

# Economic Efficiency of Implementation of the Concept of Sustainable Development of the Urbanized Territories in Russia

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## ABSTRACT

The necessity of transition to sustainable development of the urban territories is proved. The concept of the natural-socio-technical model of urban territories is offered. Green building as one of the aspects of unity in urbanized areas and the natural environment is presented. The basic principles of the paradigm of safe and comfortable urban environment that is compatible with the biosphere are formulated. The structure of the humanitarian balance and the methodology for quantifying them are described. The model of sustainable development of the environment through the comparison of human capacities and parameters of the environment is simulated. The criteria for the compatibility of urbanized territories with the biosphere were formulated as a measure of the sustainability of their development. The example of calculation of an indicator of biospheric compatibility of urbanized areas in relation to transport construction and road infrastructure of the city is given. It shows the economic efficiency of realization of the concept of sustainable development and the creation biospherically of the urban environment on the example of road infrastructure of the city.

**Key words:** *economic efficiency, city infrastructure, transport system, ecological safety, urban ecology*

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## INTRODUCTION

The last decades have shown that the terrestrial biosphere in general and her separate components – ecosystems of various levels – have limited potential for ensuring the normal functioning and reproduction in the conditions of excessive impact of human activity.

Therefore among global problems which solution is badly checked in the existing development models the important place is taken by such problems as exhaustion of available natural and resource capacity of Earth and pollution of the environment of the planet.

Therefore the concept "sustainable development of the urbanized territories" is so widely used and discussed by the scientific world community, including Russia. As ideologists of transition to sustainable development the most advanced and progressive organizations of both the world community and the certain countries act.

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Today the concept of sustainable development is considered as means of an exit from the ecological deadlock of development of a modern civilization.

The cities which have become the leading form of the human settlement and the urban environment created by the person are centers of a modern technogenic civilization. But development of a civilization at insufficient accounting of laws of interaction between society and the nature accompanied by essential impact on components natural environment. It conducts to catastrophically consequences for the biosphere and the person as one of parts of the biosphere.

The world famous scientists involved in new concept of compatibility of the urbanized territories are Barber, Brown, Clemens, Daniel, Dasgupta, Goldman, Hamilton, Heal, Korowitz, Meadows, Mozes, Randers, Stievers, Tadani, Wagner A. and others. In Russia in Academy of architecture and construction sciences the founders of this new concept of compatibility of the urbanized territories with the biosphere are academicians Ilyichev and Kolchunov and others. The Russian higher education institutions in the cities: Kursk, Oryol, Voronezh, - are actively engaged in the decision of problems of a numerical experiment of assessment of compatibility of the urbanized territories with the biosphere.

As a result the modern cities gradually turn from the centers of development of a civilization into sources of destruction of the surrounding nature and degradation of the population.

The widespread point of view that the market model of economic development and the concept of a possibility of his self-regulation will automatically solve all arising environmental problems is insolvent. It was shown by the analysis of trajectories of economic development and an ecological condition of those countries which in the last decades have passed to market economy.

The economy and the market badly adapt to the actions having perspective focus concerning the interests of future generations. Profit today and at any cost – such is the motto of today's economy of the majority of the countries.

## **THE BASIC PRINCIPLES OF THE CONCEPTUAL APPROACH**

We will state the basic principles of transformation of the city in compatible with biosphere and developing the person.

Principle 1. The unification of the city and the surrounding Nature, respect for Earth, unity of consciousness because the person is generated by the Nature, he is her part, without her he can't exist and has to serve a maternal organism.

The solution of the problem of sustainable development initially means interaction with the Nature, preservation of her self-sustaining state. Anthropogenic loading shouldn't exceed the limit providing such state.

The following principle helps to understand that it hinders the achievement of unity with the nature in activity of the city.

Principle 2. Connection of two contrasts (external and internal activities of the city).

External - withdrawal of resources from the biosphere: air, water, fossil minerals and energy resources (gas, oil, etc.) and throw-in of waste in her: MSW, sewer drains, production wastes, gaseous products of burning at combined heat and power plant, state district power plant, in propulsion systems and many other things.

Internal - is a living environment and indicators of impact on the population: quality of the urban environment, health and life expectancy, education level, income, human potential, etc.

Both activities of the city are interdependent and deterioration or improvement of one of them in the same way influences another.



Initially activity of the cities has to be directed to reduction of external and internal negative impacts, promote restoration of capacity of the Biosphere and, finally, lead to the graded beginning - reproduction of the clean Biosphere.

Indicators of realization of this principle are, on the one hand, quantitative assessment of consumption of resources and formation of pollution, on the other hand, quantitative characteristics of a condition of quality of life and level of human potential in the urbanized territory.

It is necessary to use existing or to create the new criteria allowing quantitatively (on the basis of correlation dependences) to estimate results of external and internal activity of the city. For example, in a qualitative sense it is such characteristics as: extent of renovation of the territory from waste and her involvement in economic circulation; volume of investment into "green" industries and creation of new jobs; availability of housing; depression of consumption of energy resources on ensuring vital activity of the cities; decrease of emissions of a carbon dioxide and so forth.

Principle 3. Drawing up and calculation of triple (humanitarian) balances of Biotechnosphere - construction and the solution of the system of the equations establishing quantitative standard ratios between:

- a) biosphere life potential;
- b) population and number of places of satisfaction of needs of the population for the cities;
- c) needs of people and technospheres in resources of the Biosphere and a possibility of the Biosphere to satisfy these requirements.

Triple (humanitarian) balances of Biotechnosphere establish harmonious proportions between various parts of the Biosphere, including the population and also the list and quantity of the withdrawn resources in unit of time with a binding to the territory of the city. If the given ratios of triple (humanitarian) balance of Biotechnosphere aren't kept, then in the city (further on hierarchy: the region, the country) it is necessary:

- 1) to reorientate productions, to enter innovations into a technosphere to reduce pressure upon the Biosphere and to reduce negative impact on the population;
- 2) to limit population in this city at the existing technologies in a technosphere.

In case the humanitarian balance of Biotechnosphere isn't reached, then development of the city will degrade, if it is reached it will progress, grade. Progressive development of the cities promotes conservation, restoration of the Biosphere and the person, improves quality of life in general.

As the person himself is a part of the Biosphere, he influences it through the vital activity and can reduce or enlarge the Biosphere sizes.

As calculated components of the equations of triple balances of Biotechnosphere it is offered to apply [15]:

- technosphere unit: one place of satisfaction of needs of the person framed by people (for example, a workplace, the educational place, the medical place, the vacation spot and others);
- biosphere unit: the site of the Biosphere which potential on norms symbiotic corresponds to technosphere unit, i.e. one place of satisfaction of rational needs of the person;
- biotechnosphere's unit: the site of the Biosphere including technosphere unit, i.e. one place of satisfaction of needs of the person which is in standard symbiotic ratios with the Biosphere.

Principle 4. Legislative and standard fixing of humanitarian balance of Biotechnosphere of the city, or phased transition to it.

For each city it is necessary to set legislatively the triple (humanitarian) balance of Biotechnosphere determining the extreme sizes of a technosphere at the available capacity of the Biosphere or to carry out phased transition to it (acceptance of organizational and technical actions, updating and development of normative legal acts, etc.). Legislative and normative documents have to be based on the principle of prophylaxis and anticipation of possible dangerous situations in the cities, and not just on the facts of their detection and elimination of consequences.

The control system of the city has to provide daily regulation of its activity; to establish degree of admissible risks of emergency situations on the basis of introduction new the biosferosovmestimykh of technologies; to bring to the level of the main priority: preservation of life and human health, development of the person and so forth.

Indicators (indicators) of realization of this principle will be: quality of the legislative initiatives, normative documents and legal acts guaranteeing humanitarian balance of Biotechnosphere or phased transition to him.

It is necessary to regulate the rational criteria, standard functions concerning:

- 1) and use - sites under building, streets, green zones, etc.,
- 2) water supply and water disposal,
- 3) power engineering specialists,
- 4) the air basin according to climatic seasons.

For each factor all stages of his use from withdrawal from the Biosphere before formation of waste and their processing consistently are considered.

It is especially important that concerning social criteria it is necessary to develop normative documents and legislatively to approve them.

Principle 5. Knowledge as necessary condition of existence of the city

Strategic development of the city is based on knowledge and includes the following elements: professionalism (vocational higher education, preparation and retraining of highly skilled managing directors of shots, improvement of knowledge in the system of continuous education); intelligence (use for preparation and implementation of programs of development of experts from the universities, scientific research institute, the academic and professional communities); reliable information; preparation of new actions and development of programs for improvement of Biotechnosphere; recommendations about elimination of negative factors and offer on human development.

Within strategic city map on the basis of the analysis of the available information (the general, survey, special, statistical, analytical, etc.) the purposes of management coordinate with resources by means of the innovative programs of development which are result of creative, business activity of scientists, engineers, businessmen, authorities. Important result is participation of scientists - specialists of the relevant branches - in reorientation of the existing productions to the new resource-saving directions and low-waste technologies that is extremely important for the cities with an intense ecological situation.

Innovative projects and programs have to be directed not to creation of the new equipment, technologies and goods and to the coordinated progressive development of technologies, the organizations and goods in their unity and interrelation with the Biosphere feeding them.

Innovative programs have to include the actions and economic expenses providing transformation of the saved-up wastes, i.e. pathologies of economy and society, into a development resource. At the same time not used members of society (the unemployed, criminals) are involved in a useful social and economic turn as waste of harmful productions.

We suggest, that the technologies compatible to Biosphere are considered to be the actions providing an economic opportunity to use industrial and household wastes, low-quality raw



materials and renewable resources for creation of the high-quality products competing with the traditional items received from originally taken natural resources.

In such technologies the price of the used natural resources has to correspond to costs of their reproduction. The compatible to Biosphere technologies in construction the innovative offers developed and collected by the Russian Academy of architecture and construction sciences [16], and which have proved the economic efficiency and investment attractiveness can be examples of that.

The offers illustrate, for example: transformation of solid household (organic) waste (MSW) to the gaseous products used for development of energy or for additives in fuel; application of waste of logging production, fight of glass-container raw materials in production heat-insulating the crystalline materials of foam and glass.

Rather small volume of use of innovations in construction branch and the limited list of objects of "green" construction in Russia is explained by legal lack of regulation of process of their realization or immunity of economy to innovations now. The problem of not demand of innovations again is well confirmed by the main motto of real market economy - "profit at any cost".

The major factors influencing resource-saving, for example, at design and construction of buildings as a part of program actions, are: rational choice space planning of decisions, survivability of constructive systems of buildings, term of their service; decrease in resource intensity, ecologically safe construction materials. As result - decrease in use of non-renewable natural resources.

Quantitative indices of effectiveness of programs of development can be criteria of their selection at competitions, and the projects containing the technologies reducing the biosphere could not be allowed to participation in a competition in general. In Germany, Japan and some other countries the applicant who has submitted the proposal containing innovations concerning Biotechnosphere on a competition receives essential preferences in points at assessment of the competitive offer. In Russia, unfortunately, there is no such practice yet; even directive introduction of innovations practically doesn't work as in the country there is no economical and legal system stimulating innovative development of branches and municipal economy.

Finally, indicators of realization of the principle of "Knowledge" will be: quality of target programs of regional development, effectiveness of actions for improvement of Biotechnosphere and recommendations about elimination of the factors interfering symbiotic progressive development. All programs have to contain quantitative indices of implementation of innovative projects by means of program and target or share mechanisms of management.

#### Principle 6. Creation of harmonious social climate

On the basis of this principle it is expedient to estimate internal stability and wellbeing of the city, progress in development of the person and in restoration of the Nature. For similar assessment it is necessary to use indicators: social tension, moral atmosphere, the fact that "terrestrial happiness" - the family wellbeing, the birth of children and other indicators characterized by data of the statistical reporting on a social status on regions is called (birth rate and mortality, prevalence of deviant behavior owing to alcohol and drugs, life expectancy), quality of labor, the actual assessment of human potential and another.

#### Principle 7. Satisfaction of rational needs of the person through functions of the city

For harmonious development of the person rational requirements of him as person (vital, emotions, will, geniality and kindness, aspiration to knowledge, the need for creativity, sense of beauty) have to be satisfied with functions of the city: life support, entertainments and emotions, power, mercy, knowledge acquisition, knowledge of the world and creativity, communication with the nature. Any of needs of the personality isn't main, all of them are necessary, and without satisfaction of any of them people won't be harmonious.

As the principles of biospheric compatibility are implemented through the functions of the city designed to provide satisfaction of rational needs of the person and, respectively, through his infrastructure, we will address the analysis of these functions in practice of a urban planning.

Life support — this existence of worthy housing, jobs and their transport availability, providing with food, objects of life and life, available medical care.

All life support system is rather difficult, and it is difficult to overestimate its importance. The problems connected with life support take 90% of working hours of the city administration today.

Entertainments and emotions — this is the creation of recreational zones in the cities, theme parks, squares, sports constructions and playgrounds, bars, restaurants, dance halls and so forth, convenient for use by the population of the city.

In the city, as a rule, there are these or those opportunities for satisfaction of these needs of the person - parks and attractions, cafe, bars and restaurants, dance halls and discos, game zones, the Disneyland and many other things. Saturation of the city by these objects depends on many factors, including on the number of inhabitants, on the level of income of the population, fashion and other.

The power — is the mission personifying functions of management of the city (respect for discipline, control, the choice of the purposes and priorities at their achievement, etc.). The person in the course of the development is forced to operate himself - self-discipline, control of emotions, the choice of the purposes and priorities at their achievement, etc. In a bigger measure these functions are necessary for community of people.

In the city elements of the power have to have the corresponding architectural expression and placement on the master plan of the city: buildings of governing structures (administrations of areas, cities, areas and so forth), legislative, law enforcement agencies (police, prosecutor's office, courts, etc.), representation of the state participation (mails, banks, pension funds, etc.).

The mercy — is the central point of needs of the person. The geniality and kindness which are received by the child under normal conditions - the developed harmonious personality - cause the reciprocal need to make something similar in the matured person. In the city — there are the objects representing and performing functions of the help to persons in need: to large families, aged, to disabled people, families with adopted children, etc. - day nursery, gardens, educational, educational and specialized schools, out-of-school clubs on interests and other institutions; for physically weak, needy and socially unprotected groups of the population - a nursing home and aged, doss houses, buildings of salvation armies and many other things.

Knowledge — that means the establishment of relationships of cause and effect in the world that always was need of the person. The understanding of the events which are taking place both around the person and in him, are extremely important for individual needs of the person and for city life. In the social plan traditionally this need of the person is satisfied with an education system - kindergartens, schools, higher educational institutions, advanced training courses, re-trainings, the systems of continuous professional retraining, etc.

Knowledge makes the person independent, and the education system and its personnel structure make the country intelligently independent. Therefore the universities, higher education institutions, schools were always significant objects in the city and their importance can't be neglected. These objects in many respects define also its architectural appearance, form the place of the city in hierarchy of the cities including on the level of development of human potential.

Knowledge of the world and creativity — is the need for creativity which is the integral line of the person (to understand an essence of the observed phenomena and the taking place events, to create something new) and is implemented in the form of various creative organizations divided into two segments:



- the scientific creativity (fundamental science, i.e. science as creativity) which is carried out by the Russian state academies of Sciences, the educational organizations: universities, academies, institutes);
- the art creativity shown in the form of arts (architecture, a sculpture, painting, music, literature, theater, etc.).

Respectively in the city there always existed and have to be buildings and constructions in which these high needs of the person as however, and requirements of society, are satisfied. Theatrical buildings, conservatories, concert halls, the museums, temples usually are architectural monuments, define architectural appearance of the city and though in a quantitative sense it is only several objects, they create in many respects the unique image and internal relevancy of the city, determine his creative potential for further development of the person.

Communication with the nature — is important function of the city as the person as a species, has indissoluble interrelation with the nature, actually he uses the goods granted to him by Earth, the Nature and the Biosphere. During evolution human has created the life support system. However the need of communication with Space, Earth, the Nature remained in the form of requirement of contemplation of fine, inspiration with images of natural harmony. The person needs to feel an initial natural basis and as a psychological support and as an esthetic factor. From these positions in the city there have to exist wildlife "impregnations" in the form of parks, natural monuments, certain reserved places with picturesque landscapes, a harmonious combination of a landscape and architectural objects.

Ancient architects paid attention to importance of this party of existence of the city, architects stand up for it and inhabitants rejoice to it. The charm of many old cities is defined by indissoluble communication with the surrounding nature which is shown in many respects - a sufficient aeration, good illuminating intensity, existence of healthy reservoirs, but also - picturesque landscapes, a harmonious combination of a landscape and architectural objects, etc.

In the modern cities there is a danger of not only reductions of natural landscapes, but also their transformations to aloof territories and also in this context there is a problem of video pollution and light pollution. Residential areas of the modern cities as "the stone jungle", aggressive in the impact on the central nervous system of the person, promote not only to depression of health of the people living in them but also turn them into socially dangerous persons.

All functions of the city are closely interconnected among themselves. Realization of these functions, together with other principles of transformation of the city in compatible with biosphere and developing the person, provides achievement of a condition of favorable medium for life and development of the person.

Excellent feature of the offered approach of measurability of functions of the city is that it allows to give a quantitative assessment to such concepts as quality of life, safety, favorable environment, comfort. Quantitative estimates of representation to the inhabitant of functions of the city on time spent for their satisfaction form the basis of a technique of feasibility of these functions.

The following step is an opportunity to survey advantages of the cities, plans of strategic planning and perspective versions of the master plan, to estimate as far as they correspond to needs of the person and as the person and balance of its time can change as a result of realization of this or that option.

#### Principle 8. Reliability

It is necessary to create "Constitution" of the city according to which the city has to play the role in the constellation of other cities adequately: capital (of country, of region, of district), monoprofile or industrial city, resort, military base, city university, shopping center and many other things. It is necessary to maintain the traditions of ethnos which have developed in the

cities, culture, to bring up the relations of respect and preservation of the Nature, to involve the Councils of Elders in management process. To promote a unification of the cities, development of friendly communications between them in the field of economic and cultural cooperation, education, medicine, environment protection, etc. - joint holidays, friendly visits, exchange of experience and so forth.

Communication and information transfer between people, ability to collaboration (exchange of the ideas, thoughts, intentions, feelings, information, etc.) - necessary living conditions and development of the person in the city and society. Observance of diverse conditions of public life, the system of behavior, norm, value, professional knowledge and another unite people in various social communities (group of people): labor unions, creative public organizations, clubs on interests, association. The purpose of such association - simplification of communications between representatives of various cultures, ethnoses, decrease in conflict potential in the city, society, the state. Communications between social communities have to be based on the principles of biospheric compatibility. If cooperation between people and groups of people is the basis for interaction, then development of the personality and society will be friendly and harmonious. Otherwise there are unorganized mass of people (crowd and other their versions) that generate rumors, panic and fear in society, which is less controllable or uncontrollable by the city and the country in general.

If the previous clauses and this point are implemented, then it is possible to speak about the comfortable environment for life and development of the person.

Principle 9. Knowledge = force – this is the knowledge of the truth, objective reality allowing to pursue the correct policy is reasonable to apply law enforcement agencies, to make interaction between various layers in the city and a boundary by the cities. The cities have to develop the style, have memorials, city holidays.

The ability to dispose by force assumes knowledge of functions of the city, his political, economic, social, ecological situation, relationship of groups and certain people, their interests, understanding of strategy and tactics by means of which force is got and being kept. Knowledge promotes establishment of multilevel communications inside and between regions, development of the national idea, and strategy as bases for application of internal law enforcement agencies, planning of defense of the country, image of the country, etc. The greatest efficiency to "force" is given by "knowledge" allowing achieving the required objectives minimum spending resources; to convince people of their personal interest for this purpose; to turn opponents into allies.

The principle "Knowledge=force" ensures safety of residents. The indicators of safety of medium of vital activity are: counteraction of crime and anti-terrorist activity; information security; fire safety; mitigation of consequences and depression of level of impact of natural and technogenic catastrophes, ecological safety; sanitary and epidemiologic safety; safety of infrastructure facilities and transport.

If all previous clauses are implemented, then it is possible to speak not only about comfortable (favorable), but also safe medium in the city for development of the person.

Thus, stated above represents the sequence, hierarchy of points, positions, actions for transfer of the city in biosferosovmestimy and developing the person.

Today, according to official data [1, 2], the major factors of destabilization of the urban environment and regressive development of the cities are:

1. The ingredient pollution of the air basin and its implication as in the form of the local phenomena - a photochemical smog, acid deposits, and on a global scale - formation of greenhouse effect, destruction of an ozone layer in a stratosphere. Formation of climatic conditions of the city, meso - and the microclimatic features of the urban environment, meteorological factors influencing processes of dispersion of emissions and localization of contaminants are bound to a condition of the atmosphere;





2. Pollution of water medium and formation of a significant amount of the crude sewage, including due to the lack of treatment facilities and a shabby condition of water supply systems. Difficulties of providing urban population with drinking water are experienced practically by all regions of the country, and its sanitary state doesn't meet the existing requirements of norms and rules (40% of superficial and 17% of underground sources) [3, 4]. The problem of incidental developing of infectious diseases as which reason serves the low-quality water medium is also acute;
3. Erosion and deflation of the soil in the cities and in adjacent territories, formation on the anthropogenic broken or anthropogenic transformed territories of artificial structures and specific educations different from natural structures by their properties. The factors blasting natural structure of a soil integument in the cities, that have the "sealed" day surface, reinspissation and the raised loads on the soil, its salinization and poisoning. A special problem for the modern cities is the modification of geological medium in a lithosphere which is shown in the form of various dislocations: failures, sags, karst phenomena, landslides and gullying;
4. Parametrical (thermal, mechanical, sound, vibratory, optical, electromagnetic) and radioactive pollution; development of new types of energy carriers with negative ecological consequences;
5. Territorial offensive ("expansion") of the city at the environment through direct contact - transport networks, utilities etc., leading to reduction of the sizes and violation of integrity of natural complexes and also decrease in their stability and efficiency of favorable impact on the urban environment. So, annual reduction of the area of forests results from activity of the person with a speed about 7,3 million hectares a year;
6. The adverse effect of the city on a plant and animal life leading, as a rule, to violation of natural processes of activity both separate species of plants and animals, and all biocenosis. By estimates of experts, daily and forever from 100 to 200 types of live organisms and plants disappear. Loss of the habitat, its pollution and overexploitation of biological resources by the person are the reasons of it;
7. Accumulation of dumps, tailings dams, waste heaps and other results of long-term economic activity, problem of their utilization and elimination. Only in Russia there are more than 500 million m<sup>3</sup> of radioactive wastes and about 20 thousand tons of the fulfilled nuclear fuel;
8. Global distribution of super\_toxic substances through trophic chains that leads to violation of endocrine and reproductive systems of the person, manifestation of disintegration of genetic programs of the person that can lead to degeneration of the nation;
9. Low level of ecological consciousness and culture of the population, is a consequence of what the insufficient efficiency of administrative and, first of all, control functions in the field of environmental management and environmental protection take place; low level of ecological regulation of town-planning activity, including lack of rent payments for use of natural resources, for the territories polluted by dumps, etc.

Finally, the cities as civilization carriers, get the prevailing function - destroyers as they destroy the Nature, and together with her and own population.

- 1) The urban environment represents dynamic system which condition is caused by:
- 2) external influences (for example, climatic factors, change of requirements of the standard-right base, social standards and qualities of life, change of education level and culture of society and others, defining a possibility of cooperation with the biosphere);
- 3) internal interactions between components (for example, rendering services, social tasks, environmental protection, etc.;

4) the intra making processes (for example, the intra production and economic relations).

Thus, the urban environment is the system open for external managing directors of influences, i.e. the influences transferring system to a new state.

On the basis of the above-stated principles of transformation of the city in compatible to Biosphere and developing the person the conceptual model of the safe urban environment as natural socio - technical structure is constructed [24].

In conceptual model natural socio-technical structure of the urban environment we have allocated the following components:

- the natural component as the part of the external environment containing resources for the person, interacting with objects of city infrastructure and which is exposed to negative technogenic impact;
- the social component as the part of the external environment which is also interacting with objects of city infrastructure and expecting satisfaction of the requirements at certain risks. Besides, the person as the representative of society, being a part of the environment, indirectly is influenced by negative technogenic impact;
- the technological component making power impact on natural and social environments, and defining first of all, a possibility of formation of an adverse ecological situation in a certain territory.

The basic novelty in creation of conceptual model of the safe urban environment in the form of open dynamic system in this case is that her state is defined by other specific laws which are based on mutual influence of parts of model which make her, as a part of uniform natural socio - technical structure with external influences.

## CONCLUSION

For an example we have executed calculation of an indicator of biospheric compatibility of the territory of the motor transportation enterprise on the example of one of the cities of the central part of Russia with the population about 400 thousand people.

On the basis of the analysis of the received indicative values of factors conclusions on development of normative documents or concepts of program documents, for example, of target programs of innovative development for motor transportation infrastructure and other life support systems of municipal economy functioning in close interrelation with motor transportation system are drawn.

The general recommendations about development of programs of development of objects of motor transportation infrastructure contain the following stages.

At the initial stage conceptual installation and the general purpose of innovative development of the city transport system according to the fundamental principle of paradigm 1 by the biosphere of compatibility are formed. On the basis of the formulated general purpose tactical targets as which, for example, there can be following are developed:

- 1) realization of purposes of strategy of ecological reconstruction and safe development of motor transportation infrastructure of municipal economy;
- 2) development of new regional criteria for evaluation of quality of ecological safety of objects of motor transportation infrastructure of municipal economy;
- 3) development and legislative fixing of branch humanitarian balances of a biotechnosphere or phased transition to them;
- 4) realization of the program actions which are based on the principles of program goals management and share mechanisms of managing;
- 5) introduction to economic circulation the compatible to Biosphere technologies eliminating imbalance of objects of motor transportation infrastructure and providing



- realization of functions I am proud for the maximum satisfaction of public benefits in the conditions of market economy;
- 6) establishment of target standards of the socio-economic indexes characterizing quality and technical capabilities of motor transportation system and objects of motor transportation infrastructure, for example, of costs of transport availability, etc.

It should be noted separately that application of a program and target method of management of realization of program actions is based on share mechanisms of management by means of which participants of programs of development are called to work for the end result with "personal" responsibility of everyone.

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