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## **ECONOMIC AND GEOGRAPHICAL APPROACH TO DEVELOPMENT CRITERIA FOR PRE-DESIGN ANALYSIS OF URBAN GREEN AREAS**

***Annotation.** The article reveals the concept of urban green areas as part of a recreational zone. Three types of urban recreational zones are identified and described: active, passive and specialized recreation. The basic concepts and definitions of green areas are considered. The types of green areas are given according to the functions performed, accessibility and attendance. The standards of provision with green areas of settlements of different population are presented. The authors propose one of the possible options for a set of criteria for a pre-project analysis of a green area for its improvement and development. Recommendations for conducting urban planning, historical, sociological, socio-cultural, economic, transport, environmental analysis are also considered. Questions have been developed for conducting a sociological study involving a qualitative and quantitative assessment of a green area of common use (in particular, for a park area).*

***Keywords:** territorial zones of the city; green areas of common use; city parks; pre-project analysis of landscaping.*

### *Introduction*

Green areas of common use perform an important role in the functioning of the city—they provide environmental parameters of the living environment and recreational areas for the population. The "green lungs" of the city, with proper care, can become the hallmark of urban space and a place of attraction for the local population and tourists. The picturesque landscape is one of the key factors of tourist attractiveness of any territory [1].

When designing a territory, it is necessary first of all to analyze its current state with the help of qualitative and quantitative assessment of indicators of landscaping, landscaping and services provided. A comprehensive analysis will help to identify weak areas and determine the ways of development of the territory.

The purpose of the article is to define universal criteria for a comprehensive pre-project analysis of green areas of common use, in particular park areas, for their improvement and development.

### *Research materials and methods*

The main general scientific research methods used in the article are methods of analysis and synthesis. The economic and geographical approach to the development of criteria for the pre-project analysis of urban green areas involves the use of historical, cartographic, field methods, the use of geoinformation systems, methods of quantitative and qualitative analysis.

Normative documents such as GOST 17.6.1.01-83., GOST 28329-89., SP 42.13330.2016., SP 475.1325800.2020, the Urban Planning Code of the Russian Federation, methodological

recommendations on the procedure for the development of integrated landscaping projects were used as the main sources of theoretical and methodological information for writing the article.

### Research results

The territory of any city, as a rule, is divided into zones (Fig. 1). Zoning is carried out taking into account the functions performed by individual sections of the territory.

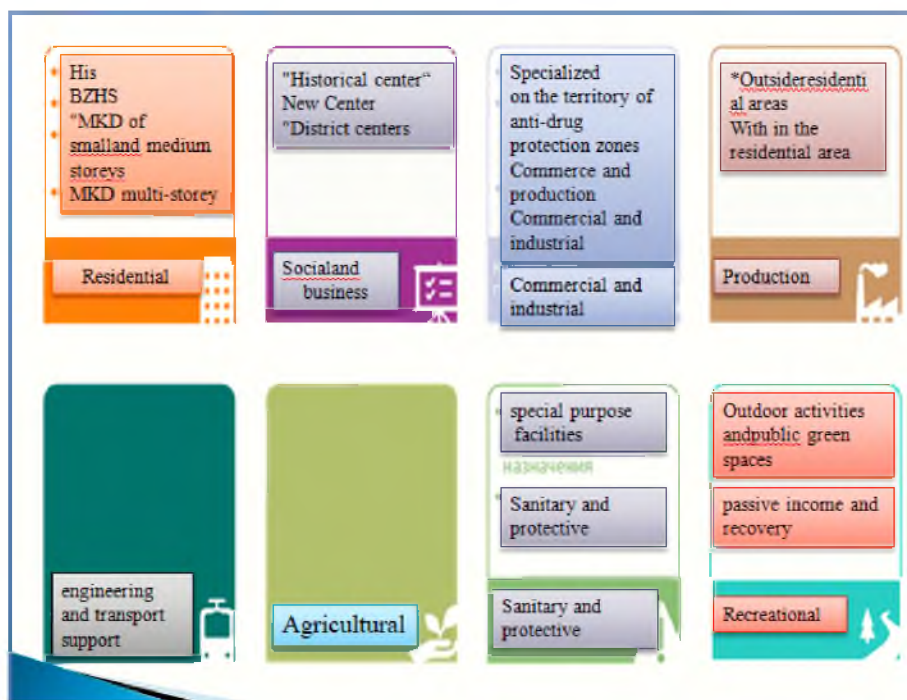


Figure 1 - Territorial zones of the city (compiled by the authors according to [2])

According to the Urban Planning Code of the Russian Federation, zones for recreational purposes may include zones within the boundaries of territories occupied by urban forests, squares, parks, city gardens, ponds, lakes, reservoirs, beaches, coastal strips of public water bodies, as well as within the boundaries of other territories, used and intended for recreation, tourism, physical culture and sports [2]. Conventionally, three types of recreational zones can be distinguished:

1) Active recreation area. This can include objects that are used for sports, active pastime with children of active tourism: playgrounds with sports facilities, jogging and bike paths, attractions and others.

2) Passive recreation area. This zone has the maximum area of territories with public greenery, such as parks, gardens, squares, alleys, boulevards, etc.

3) Specialized recreation areas. The objects of health-improving institutions are concentrated here, such as resorts, sanatoriums, health resorts.

Let's take a closer look at passive recreation zones, namely urban green areas. A green area is usually understood as a part of the natural or artificially created frame of the city, at least 70% of the area of which is occupied by vegetation and plantations. Urban green areas are also of different types depending on the functions performed and the permitted activities on their territory (Table 1).

As with all zonal territories of urban space, there is a set of rules and regulations for green areas of common use. Such rules contain norms for indicators of the boundaries of green areas, green spaces, objects of engineering improvement and other functional elements. For example, in the structure of green areas of common use, large parks and forest parks with a width of 0.5 km or more should be at least 10%.

The indicators prescribed in the norms and rules differ for different types of green areas and depend on the natural features of the territory, the population and the degree of industrial development of the settlement. For example, it is permissible to reduce the area of green areas of common use by a maximum of 20% from the norm of 8-10 square meters per person in medium and small cities, provided that these cities are surrounded by large forest areas and (or) have large reservoirs or watercourses, the coastal zones of which have a high density of vegetation [3].

In turn, in the largest, large and large cities, forest plantations available within their borders also belong to green areas, while not performing many recreational functions[4]. The norms of the area of green areas of common use in cities are presented in Figure 2.

Table 1 - Types of urban green areas (compiled by the authors according to [5])

	Green areas		
	General use	General use with some restrictions	Limited use
The main function	Recreational	Recreational, sanitary and protective, environmental	Sanitary-protective, environmental
Paying for a visit	Is free	Paid or free of charge in accordance with the regulations of the territory.	Paid
Number of visitors	Unlimited	Limited or unlimited in accordance with the regulations of the Territory.	Limited
Objects	City parks, gardens, forest parks, squares, alleys, boulevards.	Resorts, sanatoriums, medical, children's, sports facilities, residential areas. Plantings separating residential areas of the city from industrial enterprises, roads and railways, cemeteries; water protection, fire protection plantings, botanical, zoo-botanic, fruit orchards, arboretum parks, nurseries.	Natural and natural-historical, national parks, nature reserves, natural monuments, urban forests and forest parks. Water protection, fire-fighting plantings, botanical, zoobotanical, fruit gardens, dendrological parks, nurseries.

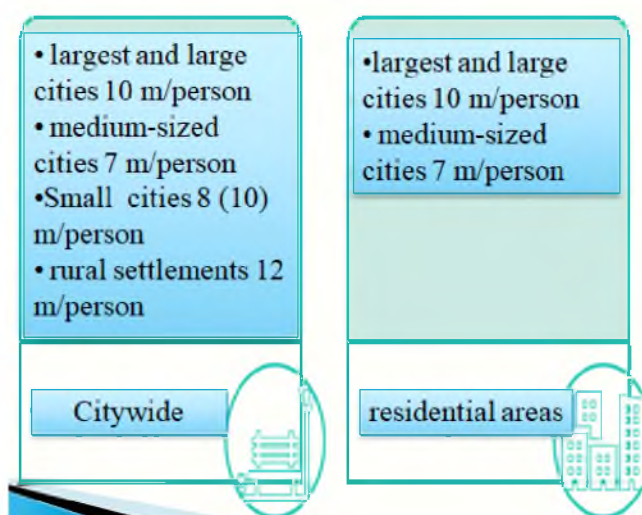


Figure 2 - Norms of the area of green areas of common use in settlements (compiled by the authors according to [3])



In most cities, compliance with the norms of the area of green areas of common use is "ensured" by the adjacent forest area or undeveloped forest park areas. Currently, there is an urgent need to improve a certain part of the green areas of the city. The successful implementation of the forest park improvement project begins with a pre-project analysis of the area of interest[6]. Pre-project analysis includes the following stages of analysis:

1. Urban planning analysis. At this stage, the position of the object of interest in the structure of the city relative to other functional zones and in the structure of urban green zones is being studied. Accordingly, documents of the master plan, rules of land use and development, city planning projects and zones of protection of natural and cultural heritage objects, cadastral documents of the territory are used for the implementation of urban planning analysis.

Regulatory and technical regulation of landscaping issues can be regulated in the following types of documents: at the federal level — building regulations (SP), at the regional level - regional standards of urban planning design (RNGP), at the local level — rules of land use and development (PZP) and rules of landscaping and maintenance of the territory (PBIST) [7].

2. Historical analysis. Various archival sources of information are used for historical analysis: textual, illustrative and cartographic material of the territory. When designing a green area of common use, in accordance with the legislation on the protection of historical and cultural heritage, it is necessary to ensure the physical preservation of cultural heritage objects: ensembles and architectural monuments, parks, squares and boulevards that are works of landscape architecture and landscape art, protected landscapes, cultural layer and archaeological monuments [8].

3. Sociological analysis. Such an analysis is carried out by the method of a sociological survey of the population in order to identify satisfaction with the quality of landscaping, landscaping and services provided near and on the territory of the studied object. During the sociological survey of the population, a qualitative assessment of the park improvement is provided in points (excellent - 3 points, good - 2 points, satisfactory - 1 point, bad/absence - 0 points) according to the following criteria:

- landscape design;
- well-groomed plant forms;
- benches and places of short-term rest;
- sports grounds;
- playgrounds;
- a zone for holding mass events (square, stage, etc.);
- a zone for arranging a picnic;
- walking paths;
- bike paths;
- public catering;
- attractions;
- rental of mobile transport (bicycles, scooters, skis, etc.);
- garbage containers and bins;
- public toilets;
- general cleanliness of the territory.

The criteria for quantifying the improvement of the park also assume a point score (3 points are enough, 2 points are not enough, 1 point is too much, no and 0 points are not needed) for the same positions with the addition of such indicators as:

- lighting at night;
- public transport stops;
- car parking.

The evaluation of the marker "not enough" at 2 points, and "too much" at 1 point is due to the fact that the city park is primarily an ecological and recreational zone, which should primarily

have green spaces on its territory, and anthropogenic objects are secondary and their excess contradicts the main function of the territory [9].

The survey of respondents can be conducted in two ways:

- 1) field – near and directly on the site itself;
- 2) remote - using information Internet technologies and mass media.

4. Socio-cultural analysis. It represents the study of the cultural characteristics of the area, as well as the statistical structuring of the flow of visitors to the territory of the research object. Socio-cultural analysis can be carried out simultaneously with sociological (by including the questions from Table 2 in the sociological survey) and historical (tracing the history of the formation of cultural characteristics and the development of a given area).

*Table 2 - Respondent's questionnaire (compiled by the authors)*

Mandatory questions		Additional questions		
Paul	male	Education (completed)	incomplete secondary (grades 9)	
	female		general secondary (11 grades)	
Age (full years)	under 18		secondary vocational (college, college, technical school)	
	18-34		higher education (bachelor and above)	
	35-60		Monthly income (rubles/month)	менее 10 000
	over 60			от 10 000 до 35 000
Frequency of visits to the park	every day	от 35 000 до 70 000		
	several times a week	above 70,000		
	several times a month	Special factors	low mobility (physical health limitations)	
	several times a year		there are children under 14 years old	
			there are pets that require walking	

5. Economic analysis. The analysis of municipal and private enterprises and institutions that are located on and outside the territory of the object of study (but directly related to it) in terms of quality, accessibility and variety of goods and services is carried out; existing and possible sources of income and expenses for the maintenance and operation of the object's territory and the provision of visitors are identified. Separately, the analysis of the real estate market, which is located near the investigated site, is carried out.

6. Transport analysis. At this stage, the organization of the road network near and on the object is analyzed: activity and accessibility for pedestrian, bicycle, public and personal transport, connectivity of the road network with other areas of the city – with residential, with public, with commercial, with industrial.

7. Environmental analysis. It is recommended to conduct an assessment by expert experts to identify the level of atmospheric air pollution from stationary and mobile sources, the level of noise pollution. Experimental studies require the selection of a series of experimental sites (at least 30 basic ones), the number of which may increase in the course of research development [10]. Sanitary and botanical assessment of existing plant communities on the territory of the object (species composition, assessment of vital activity) is carried out with

#### *Conclusion*

A pre-project analysis of a green area is a comprehensive assessment of a section of territory according to various parameters – history, population and culture of the area, transport security, economic and environmental situation, the role of the territory in the functioning of the urban system - which should be carried out by the designer taking into account the opinion of the population and with the help of recommendations of narrow specialists on a particular type of



analysis. The set of criteria for a comprehensive analysis of the park area given by the authors allows for a detailed analysis of the park area at the initial stage of design, which allows identifying strengths and weaknesses. The performed preliminary analysis of the territory according to the indicators given by the authors will allow us to clearly build the tasks of development and improvement of the park territory. It is worth noting that such a set of indicators is only one of the options for possible assessments of a green area.

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**Костромина Д.А., Саттарова Г.А., Закиров И.В.**  
**ҚАЛАЛЫҚ ЖАСЫЛДЫҚ АЙМАҚТАРДЫ ДИЗАЙНДЫҚ ТАЛДАУ**  
**КРИТЕРИЙЛЕРІН ДАМУҒА ЭКОНОМИКАЛЫҚ -ГЕОГРАФИЯЛЫҚ ТӘСІЛ**

**Аннотация.** Мақалада рекреациялық аймақтың бөлігі ретінде қалалық көгалдандырылған аумақтар туралы түсінік берілген. Қалалық демалыс аймағының үш түрі анықталды және сипатталды: белсенді, пассивті және мамандандырылған демалыс. Көгалдандырылған аумақтардың негізгі түсініктері мен анықтамалары қарастырылады. Көгалдандырылған аумақтардың түрлері орындалатын функцияларға, қол жетімділікке және келуге байланысты. Әр түрлі елді мекендердің көгалдандырылған аумақтарымен қамтамасыз ету стандарттары ұсынылған. Авторлар оны жақсарту және дамыту үшін көгалдандырылған аумақты жобалау алдындағы талдаудың ықтимал нұсқаларының бірін ұсынады. Сондай-ақ, қала құрылысы, тарихи, социологиялық, әлеуметтік-мәдени, экономикалық, көліктік, экологиялық талдау жүргізу бойынша ұсынымдар қарастырылады. Жалпы пайдаланудағы көгалдандырылған аумақты (атап айтқанда, саябақ аумағы үшін) сапалы және сандық бағалауды көздейтін әлеуметтік зерттеу жүргізу үшін мәселелер әзірленді.

**Кілт сөздер:** қаланың аумақтық аймақтары; жалпы пайдаланымдағы көгалдандырылған аумақтар; қалалық саябақтар; аумақты абаттандыруды жобалау алдындағы талдау.

**Костромина Д.А., Саттарова Г.А., Закиров И.В.**  
**ЭКОНОМИКО-ГЕОГРАФИЧЕСКИЙ ПОДХОД К РАЗРАБОТКЕ**  
**КРИТЕРИЕВ ПРЕДПРОЕКТНОГО АНАЛИЗА ГОРОДСКИХ ОЗЕЛЕНЕННЫХ**  
**ТЕРРИТОРИЙ**

**Аннотация.** В статье раскрывается понятие городских озелененных территорий как части рекреационной зоны. Выделены и описаны три типа городской рекреационной зоны: активная, пассивная и специализированного отдыха. Рассмотрены основные понятия и определения озелененных территорий. Приведены типы озелененных территорий выполняемым функциям, доступности и посещаемости. Представлены нормативы обеспеченности озелененными территориями населенных пунктов разной плотности. Авторами предлагается один из возможных вариантов набора критериев предпроектного анализа озелененной территории для ее благоустройства и развития. Также рассматриваются рекомендации по проведению градостроительного, исторического, социологического, социокультурного, экономического, транспортного, экологического анализа. Разработаны вопросы для проведения социологического исследования, предполагающего качественную и количественную оценку озелененной территории общего пользования (в частности, для парковой территории).

**Ключевые слова:** территориальные зоны города; озелененные территории общего пользования; городские парки; предпроектный анализ благоустройства территории.