Materials of Conferences

CONDITION AND PROSPECTS OF THE DEVELOPMENT OF OBJECTS OF GREEN BUILDING IN STAVROPOL

Bunina O.A.
Stavropol State University
Stavropol, Russia

Today the issue of ecology and rational nature management in the territorial complex scheme of the town-planning of Stavropol is considered according to "residual principle". At the same time in accordance with contemporary realias the development of approaches and methods allowing more completely to take into account a specific character of environmental factors of a territory is an urgent question during the development of town-planning policy.

Characterizing the main problems of the existing system of planting of trees and gardens in Stavropol it should be noted the following ones [4, 5]:

- a low provision of Stavropol with green areas in comparison with regulations;
- incompleteness of forming the uniform system of planting of the city including the system of forest parks, parks and gardens which meets contemporary town-planting, sanitary-ecological and recreational demands and will become the bases of ecological infrastructure;
- not carried out a passport system of objects of vegetation and not organized monitoring of a condition of green plantations as a basis of its current forming and management;
- the absence of qualitative and any other lawns within town boundaries with the exception of a central historical part of the town;
- a self-acquisition of municipal lands, a destruction of forest edges, a mass collections of prevernal plants, firing grass led to creeping fire, the absence of sanitary and improvement felling have resulted that forests becomes unattractive and littery places serving as dumps.

Contemporary forests within the town differ from each other by degree of safety. The Krugliy and Tamanskiy forests are subjected to the most recreational load. The recreational load is less in the Russian forest. However the felling especially of fine wood is more intensive here. The Chlinskiy and Mamayskiy forests are more surviving because of a relative isolation from residential areas. The widest variety of wood-shrubby kinds are registered here. Now almost all plantings demand a realization of some measures on increasing their resistance.

The square of Stavropol forests rapidly declines as a result of the town-planning policy of "point" building up. A large-scale offensive upon boundaries of forests has been developing for last 15 years. New apartment houses closely border with the territory of the forests or are wedge in it (an apartment complex "Garden-City", "Silver keys", "Alexandrovskiy Park" [1].

The role of green planting is very important in organizing a comfortable healthy habitat of a man in the town that it is difficult to overestimate it. That's why the system of green planting must be a basis of an ecological town-planning frame of the town. Unfortunately we can observe opposite processes in practice in Stavropol. The difficult ecological situation has reached crisis point connected with multitude forestry infringement. The necessary attention and supports of reforestation is absent. The planting of greenery is only in the central part and the outskirts are unattractive, unhealthy and uncomfortable from the point of view of places for living.

There is direct evidence of an absence of a complex approach to the different types of using of environmental objects. Numerous analyses of ecologists of Stavropol report about a threatening number of tree diseases in the town. So accordingly with researches of the leading recreational object of the town the Park Victory is in danger of rapid degradation in 15-30 years [2, 3].

So the condition of the environment in Stavropol which is not put on the list of cities with a high index of pollution is not very dangerous for population health. But it is necessary a variety of measures for its enhancement. Particularly it is necessary for improvement of an ecological situation to enlarge the area of green-planting territories, to relieve a number of traffic highways, to stop building on the territories with high degree of building up and etc.

Landscape and ecological analysis allow using a complex approach in the management when it should be taken into consideration landscape and ecological peculiarities of the territory while making every decision. Recommendations dealing with town-planning on the basis of landscape and ecological approach allow increasing the efficiency of planning of a town territory.

The work is submitted to the International environmental forum "Ecology of a big city", March 18-20, 2009, St. Petersburg. Came to the editorial office on 25.02.2009.

THE BAIKAL LAKE AS AN EXTRA PROTECTED OBJECT

Musikhina E.A., Zelinskaya E.V., Musikhina O.M.
Irkutsk State Technical University
Irkutsk, Russia

More and more people became interested in the problem of nature protection. However, our knowledge about natural systems is limited. The tech-

nocratic approach to land development and invasion still predominates and considers the following categories in designing and building different objects: resources transportation, energy sources, additional resources (including manpower) and social infrastructure. Ecological parameters of the area are not taken into account and mostly are not studied. As a rule, the consequence of such approach is unnatural agglomerations appearance along with environment pollution that exceeds all permissible levels. The mankind as an element of a natural system can exist and survive only in the case when it uses natural resources reasonably and rationally. One must not forget that every creature has its development limits, and humans are not an exception. The mankind should understand that air, soil and water are not clean by themselves; they are cleaned by biogenic processes that are easily to breach. In their turn, the breached natural processes can lead to serious consequences that are dangerous for the population's health: life duration decreases and the frequency of respiratory, cardiovascular, cancer and allergic diseases increases.

Having dammed many rivers and thus having turned them into a cascade of not cleaned water storages, we created one more problem for our descendants. What will they do with that huge amount of heavy metals and organic pollutants accumulated on the bottoms of water storages? And this is only one side of the process that contradicts to natural system's ecological capabilities. The most serious is the problem of human societies' diversity. It is historically developed that every nationality lives in harmony with its environment and is engaged in sustainable natural management that was developed for many centuries. The lost of national diversity (both cultural and regional) leads to not only breaking the traditions but also to bad ecological consequences. Averaged life, culture and thinking lead to a human degradation – physical and moral. The mankind catastrophically exterminates species diversity at all natural and social levels. However, if we want to live in a stable environment, we must remember that the most stable are those natural systems where the amount of biological species is the highest.

There is an ecological legislation that is executed by a system of the government authorities. Its target is to allow people live in a stable environment. It must solve the following tasks: complex evaluating the environment conditions, defining the levels of environmental impact, preventing the hazards and liquidating the hazardous consequences (if there are any). To reach these targets the following environmental management activities must be carried out:

–organizing the general and continuous environment monitoring;

–standardizing the quality of environment and the rate of influence on it;

–establishing the adequate environmental impact fee;

–forming the especially protected territories;

–eliminating the environmental impact consequences;

–working out ecological programs.

However, these activities are not always carried out. Till now we are exploiting natural mechanisms of self-regulation and self-organization, and this can't last forever. Thus, to avoid natural system's degradation, we must provide privileges, governmental investments and guarantees for enterprises embedding safe, pollution-free and resource-saving production technologies. At present time our relation with natural environment is consumer, irrational. Owing the unique natural wealth we are realizing economic activities as consumers, without taking into account the consequences of environmental impact. Without the correct evaluation of natural conditions and resources such activity leads to the breach of matter and energy balance in natural systems. Incorrect activities can result in dangerous morphogenetic processes even within those territories where they are almost impossible. Existing indeterminacies in natural processes prediction on one side and the motivation of those who make decisions on natural resources exploitation on the other side are the additional risk factors. Anthropogenic influences within a certain area on the Earth will definitely have effect on the condition of the entire planet but at different rate. It is strongly recommended to find a new approach to natural territories development basing on their complex ecological volume evaluation technology.

A good example of incorrect activity on the planet is economic activity on the territory of the Lake Baikal. The assumed age of the lake is 20-30 billion years; the origin of the lake is related with global rift structure development that is characterized with high seismic activity. By the chemical composition Baikal waters are weakly mineralized soft waters of hydrocarbon class of calcium group (the average amount of ions is 96,4 mg/l). The lake's water is famous for its oxygen saturation and transparency at up to 40 meters. The lake is presented by the unique flora and fauna. There are more than 1550 kinds of animals and about 1080 kinds of plants. More than 2/3 of these amounts are endemic.

Due to its unique properties the Lake Baikal was included in the List of the world's heritage areas of UNESCO during the 12-th session of The World's Heritage Committee in Mexico, 2-7 December, 1996. In 1999 the Federal frame law "About the Lake Baikal protection" was accepted. Several Russian Federation Governmental Decisions were accepted as subordinate legislations to the law. All this means that the Lake Baikal and its territory are under the steadfast observation of regional, Russian and world-wide legislative organizations. What happened after these legislations were accepted? To answer this question we should analyze the pollution of the Lake Baikal and its territory.

The main sources of the Lake Baikal pollution and the economic factors of influence on its ecosystem are:

–industrial and household sewages from ports and cities within Selenga river basin;

–Baikal pulp and paper mill;

–Selenga pulp and cardboard mill;

–Irkutsk hydroelectric station;

–the part of Trans-Siberian trunk railway on the South of the lake's shore;

–the part of Baikal-Amur trunk railway on the North of the lake's shore;

–agricultural enterprises of Baikal region;

–cargo transportation;

–polluted air from Irkutsk-Cheremkhovo industrial node;

–tourism, recreational activity, trade and amateur bio-resources withdrawal;

–poaching;

–interregional and global atmospheric pollutants transfer.

It is evaluated that atmospheric emissions within the part of Irkutsk region territory close to the lake are settled on the lake's surface with a probability of 10-100%. Thus, the amount of pollutants in the atmosphere over the Lake Baikal in 1999 was probably about 13-130 thousands of tones. The total amount of atmospheric emission from Baikal pulp and paper mill in 1999 was 7,46 thousands of tones. The sewages from the mill contain oil products, phenols, lignin and aluminium which concentration is higher than normal. In 2002 the total amount of sewages from the mill was 8,144 thousands of tones, in 2004 – 7,761 thousands of tones.

The data of hydro-chemical survey in 1999 showed that the water quality doesn't match any norms. The amount of pollutants exceeds the highest permissible concentrations several times. According to the data of the United Institute of Geology and Geochemistry (Siberian Department of Russian Academy of Sciences), the modern deposits of the Lake Baikal contain up to 80 mkg/kg of mercury.

Moreover, long-term influence from the industrial centers led to the influence interference, and a huge ecologically unsuccessful region appeared. The most polluted area is Angarsk-Usolye-Cheremkhovo industrial zone (about 3 millions of hectares).

The protection of the surface waters is insufficient as well. The waters of Angara river and its inflows are polluted by oil products, phenols and copper. The water of Vikhoreva river is extremely polluted. Besides, the list of first-order protection objects includes Toporok river and Ust-Ilimsk and Bratsk water storages.

In the Governmental Report "About the condition of Irkutsk region environment in 2000" the following activities are suggested:

–to convert the heat-energetic, chemical and petrol-chemical industrial enterprises to natural gas that will result in decreasing the level of ash and sulfur dioxide emissions by 50%;

–to reorientate or to close the Baikal pulp and paper mill;

–to after-burn and repress by catalysts the sulfur-containing gas from pulp and paper mills that will result in decreasing the level of mercaptan, hydrogen sulfite and carbon bisulphide emissions by 60%;

–to reconstruct the aluminium factories that will reduce the level of fluorides by 2-4 times;

–to realize the target programs in Angarsk, Bratsk, Shelekhov and Cheremkhovo cities;

–to carry out a complex of activities targeted to reduce the influence of motor transport on the environment.

However, the present situation requires a new methodological approach to the natural system condition evaluation. Nowadays the basis for calculating of environment pollution fees is a permission to emit, to dump and to locate the wastes.

In our opinion, the most rational are the following activities:

–realization of methods of real ecological damage evaluation;

–evaluation of natural resources in natural conditions;

–following the environmental legislation in the condition of high requirements;

–ecological education of population.

The work was submitted to international scientific conference «Basic and applied research», Brazil (Rio de Janeiro), February 19 - March 3, 2009. Came to the editorial office on 20.12.2008.

AIR POLLUTION AND PHYSICAL DEVELOPMENT, MOVING QUALITIES AND SKILLS OF FIRST-FORM PUPILS

Tulyakova O.V., Avdeeva M.S., Malykh T.V.
Vyatka State University of Humanities
Kirov, Russia

The physical development of children can be considered as the criterion of the quality of environment, since its indices are very dynamic and depend on the complex of factors, including from the level of the pollution in urban territories. It is known that not only the strong anthropogenic actions, but also relatively weak, for example, exhaust gases of motor transport, can have a negative effect on physical development. However, this question requires refinement. Each urban territory have unique complex of unfavorable anthropogenic factors, and their negative influence on the human organism can be reflected in a change in the different indices. Are studied the indices of physical development, physical preparedness and