

Ecological and economic peculiarities of settled land use

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Expert paper

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Abstract

Aim of the given article is to ground ecological and economical peculiarities of the use of settled land in modern conditions. The author describes the problem of settled land use, which are caused by functional probing of territorial development, urbanized surrounding. During the investigation factors influencing ecological situation on settled land, directly in cities are grounded and determined.

Key words: improvement, environment, question, measures, protection

Introduction

In conditions of tense ecological and economical situation in Ukraine the first task of land resources management system is to determine peculiarities of the use of settled land, which is based on integrated social, economical and nature protection factors and criteria.

According statistic data, land of settlements occupies 11,8% of Ukraine's territory, including 3,2% make cities and settlements of urban type. Urban population makes the main part of the whole Ukraine's population and here scientific and technological potential of the country is concentrated. It is worth mentioning that already 45 years ago – in 1960 cities and settlements of urban type made only 1,7% of Ukraine's territory. According to WOHP, number of population, living in cities of developed countries makes 75-85%. Ukraine's indicator of this number is practically the same as in the leading world countries (data of 01.03.2005). In our world 31,98 mln people (whole Ukraine's population is 47,21 mln) live in cities and it makes 67%. [1, p.8]

Urbanization growth and as a result, complication of space form of farm and social activity needs more attention to protection of natural resources, because it is developed due to them. The idea to decrease number of urban population because of the unfavorable ecological situation in cities is utopian one, because only there people have a possibility to provide their material, spiritual and social need. That's why, at the present period of social development, ecological problems of cities become so urgent ones, because they directly influence health and ability to work of their inhabitants as well as environment.

Problem discussion

Researchers of urbanization, ecologists, land surveyors determine the following problems of the modern cities: soil pollution, territorial growth of cities, air pollution, cities' water pollution, noise pollution, energy supply of urbanized territories, development of vegetation and animal in cities. The mentioned problems are caused by scientific and technical revolution, because intensification of social production is mostly based on urban concentration and on the productive function of urban areas. [2, p.18]

When developed countries of the "western world" faced the negative ecological effect of scientific and technical revolution in the middle of the 50's of the 20th century, they started to overcome it by means of educating population in direction of ecological principle; priorities. But Soviet countries were confident that they did not have ecological problems. That's why, during half of the century capitalistic countries developed ecological consciousness of their population and used tight economic sanctions against careless entrepreneurs who made harm to environment and people' health by their manufacturing and products and improved the quality of people' life. But the situation in post Soviet countries needs to be improved.

We think that one of the main problems of cities, especially large one, is aggravated by its non rational building and as a result – lack of natural and space resources. Non rational building is mostly caused by ignoring of functional probing of a city, i.e. division of a city into building zones – inhabited, industrial, public and storing, recreational ones, etc. The aim of functional probing of territory is to concentrate building in certain areas according to its functional determination. For example, ecologically dangerous enterprises are situated inside cities near inhabited area, but they should be concentrated in a special determined industrial area near city. However, nowadays nearly all enterprises are privatized and their new owners have no costs for that, as well as local authorities need state support. It is necessary to take into account that industrial production tends to increase its amounts and as a result, harmful enterprises will increase their negative impact on environment. And even if new owners will modernize their production, apply super purifying filters on installations in order to decrease emission of gases, dust heavy metals into air and sewage, our ecological legislation with its miserable fines is so non perfect that it is practically impossible to control harmful disposal of those enterprises into the environment and make their workers' and urban inhabitants' life healthy.

As to pollution of cities' soil, it should be mentioned that the fertile topsoil is not so important for cities' economy as for agriculture [3 p.17], which is senseless to conduct in cities, because of the great value of urban land for industrial and civil building. It is understandable that parks require fertile soil, but it is quite possible to get it by building, gathering and moving fertile topsoil.

Observing the stable development of population number at settled areas, it should be mentioned that it is connected with territorial development of settlements, and the last one happens using the land that belongs to other land fund categories. If one compares tempo of territorial growth to the growth of its population, it may be observed that the first one is double so fast than the second. This tendency could be clearly witnessed during the last decades. In such conditions urban surrounding widens even faster, its impact on nature becomes more intensive. It is caused, firstly, by space placement of population, mainly in cities, development of technologies, demanding territory extension, and consequently, area of population, development of mass media and communication. Secondly, it can be explained by spreading of urban way of living, especially extreme increase of spacious move of population.

Next problem lays in air and atmosphere pollution. At present day this is the factor that correlates with sickness and death rate of population. If we take the whole pollution of cities' air as 100%, then pollution caused by transport makes 60,6%, by industries – 12,2%, by heat power stations – 15,6%, by waste – 3,5%.

Investigation results

Intensive pollution in cities is also caused by concentration of production and growth of urban population, mainly by means of increased consumption of various kinds of fuel. Speaking about fuel quality, it is worth mentioning the contents of lead compound, aromatic hydrocarbons and sulfur in petrol and diesel fuel which is sold at filling stations of our capital, is approximately 10 times higher than it is allowed by the law for the norms of industrial countries (according to the data of Kyiv city program "Ecology of Transport"). [4, p.28] But fuel which is sold in the capital does not differ in quality from that, sold in the whole country. For example, according to the statistic data, amount of harmful wastes disposal from vehicles into atmosphere in 2002 in Kyiv made: nitric oxides – 2602 ton, soot – 215 ton, sulfur anhydrite – 213 ton, carbon oxide – 30812 ton, hydrocarbons – 5464 ton. Totally it makes 43,3 % of all harmful wastes in Lviv region. [3, p.376]

It is worth mentioning that sulfur gas in quantity of 0,5 mg/m³ poisons person's body so much, that it may cause dangerous diseases and genetic changes. For example, relation of high death rate from bronchitis and concentration of smoke and sulfur gas in quantity of 0,2 mg/m³ makes correlation coefficient of 0,96.

At places of high traffic, one can observe high concentration (5-10 mg/m³) of CO – coal gas, which in quantity of 20 mg/m³ is dangerous for human life. Exhausts from automobiles make 93% of the pollution, wastes – 6,3%, and all other kinds of coal gas emission – 0,75%.

Carbon oxides, oxidants, dust, soot, ash particles are also pollutants. They are other results of scientific and technical progress and are dangerous. Concentration of them in the air cities of developed capitalistic countries

caused public pressure on governments of these countries, demanding to establish air quality standards. In the countries of the third world these standards are necessarily required and are already established.

As to cities' water, one can see that the problem lays, first of all in a non rational use of it. According to the date of the state enterprises of water supply of population (Lviv Vodokanal), in our country 30% of water are lost during its transporting by mains chains to consumers' houses, 50% are lost inside a house because of defective plumbing supply and only 20% come to people. It has never been investigated how people use water in our country, but it was made by scientists in Acron (USA). They found out the following structure of tap water consumption: bath – 37%, toilet – 41%, cooking – 6%, garden watering – 3%, car washing – 1%. The rest 5% are used for drinking. But these are water demands for personal needs of people and its average indicator in industrially developed countries is 300 l per day. This indicator is not essential in comparison to water consumption for production. It is enough to say, that manufacture needs 10 ton l of clean water to produce 1 ton of kapron, 100 kg of water to produce 1 kg of paper. Production of 1 ton of textile tissue needs 270 000 l of water, production of 1 ton of cement needs 5 ton of water. In general, industry of developed countries use 1,2-1,5 thousand m³ of water per head annually.

Consequently, figure of water consumption amounts is really impressive. Water quality is far below the necessary level, because industrialization and urbanization have changed water contents in nature, as well as its quality. Pollution of stagnant and flowing surface water and dangerous state of underground waters make people to worry, especially in countries with high level of population density. And this worrying is not groundless: every year nearly 400 km³ of sewage from houses and industries into rivers. According to researches, in developing countries 80% of diseases are provoked because of consumption of low qualitative water.

French sociologist F.San-Mark writes that street noise is the reason of 80% of migraines, 52% of memory problems, and nearly of half of corrupted characters. Austrian scientist Griffit considers that noise makes 30% of reason of premature aging, shortens people life for 8-12 years and also forces violence, suicides and even murders. The source of noise pollution is artificial acoustic background, provoked by people's economical, technical and cultural activities, though natural background has a relaxing effect.

Speaking about Lviv, the main sources of noise is the city are the following: traffic, railway, airport, industrial enterprises, equipment of various workshops and public services, objects of food supply, stores, residential houses. Mostly acoustic regime is established by volume of noise from road traffic, the least part – by railway. As to noise from industrial objects, it is not so great, because in conditions of continuous economical crisis almost all plants and factories in Lviv work not for their full capacity. That's why in the nearest future, until the industry revive, automobiles will remain the main source of pollution. The main reason of their harmful impact on environment is their "grave" age and non-conformity to the modern European norms of ecological safety.

Concerning energy supply of urbanized territories, one should notice that evolution of energy consumption is also connected with the development of these territories, concentration of industry and labor resources. From the beginning of human civilization, industrial evolution gradually increased amounts of energy consumption. Though, during the last years humanity tries to transfer to more energy consuming kinds of production, but it is still far from reality. The reason lays in the fact that economy is the main energy consumer, but economy is being developed to support our life activity, even our smallest demand.

If one analyzes consumption of energy resources in Lviv, it can be observed that during the last seven years its indicator has essentially decreased, not because of energy safe technology, but because of shutdown of enterprises-consumers. So, during the period of 1995-2002 use of heat energy by enterprises and organizations of cities has decreased by 65%, and electric energy – by 38%. As to the use of main kinds of fuel by enterprises and organizations at the same period, consumption of them has decreased, i.e. natural gas – by 76%, coal – by 81%, car petrol – by 78% and only consumption of diesel fuel has increased by 2,2%.

Unfortunately, our country does not use solar, wind or geothermal energy. In 197 Ukraine took the 15th place in the world by consumption of electric energy – 178 billion kilowatt-hour. 45% of it is produced by nuclear power stations, which, in spite of Chornobyl catastrophe, continue to work. [5, p.124]

Such situation leads to intensive environmental pollution at limited areas, which is destructive at our farming system.

Conclusions

Taking into account that city is a place of concentrated number of people and their labor activity, support of optimum ecological state of environment is one of the main tasks of modern civilization. Solving of such key tasks as territorial growth of cities and withdrawal of lands of other land fund categories for this purpose; purification of cities' air and supply of population with drinking water; acoustic pollution; energy consumption by urbanized territories and life support of vegetation and animals of cities need concern not only from public, but also from state authorities, particularly for the creation of strategy of ecologically balanced and safe development of cities, as an area of homo sapiens habitat.

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