



e-ISSN: 2630-6417

International Journal Of  
Social, Humanities And  
Administrative Sciences  
(JOSHAS JOURNAL)

Vol: 8  
Issue: 50  
Year: 2022  
pp  
324-335

Arrival  
07 January 2022  
Published  
27 March 2022

Article ID  
942  
Article Serial Number  
2

Doi Number  
<http://dx.doi.org/10.31589/JOSHAS.942>

**How to Cite This Article**  
Aghayeva, N. & Bogenç, Ç.  
(2022). "City-Ecological  
Development Framework Of  
Urbanized Environment In  
Greater Baku", Journal Of  
Social, Humanities and  
Administrative Sciences,  
8(50):324-335.



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## City-Ecological Development Framework Of Urbanized Environment In Greater Baku

### Büyük Bakü'de Kentleşmiş Çevrenin Şehir-Ekolojik Kalkınma Çerçevesi

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#### ABSTRACT

The industrial revolution and rapidly developing cities have brought ecological problems with them. The housing-oriented development of the urban area has neglected other ecosystem services, and the cities have turned into places devoid of green spaces. However, cities, which are living spaces, are places where many natural and cultural elements coexist. The natural environment and socio-economic activities are important elements of the urban ecosystem. The healthy development of the urban ecosystem depends on the successful establishment of the relationship between the city and ecology. Urban ecology is a relatively new but vital concept for modern city planning and is even recognized as a new discipline or one of the main elements of modern city planning. An aesthetically beautiful and functional city should offer its users a life that is both compatible with the natural environment and taking into account ecosystem services. Today's people should plan the urban development in a scientific way, taking into account the ecological, economic and social characteristics of the region and taking into account the geopolitical position of the region. The development goals of the Great City of Baku, which has been developing with a focus on development in recent years, include "increasing the quality of life of the citizens, designing environmentally friendly spaces, establishing the city-ecosystem relationship, improving the ecological situation of the region, and the development of modern transportation". In this study, the basic principles of the new regional development plan for Baku were analyzed and suggestions were developed by examining the urban development and planning process of Baku, the capital of Azerbaijan, from past to present.

**Key words:** Urbanization, Baku, Ecological, Landscape

#### ÖZET

Sanayi devrimi ve sonrasında hızla gelişen kentler beraberinde ekolojik sorunları da getirmiştir. Kentsel alanın konut odaklı gelişimi, diğer ekosistem servislerini göz ardı etmiş kentler yeşil alandan yoksun birer mekan haline dönüşmüşlerdir. Oysa ki yaşam alanı olan kentler doğal ve kültürel bir çok unsurun bir arada bulunduğu mekanlardır. Doğal çevre ve sosyo-ekonomik faaliyetler kent ekosisteminin önemli öğeleridir. Kent ekosisteminin sağlıklı gelişimi kent ve ekoloji ilişkisinin başarılı bir şekilde kurulmasına bağlıdır. Kent ekolojisi, modern şehir planlaması için nispeten yeni fakat hayati bir kavramdır ve hatta yeni bir disiplin veya modern şehir planının ana öğelerinden biri olarak kabul edilmektedir. Estetik açıdan güzel ve işlevsel bir kent kullanıcılarına hem doğal çevre ile uyumlu hem de ekosistem servislerini dikkate alan bir yaşam sunmalıdır. Günümüz insanı kentsel gelişimi ekolojik, ekonomik ve sosyal özellikleri göz önünde bulundurarak bölgenin jeopolitik konumunu dikkate alarak bilimsel temelli bir şekilde planlamalıdır. Son yıllarda kalkınma odaklı gelişmekte olan Büyük Bakü Şehri'nin gelişim hedefleri arasında "yurttaşların yaşam kalitesini arttırmak, çevre dostu mekanlar tasarlamak, kent-ekosistem ilişkisini kurmak, bölgenin ekolojik durumunu iyileştirmek, modern taşımacılığın gelişmesi" yer almaktadır. Bu çalışmada Azerbaycan'ın başkenti Bakü'nün geçmişten günümüze kentsel gelişimi ve planlama süreci incelenerek Bakü için yeni bölgesel kalkınma planının temel ilkeleri analiz edilmiş ve öneriler geliştirilmiştir.

**Anahtar Kelimeler:** Kentleşme, Bakü, Ekoloji, Peyzaj

## 1. INTRODUCTION

The time is now for urban planners to have to reconsider the existing attitudes and methods of work, and to fully understand the leading, fundamental importance of the natural factor in the development of cities and urban agglomerations, otherwise, many opportunities will be lost forever, the urban environment will continue to be standardized and impoverished (Ercan, 2007:69). What should this urban nature be like? How much is it needed and in what forms? The answers to these questions are researched by specialists from various branches of knowledge such as ecologists, medical community, sociologists, landscaping engineers, climatologists, but the last word will be of those who specifically and in practice determine the 'construction' of the city. The urban planner is the ultimately responsible for the fact that particular city lost its natural face, turned into a shapeless or geometrized mass of solid buildings stretching for tens of kilometers, from which nature retreats further and further. City ecology is a relatively new, but vital concept for modern urban planning, and it may even be a new discipline, or one of the main directions of modern urban planning. An aesthetically beautiful and functionally convenient for life city can exist only in unity with the natural environment. However, there is a fundamental difference between the modern city and the cities of the past. If in the old days gardens, parks, bays were although desirable, but not obligatory element, at least not vital, then a large city of our days simply cannot exist without open and green spaces.

The quality of the living environment in a whole, the composition of the air we breathe, the possibilities of everyday leisure, active recreation, aesthetic impressions, our physical and mental well-being depend on them. Planning in general terms, and territorial and urban planning in particular always has been one of the main priorities for the progressive and effective development of the state as a whole. The late 20th and the early 21st century was marked by intense development of modern technology, communications, new speeds and, accordingly, new types of transport. Concurrently the population of the Earth is growing uncontrollably and has reached almost 7 billion people. All these lay a heavy responsibility primarily on territorial, regional and, of course, urban planning of the land. It is regional and urban planning that is the guarantee of the progressive and rational development of cities and residential areas in the modern world. However, today in many countries of the world, urban planning systems have changed only slightly and are often a source of urban problems rather than means of improving the environment and living conditions of the people. Taking this into consideration,

The most of the leading experts in the world come to conclusion that in most countries of the world it is necessary to change the existing approaches to planning, and that it is necessary to find a new place for it in ensuring of sustainable urban and regional development.

## **2. MAIN FACTORS INFLUENCING THE FORMATION of THE URBANIZED ENVIRONMENT of the XXI CENTURY**

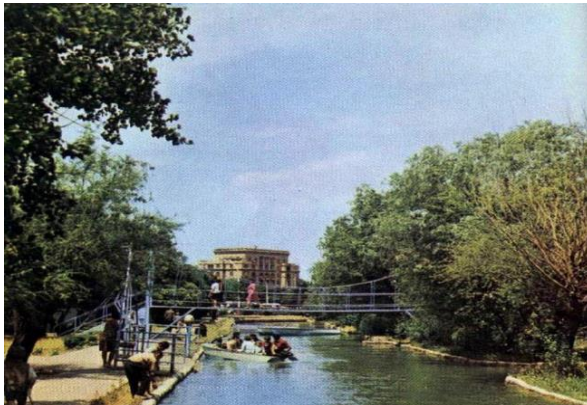
In modern times in the largest urban agglomerations the process of convergence and merging of separate suburbs lasts, open-air territories are made smaller, the air basin changes for the worse, urban centers are increasingly out of step with nature. The anarchic growth of cities across the West is compared to a volcanic avalanche, an octopus, a cancerous tumor. Moving beyond their borders cities 'reshape' the surrounding countryside. In this field, we can give an example of the statements by Western experts figuratively characterizing what is happening in the cities and agglomerations of the United States, France, Germany and other countries.

The geographer urbanist D. Harwayne; 1965:45; "The advance of the city spreads here like a glacier - senseless and inexorable, the ugliness of separate manifestations and general unsystematic character give the territory of this zone the appearance that we unmistakably associate with the slums". However, these are not slums of poverty, but slums of entrepreneurship. The settlements merge into a single suburban mass, which has neither a definite shape, nor a clear internal structure'. The urban planner Ragon 1969:21; 'Enhancement to exurban area did not give us the benefits of being in touch with nature we hoped for". The reason of the main problem in our urbanized territories is the fact that we failed to take into account the revolutionary changes that took place over the past 50 years. We keep wasting fields and lands aimlessly, spreading the urban development out rural areas until the city begins to merge with its neighbors. We broke down; we created disorder conditions and anarchy (Partigöç, 2017:90).

Our cities became unsuitable either for life or work, they keep becoming unprofitable economically; they deprive their inhabitants of the usual human joys'. The architects (Grushka 1969:48)'Our cities have the form of somewhat huge hermetic asphaltic skin intervening every possible vegetation'. Territorial and structural development of large cities and agglomerations results in ever-Greater complexity of the system of open and green areas and strengthening of its such functions as sanitation, planning and regulatory, technical support of the city, etc. This system acquires a multilevel (hierarchical) structure, and the number of addends of elements reaches several hundred. Accordingly, the contacts of the city with the natural environment expand many times and become more diverse. The problems of the formation of the landscape environment can no longer be considered only within a single city, they must be resolved at the regional level, within the framework of the emerging settlement systems (Bekci vd., 2013:867). Urban planning of the past did not face the issues of such a scale, the grandiose areas of such systems require new architectural and landscape techniques, development of a new design methodology, put specific problems on the agenda. It is possible to ensure the compositional unity of large garden and park systems only on the premise of considered analysis of their natural background, taking into account the prospects for the development of the city. The issues of city ecology regulation of the urbanized environment become to be more complicated nowadays, turn to be more multidimensional; they are conditional upon general aims of creating an optimal living environment, sanitary and hygienic, social and other requirements. The decisions made on the development of cities are predetermined by the desire to ensure their organic relationship with the natural environment like never before, notably in the most flexible and dynamic planning forms. However the problem of urban development in organic connection with the natural environment was not solved yet either theoretically or practically.

Many valuable landscape complexes in the immediate suburbs are built-up or appeared to be on the verge of destruction as the result of excessive man-triggered and recreational pressure (Lawton, 1970:34) The existing ecological relationships in them were violated under the influence of such factors as air pollution by transport and industrial emissions, deterioration of the noise regime, pollution of water and soil, changes in the hydrological regime,

reduction of forest areas, the network of roads and engineering communications thickening on the approach to the city.



**Figure 1.** Little Venice in Baku Boulevard (1974)

The main task of building (constructing) the city ecological framework of an urbanized environment is to ensure optimal relationships between natural and artificial components of the environment at all its hierarchical levels in such a way as to enhance the recreational effect of nature on humans and minimize the negative effect of industrial and construction development on nature. Various architectural, landscape and ecological aspects of urban development are considered in the works of such geographers as Zvonkova T.N., Isachenko A.N., Milkova F.M., Preobrajenskiy V.S., Penscik E.N., Smirnova E.D., Lappo G.M., Rodoman V.V., Saushkin Y.G., Chaloy I.P., such biologists as Rubscov L.I., Mashinskiy L.O., such architects and urbanists as Baburov V.V., Ginzburg M.Y., Kamenskiy V.A., Ikonnikov A.V., Lavrov V.A., Tverskoy L.V., Ullas N.N., Smolar I.M., Belousov V.N., Bocharov Y.P., Shishelgis K.K. and etc. Modern ideas about the relationship of the city with nature were influenced by the concepts of such foreign architects, geographers and ecologists as Howard E., Le Corbusier, Mumford L., Neutra R., Tange K., Aalto A., Gruz I., Dorst J., Bauer L., Repsons R. In the normative literature on urban planning, as well as in scientific publications, there are still no answers to many important questions which an architect-designer face each time he starts developing a master plan for a city. In a large city, in addition to built-up ones, there should be open green areas. What should exactly be considered to be an open area? A public garden or a boulevard, of course, is an open area, but is its size sufficient to break-up the contiguous area of building system or simply not to merge with the general urban background? Where is the minimum and optimum width of the area that would serve as a counterbalance to the building system? How the 'nature' should be inserted into the city – regularly or concentrated, in compact masses or in a form of green dots and capillaries; or maybe a close maximally urbanized body - cluster should be preferred, and thereby it will be possible to reduce the total area occupied by the city and keep intact the open areas around it? (1) The need to tighten the planning control on use of inter-settlement and suburb areas, as well as those forming the natural environment of the agglomeration, becomes imminent (Ikonnikov, (2006:51) . Is it possible to count on the viability of concentric 'green' and 'forest' belts or can we rely on the creation of a system of green sectors - wedges, diameters and other zones, freely located in suburban area? The scientific-based parameters of these belts and zones are not developed either. Are stable city boundaries, some permanent boundaries between open and built-up areas needed and possible? If not, then how to exclude the gradual absorption of the external open area by the city and the progressive self-isolation of its central regions from natural landscapes? The absence of clear theoretical concepts that could align the needs of today with a long-term perspective, harmonize business and other considerations with environmental laws manifests itself (Çetin, 2016:801).

Urban planning and the formation of the architectural and planning structure of the city, first of all, is the form and content of its relations with the existing natural environment. These territorial, spatial, functional, compositional relations are expressed in construction of disurbanized (open – unbuilt) territories, the formation of which is the aim of city ecological regulation of the living environment of people as specific field of the urban development. The concept of 'disurbanized territory' term (open – unbuilt) can be correctly interpreted only in comparison with its opposite urbanized (closed - built-up) territory. The modern large city is not possible to be fully 'put' into particular geometric form: most commonly, its different parts are located in different conditions, have their local system of the visual revelations, connections and orients. And yet, most cities are distinguished by some one leading type of relief, which expresses the essence of the landscape situation, is most typical, and is its main feature, symbol.



**Figure 2.** Symbol cities (A: Florence, Italy B: Safranbolu, Turkey C: Rothenburg ob der Tauber, Germany)

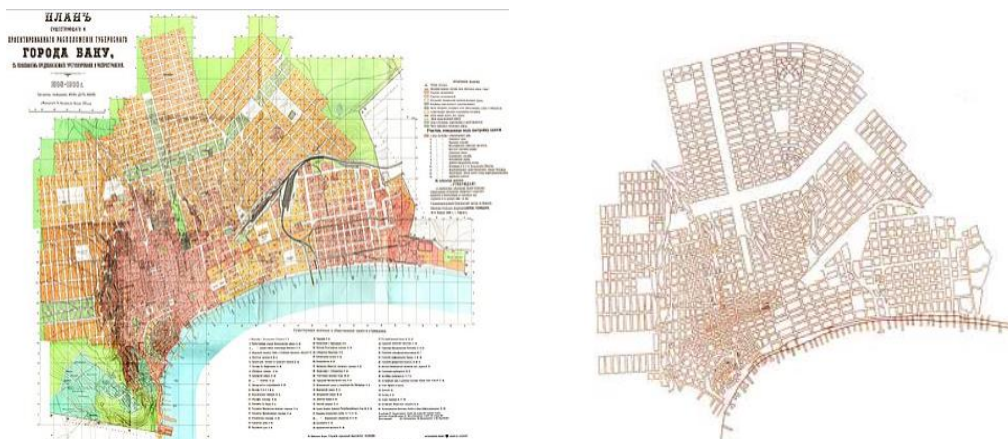
In the future, urban planning must be carried out taking into account the factors influencing the formation of cities of the XXI century, including such factors as:

- ✓ environmental problems caused by climate change and excessive development of cities on automobiles, working on natural fuel;
- ✓ demographic problems: in developing countries due to rapid urbanization, the rapid growth of small and medium-sized cities and the growth of the number of young people, and in developed countries, the problems of dying cities, an aging urban population and an increase in the number of representatives of different ethnic cultures among urban residents; and in developed countries, the problems of dying cities, the aging of the urban population and the increase in the number of representatives of various ethnic cultures among the inhabitants of cities;
- ✓ economic problems associated with the uncertainty of future economic development and serious doubts about market methods generated by the current global financial crisis, as well as the expansion of informal activities in cities;
- ✓ growing social and territorial problems, in particular urban sprawl and unplanned built-up of urban fringes;

Strategic territorial and regional planning combined with infrastructure development contributes to more compact urban built-up focused on public transport. In this regard, matching of strategic planning with large construction and investment projects for infrastructure development becomes to be essential (Azgosproekt, 2014). The key element in such kind of strategic territorial plans is infrastructure planning; and here the most important are the connections of the “land use - transport” type, they should be of priority importance, and only after this the issues of other types of infrastructure, as well as the main transmission water-supply network and sewerage networks, should be resolved.

### 3. THE ESTABLISHED HISTORY of URBAN PLANNING in THE AREAS of AZERBAIJAN ON THE EXAMPLE of BAKU CITY

Urban planning in Azerbaijan as a modern science and state policy dates back to the middle of the 19th century. Just then, more exactly since 1864 Baku city have been starting to develop. The beginning of the oil sector functioning in Absheron accrues to this period, which first of all gave impetus to the development of Baku as a large industrial and trade center and urban planning as a science in particular. In Azerbaijan, which was a part of the Russian Empire, the master city plan of Baku city was developed for the first time. This was the first master city plan of Baku developed by the Russian civil engineer Nikolaus von der Nonne in 1890-1910. It covered an insignificant, by modern standards, area around the ancient old city ‘Icheri Sheher’ (Inner Town).



**Figure 3.** City plan of Baku 1898 -1911 (Фатуллаев, III., 1986.)

Subsequently, there were four more general plans, three of which were already developed within the Soviet Union in new, different economic conditions. Of course, firstly it was the oil sector to contribute to growth of Baku city, as well as all other industries related to this city-forming factor. In its turn, this growth caused the growth of population and thereafter the need to expand the city territory, specifically expansion of all Baku amphitheater planning. It was this concept, that formed the basis for the fourth master plan developed by the famous Soviet architect Lev Ilyin in 1934-1937; and it was this master plan to form that structure of the city which today we actually name Baku (Фатуллаев, 1986). Completing the construction of the Baku amphitheater in the 70s of the XX century, the need to search for a concept for the future development of the city outside the amphitheater began to arise. In this regard, it was decided to start work on the fifth master plan of Baku city. However, this document, which was accepted for execution in 1987, had already covered the territory of the entire Absheron Peninsula. Precisely this complex and scale approach in the context of territory coverage determined the new stage in urban planning. However, unfortunately the political collapse in 1991 led to break-up of the Soviet Union, and accordingly, to the changes in the political, economic and legal component of the state, which made it impossible to implement

the fifth master plan for the development of Baku city. For the mean time exactly, specifically the period of 1991-2001 was the most difficult in the modern history of Azerbaijan, which in its turn had no choice but affect the use of land and urban planning in a whole. Lack of a newly formed state structure, lack of new regulatory and legislative acts, lack of a sufficient number of professional staff, unhealthy transition from a vertical centralized to a horizontal market system of urban planning management created a large number of problems that are demanded to be solved today. However, despite of the significant complexities in modern history, Azerbaijan was able to recover and today assert itself in the world more and more. The last 10 years were marked by the largest uptick in the economic and social development of the state, which in its turn revealed many problems of territorial and urban planning and the need to search for the formation of a new, modern approach to solving issues of land urban planning. Today in Azerbaijan the approach to consideration, analysis and decision-making on the issue of regional development of a certain territory of the state is impossible without analyzing the whole territory of the country. It is the consideration of the development of a certain region in the context of the development of the entire country to be the key of constructive and effective functioning of the state in the future. Considering the territory of Azerbaijan as a whole, we would like to note the heterogeneity of both the landscape, natural and climatic conditions, and the unevenness of settlement across regions and cities.



**Figure 4.** City of Baku Irregular Settlement

First of all, the disbalance between the Greater Baku region and the rest of Azerbaijan is evident. Ultimately, it is most economical rating that this region resists on a national scale. %77 of the national indicator of the total gross production volume accrues to in the Greater Baku region. The population, concentrated on an area of %6 of the total area of Azerbaijan, is %36 of the total population of the state. This imbalance clearly demonstrates both the significance of the Greater Baku region and the problems that Azerbaijan faces in this situation. Nowadays the territorial and administrative divisions in Azerbaijan is like following: there are 10 economic regions, 66 administrative regions and 8 cities of central subordination. For effective and competent land management, first of all it is required a territorial (national) development plan for the entire state, thereafter regional plans of economic regions development, master city plans and in conclusion comprehensive plans of building system (land-use plans) are required. However, despite the past 20 years of independence, it has not yet been possible to design and implement any regional development plan. This in its turn creates major problems in effective management of the land throughout. The development of Azerbaijan in the last 10-12 years significantly increased the importance of complex land appraisal, coordinated land use, large-scale of both national and regional land and land use planning. In view of the high rates of development of the Greater Baku region in recent years, the lack of proper urban planning is felt sorely. The mass land development, large-scale construction developed in 1997-1998 retained the management of urban planning. This was especially evident in the absence of institutional mechanisms for the planning process managing.

Realizing the importance of the problem on the one hand, and the lack of original base on the other hand (lack of cadaster, lack of professionally completed structures), the urgent need for a general scheme and development plans for one of the most important regions of Azerbaijan, in 2008 the Government of Azerbaijan decided to start work on the 'Regional Development Plan for Greater Baku' project. This project will afford an opportunity to direct the process of urban planning in a scientifically grounded, rational, efficient, coordinated frame. The project, designed for the next 25 years, organizes the initiate spontaneous development of the process of land use and urban planning.

#### 4. URBAN PLANNING for GREATER BAKU in MODERN TIMES

The organizers of the project designated a part of the territory of the Absheron economic region with the term Greater Baku including: administrative territory of Baku city, administrative territory of Sumgait city and a part of Absheron administrative region, which is territorially and geographically part of the Absheron Peninsula. Why exactly this, at first glance, strange and complex territory? This particular territory covers the entire Absheron Peninsula, although it is divided between different administrative units. The relevance of issues of urban planning in the Greater Baku region today is primarily associated with the significant rates of both economic and territorial development, as well as the growth of demography. Along with this in recent years, the growth of population migration to Greater Baku came up with the natural population growth in the region. All these lay a heavy responsibility on the system of the urban planning and land use on this territory. The project territory covers only %6 of all square footage of Azerbaijan, however almost %77 of the total volume of the gross production of the state is concentrated in this territory. Also, more than 36% of the total population of Azerbaijan is concentrated in this territory. Besides, a significant number of refugees and displaced persons who moved to the territory of Greater Baku in a short time is a significant factor affecting the process of the effective functioning of both land and engineer infrastructure of the region. According to preliminary estimates of experts, the territory occupied by unorganized settlements that appeared after 1991-1993 exceeds 100 km<sup>2</sup> (10000 ha). Taking into consideration all mentioned above, summarizing the current situation and the vital issues, it is possible to define the problems of the region development for the near 25-30 years as following:

- ✓ Development of the region development concept in the framework of the whole state;
- ✓ Improvement of the institutional development system of the urban planning;
- ✓ Development of the scheme for specific land use of the region;
- ✓ Development of the unique traffic diagram.

Today institutional development of the management system is one of the most important issues of the urban planning in modern times. Our proposition is to create and improve the management mechanisms of the land use processes by using high technologies including space processing. Today our aim is to direct the development of the city in a right, scientifically based direction. Taking into consideration the ecological and economic priorities, population growth and significance of the region in modern times, the issue of urban planning is of course, first of all, the improved quality of citizens' life. This also involve creation of comfortable residential environment, improvement of ecology of the whole territory, increasing of engineering assurance up to world standards, improvement of the modern passenger transport and etc.

The urgency of an issue lies in the fact that the break-up of the Soviet Union and restoration of independence of Azerbaijan, first of all, brought to appearance of the problem of the land use system change and change of the system of project-oriented construction process in whole. If under conditions of Soviet Union, both land and project-oriented, construction organizations were the properties of state, which of course simplified the management from the point of view of the urban planning, then under conditions of the market economy an issue of creation of the managed planning system arises. In other words, it is a change from 'vertical' structure to 'horizontal' one. Another issue of the current problem is the absence of the adequate manpower for realization of the city-planning policy in modern times. Professional manpower training is one of the priority direction of the future development. The next issue is formation of the new legal and regulatory framework for operation of the city-planning process and realization of the land use. Nowadays in Azerbaijan the new City-planning Code is already accepted, but in this direction, there is still much work to be done. Another problem, which crashed down on the city in recent years is the transport problem. The center of Baku city over recent becomes to be one large unique traffic jam. Almost all the roads are packed with cars, buses and other automotive transport. As yet all the measures taken do not bring the desired effect. This problem is one of the burning problems today. Also the uncertainty of the engineering systems was inherited to us from Soviet period. Up till now in Baku the water is fed dead on time, there are gas and electricity supply shortage, there are no modern wastewater treatment plants. Insufficiency in mass public transport provision is deeply felt. Extermination of the old tramway and suburban train did not alleviate the situation in the city, but intensified the immediacy of the problem of passenger transportation. In the immediate future it will be necessary to

urgently upgrade and expand public transport network. Today outside the territory of proper Baku only a bus represents the public passenger transport which of course is insufficient. The lack of qualitative provision of the public passenger transport in its turn created the problems in development of new residential areas, new industrial zones, new shopping malls, university campuses, hospital complexes and the others. The next problem of Greater Baku is availability of the unique, general, insignificant in terms of area the center of the city. The modern city center, which occupies an area of a shade over 1000 ha, cannot manage its functions.



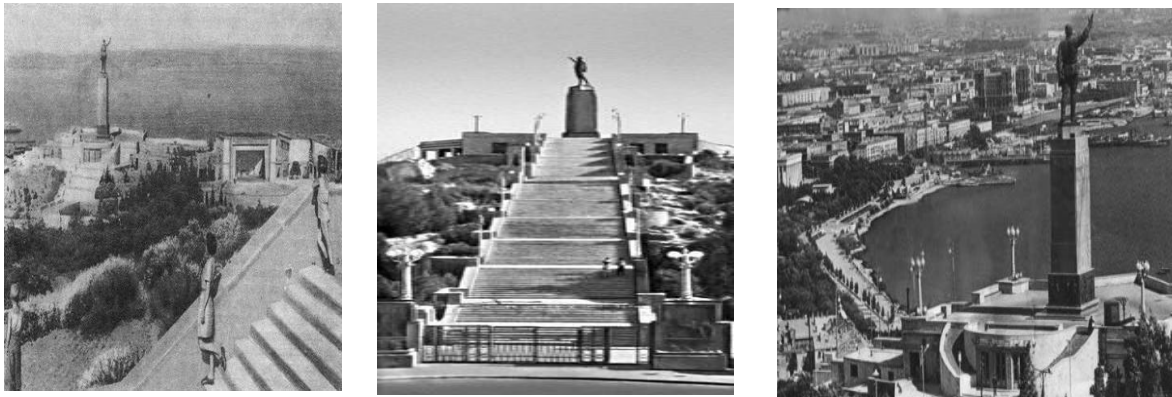
Figure 5. Baku City Center 2018

Over the last 30 years the city grew by 1 million inhabitants, but the center area size remained almost the same on the one hand. On the other hand, today both administrative and historical cultural, as well as sports, transport, industrial, shopping and business centers understood to be the center of Baku city. Almost all universities, hospitals and the other public establishments are concentrated in this center – almost on 1000-1500 ha. This is one of that paramount problems to create the advanced functional scheme of the city, Greater Baku faces today. Without reasonable disposition of the centers it will be impossible to create the comfortable life environment for the people and strong functioning of all the region in a whole.

## 5. MAIN DIRECTIONS of MASTER PLAN DEVELOPMENT of GREATER BAKU

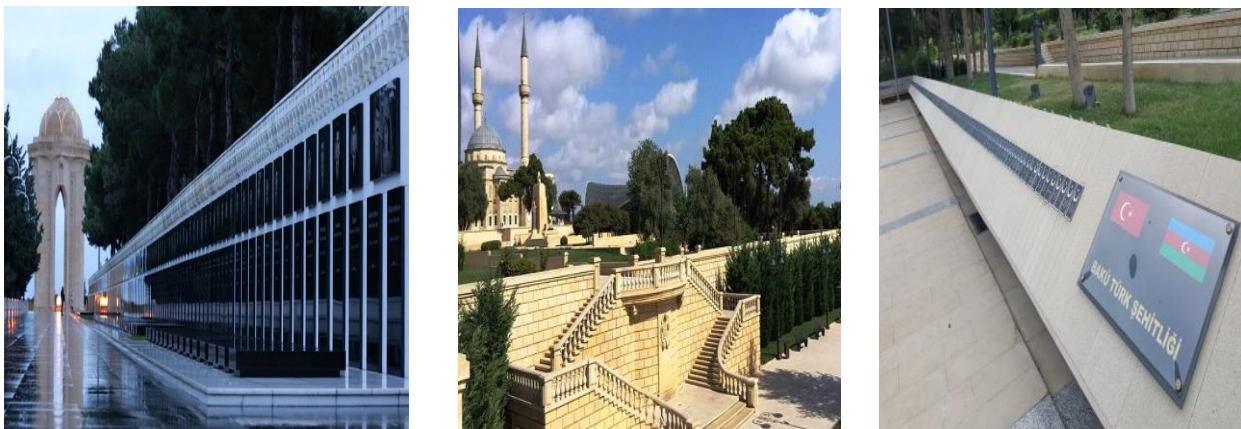
The main aim is decentralization of the region of course both inner regional decentralization and nationwide decentralization. Centralization just as economics, culture, so administration, education and medicine led to massive density of population in the small area of Baku city center, and this in its turn led to appearance of the array of problems coming out of this situation. The main direction of Greater Baku region development, first of all, is directed to the process of reorganization of land use on the Absheron peninsula, most notably regeneration of the industrial region of the territory of the proper Baku the area size of which is 3000 ha. In past this territory was in operation as a large industrial center of Union assignment. Today these production facilities is no longer of relevance on the one hand, and on the other hand this part of the city today is located almost in the center of Baku amphitheater do not meeting either the ecological or functional requirements. The more effective use of this territory is one of the primary objectives in the next 20 years. One of the grand reorganizational projects in modern Baku is transfer, more exactly, carrying seaport and ferry out of Baku bay. To this date the decided and started construction of the new International Industrial Port in Alat town 65 km far from the Baku city center is the essential city planning reorganization. The parallel constructions of the new industrial centers of the oil and chemistry complex along shore of the sea to the south of Baku predetermines one of the directions of Greater Baku development to the south towards Alat town. Even today cement plant, Deepwater Jackets Factory, new gas-condensate factory operate in this region of Baku city, continues construction of new shipbuilding facility and cement plant. Of course, all these will bring to the development of residential area in this part of the region. The other center of industrial force is Sumgait city. A large industrial, oil and chemical city in the past sees a revival today. In the Soviet times this city was one of the serious suppliers of the oil and chemistry products. Today the huge areas of the former plants are regenerated and planned in mobile, modern, multifunctional plants and factories, which in their turn already produces the competitive production. The other center of the region to which close attention will paid is Khirdalan town and respective territories to it. This residential area developed almost in recent 15 years, and considering the fact that in particular these 15 years were the most troublesome in urban planning, then the result became to be deplorable of course. This zone of the Greater Baku region demands significant city planning reconstruction. Almost all the territory of both Khirdalan town and the adjoining areas is covered with the unorganized settlements, with no elementary social maintenance. The next zone of the future development is the north shore line, which the function of a recreational zone has long been assigned for. This zone is planned to be effectively developed and greened up in future, and all the north area is planned to be developed as a world-class resort zone. Even today, this territory attracts significant investors wishing to develop the resort tourism.

The landscape of Baku consists of sets of terraces-stages exposed to the sea and forming so called Baku amphitheater continue down to 20 km. Eminent architects such as Dadashev S., Useynov M., Ilyin L., Ivaniskiy A., Semenov V, Vesenin brothers, Fomin I., and etc. leveraged this advantageous topographic features; it is suffice it to recall the widely known High Park rising above the city (Гасанова, 1996).



**Figure 6.** Highland Park Baku (Гасанова, А. 1996)

At the present stage, there is a sharp change in the nature of the development of the amphitheater Not only central but also its distant remote areas in the East, North and West. The time is not far off when the city fully cover all the territory of the amphitheater. The scope of the building system is also changed. The panorama is dominated by artificial objects - TV towers, silhouettes of skyscrapers. Under this conditions the danger of natural landscape suppression and leveling of characteristic town image arises. This danger was realized on time, and while development of the master plan of the city in 80s of the 20<sup>th</sup> century the special attention was given to the detailed study of the space structure of the landscape (Kahramanova, 2013:2). Step terraces, higher grounds, definite slopes, upland fringes, watershed divides and etc. were highlighted in the topographic plan. At the present Higland in Baku renewal fuction.



**Figure 7.** Highland Park Baku (1997)

Numerous transverse profiles of the district on which the variants of use of the slopes and terraces for building construction were shown with respect to conditions of perception from the seafronts, high points of the city and the area of Baku bay were of outstanding interest. The watersheds on the upper terraces were interpreted as lines along which the silhouette of the city can be formed from the farthest points of perception. However all progressive concepts of the authors of the master plan of the time were reduced to a minimum by intensive and sometimes inconsiderate building structure of skyscrapers in the historical central part of the city.

In modern times, Baku is the only megapolis of the country and a core of Baku agglomeration. More than a half of the population of the country, the most of social and cultural and educational establishments, industrial complexes of Azerbaijan are located here. More than %70 of the industrial potential of the country is located in the Absheron economic region. Such a unique position of the city and Absheron peninsula developed historically. Since the 19<sup>th</sup> century, the development of the oil industry determines the rapid growth of the city and the intensive migration of the population here from all regions. Today under conditions of current favorable investment climate Baku experiences its new birth as the largest economic and cultural center of Transcaucasus. Here some of the most ambitious projects of the world have already been realized (Flame Towers, Haydar Aliyev Cultural Center, Crystal



Hall and etc.), and it is planned to realize more large scale projects. But is everything successful in the city planning of Baku?



**Figure 8.** Baku city projects (A: Flame Towers B: Haydar Aliyev Cultural Center C: Crystal Hall)

Another argument in favor of developing a new master plan for Baku is that after the collapse of the USSR and the transition of the economy to market relations, many provisions of this plan were violated. The growth process of Baku acquired an unrestrained and chaotic character, that completely deviated the development of the city from the approved master plan (Maltsev, A. (1997). This process was delayed for so long that today we have to talk not about change of individual quarters and districts of the city, but practically about the entire planning, volumetric-spatial and compositional components of the city's structure. Residential and public multistore buildings filled the city out not leaving any small space for leisure activities, sports, walks for children. Large green areas of the city, which were carefully created over secular period in the semi-desert landscape of Baku with Greater difficulty, were destroyed in a decade to please the army of new buildings without any regret, turning the city into a 'stone forest'. Urban planning norms and regulations are widely ignored. It is an interesting fact that with due time the chaotical building system of Baku have been finding excuses by the city authorities as a consequence of the lack of a new master plan and the laws of a market economy. However, the absence of master plan does not excuse those irregularities, which conducted the building up of the central regions, and the suburbs of Baku. Suffice to say that built-up density in the city far outweighs, there is no yards, parking places and places for passage of vehicles. Sometimes the space between the buildings are so small that the balconies of the buildings are almost adjacent to each other. There is no chance to talk about normal aeration and insolation of residential premises in such buildings. Exceeding the permissible building density and failure to carry out reconstruction works and work to improve engineering communications in recent years, as well as sewerage system, water lines and etc. led to insanitation in the city. The engineering services are in disrepair. The situation will become more intense after full settlement of new constructions connected to old distribution lines. Large problems have also arisen in present days in the suburban construction of Baku, which is carried out chaotically with 1-2-storey individual buildings and creates problems for the development of the city. As a rule such kind of building system does not come with laying services and necessary infrastructure, provision of the necessary facilities on site, and gestates the future slum areas. The situation is made worse by the fact that as the result of frantic pace of construction on Absheron there are no vacant lots left for the development of the city. The issue of reclamation of oil-field territories, properly Baku, remains on the agenda. This direction of the urban planning will be retained in the next 20-30 years. The large scale changes are expected in the region of the former industrial zone located in the center of the city and composing almost third part of the city territory.

All industrial enterprises located in the territory from 'Black city' till Darnagul settlement will be transferred to the Garadagh district, where some large industrial objects locates already. The saved territory will be a reserve for development of sporting and youth complexes, residential areas and parking zones. In particular, the construction of park zones with an area of 2,700 hectares is planned to be located in the Keshla settlement between H. Aliyev ave., Babek ave. and M. Aliyev str. 'White city' project was developed for this zone (URL-1, 2010).



**Figure 9.** Baku City Plan and 3D Model View

Besides, it is easy to pull down an obsolete accommodation. It is much more difficult to solve the problems of relocation of the people living in these houses. Large facilities are required for solution of this problem. Relocation of population of the existing regions are always identified by financial and noneconomic loss, difficulties of addiction to the new places of residence, new neighbors and etc.

What it also involves is what it involves is, ‘home-work-home’ pendulum movement change and etc. In our opinion, it would be wiser not to ‘improve’ the old districts, but to populate the residents of the same district in new houses. In most cases, citizens are granted ‘emoluments’, and they are forced to remove on the outskirts of the city, as they are not able to buy an apartment corresponding to the area of the former housing in their region for this low ‘emoluments’. In accordance with the new master plan, all higher education establishments located mainly in the center of Baku, should be transferred outside the city. This will solve two problems at once: 1) higher education establishments create problems with movement of many students and teachers, and transport vehicles; 2) higher education establishments in Baku are limited in the areas, which are demanded for modern education establishments campuses (URL-2).

The regional development plan of Greater Baku considers development of the settlements on Absheron. On the territories of such settlements as Dubendi, Turkan and Zikh it is planned to create campuses, and to development tourism zones at such settlements as Mardakan, Mashtaghi, Pirshaghi, Nardaran (URL-3 2020.). One of the key points of the new master plan of Greater Baku have to be a transition from monocentric to polycentric model of the city. As any historical city in the post-Soviet area Baku had one center around which a metropolis was formed. However, today Baku city is not only a megapolis, but also a center of Baku agglomeration, occupied almost all Absheron peninsula. The historic city center with a radial layout is becoming more and more difficult to cope with its functions.

Traffic jams and human congestion, growing day by day, more and more complicate this problem. Creation of the 2<sup>nd</sup>, 3<sup>rd</sup> and more centers is the hot topic of the day, and may help to get shut of the problem peculiar to modern megapolis.

Development of the new master plan of Greater Baku is definitely the necessary and timely step to solution of the city planning problem of Baku. This will allow determining the vector of the further development of the city, the regulation of the build-up of Baku, the determination of solution of the transport, ecological and the other problems of the city, demanding immediate measures. However, it is impossible to solve the problem of development of Baku in isolation not considering the problem of resettlement and location of economic activity in the country. The problem of unloading of the capital city has long gone beyond the problem of Baku and Absheron. To solve this problem first of all it is necessary to stimulate the out migration to the regions by means of economic base of town regeneration in the regions – building up industrial and agricultural enterprises, and accountability of population for the agriculture by incentives and privileges scheme. For this, first of all, it is necessary to create communicational, informational and the other infrastructures, connecting all the regions of Azerbaijan into one network. In this context, it is important to improve the high-speed rail lines and highways system, which will play an essential role in the issue of integration of Azerbaijan into the global community.

## 6. CONCLUSION

Lately I would like to bring to recollection the words of the famous architect Гинзбург, 1936. 1936, which exactly characterize the essence of the city ecology regulation of the environment: ‘Several trees, hillside, cliff over the river - all these are the elements appeared accidentally. However, in the perception of authentic architect this natural motive worth to be understood as a canvas on which an architectural work merging with it will turn into a complete, natural

synthesis of nature and architecture. However sometimes nature contains fully ready and completed artistic assemblies. Here the aim of an architect is no less difficult. It is necessary to understand this assembly, its character as a Greater concept. At last, there can be such situations when nature is joyless and sad. In such cases an architect needs to be able to recompose this nature, bring it under control of the architecture, enrich it with new green plantings and the rhythm of architectural and sculptural elements; in all these cases the aim of nature and architecture synthesis is one of the most difficult creative tasks.<sup>1</sup>

Is the city located in the nature or the nature is in the city? – Both are in their organic unity and dynamic balance. A city of tomorrow is a landscape city open to the sunlight, absorbing and preserving the most valuable things in its environment in a transformed form. This is a city constructed on the understanding of human wants, environmental regularities, the growing technical capabilities of our times (Вергунов, 1982.).

Today because of the intensive chaotic building system in the urban planning of Baku there are certain problems that need to be addressed urgently. Among them there are:

- ✓ development of a new methodology for drawing up a cost-benefit analysis of the building system and city design of Baku, acceptable for modern economic policy;
- ✓ development of flexible infrastructure considering the modern demographic structure of the city and meeting the urban planning norms in the function of the basis of the new master plan;
- ✓ necessity to review the development of the city in a northerly direction and north-westward in connection with overpeopling, overcrowd and compactness of the territory of Baku;
- ✓ necessity to pay special attention on the issues of ecology, modernization of engineering communications, greening and etc.;
- ✓ reduction of the residential construction within the bounds of Baku, paying special attention to the projection standards;
- ✓ development of the detailed planning projects for the redeveloped regions of the city and projects of reconstruction for the old regions requiring transformation with respect to heritage conservation and historical landscape of the city;
- ✓ street widening, development of new traffic diagram of the city and infrastructure objects; vegetation and parking network should possess a special place in the new master plan.

It should be mentioned that development of the Greater Baku region in 2015-2040 is a period of birth of new Baku under the new political and economic conditions. This period of removal of all the old, lived out, and construction of the new, advanced modern city based on modern technologies, new scientific researches, and considering the experience of the leading cities of the world. At the same time Baku as one of the ancient cities of the world, possessing a unique originality, culture, aura, with its distinctive and original monuments of history and architecture will remain the principal magnet of tourism from all over the world (Matzarakis, 2006).

We, architects, landscape architects, urbanists, government and also all citizens of Baku will do everything to make Baku much more significant city of the world. We want Baku to be not only geographical center of the Eurasia, but also the cultural, economic, financial center of all Middle East region.

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