

# Ecological Culture of the City Environment of Astana

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**Abstract:** *The article «Ecological Culture of the City Environment Of Astana» deals with the urban environment of ecology in the historical retrospection of Astana - the capital of the modern Republic of Kazakhstan. The solution of urban environment problems, the authors analyze in the context of social and cultural development of the city. On the basis of archival materials the natural character of the environmental problems of pre-revolutionary city Akmola is justified. Using archival sources shows the inadequacy and utopian ideas of purposeful formation of ecologically safe urban districts in the Soviet city of Tselinograd. The features of the solution of environmental problems of the city through the use of new technologies in the project for the construction of Astana are shown.*

**Index Terms:** *city, urban environment, the ecological environment of the city, urbanization, Akmola - the city of the XIX century, Tselinograd - Soviet city, Astana - the capital of Kazakhstan.*

## I. INTRODUCTION

The culture of the city in its wide sense includes such important segment of the general component as an ecology of the city environment. The ecology appreciably influences on the development of the city culture and the formation of the cultural-landscape layer of the city, defines an external shape of the city formations. The ecology of the city environment is one of the major socio-cultural problems of the city development.

## II. CITY ENVIRONMENT

An urbanistic and ecological anthropology concern to the special areas of the research in the world science. In our case we shall recognize that the concept ecology of the city environment is considered in its wide sense and includes both the natural environment of the city development, and the ecological environment of the city formed during the urbanization. The city environment and the city ecology act as the basic matrixes of the research. Let's consider the various aspects and approaches of the formation of the city ecology environment and the decision of the environmental problems on materials of Astana where the city culture was developed during the several decades under the direct influence of the natural and anthropogenous factors. Each of the stages in dynamics of the city is noted by the formation of an anthropogenous.

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Landscape layer which during the development and transformation of the city formation varied under the influence of both external calls, and internal factors.

The city culture unlike the traditional rural is focused mainly on the creation of an artificial inhabitancy. The wane in a sense of ecological cleanliness of the person inhabitancy and an absence of the harmony with the nature owing to technogenic, industrial activity of people consists in it. Therefore there were actual problems of the social designing of the artificial city inhabitancy focused on the harmonization with the nature. For more objective and full illumination of the problem we shall address to the historical past of the city. Akmola - historically the first name of the modern capital of Kazakhstan, from the end of the 60-th years of the XIX-th century till the 20-th years of the XX-th century was an administrative centre of Akmolinsk district in the same area. Natural ecological conditions of Akmola city formation were adverse as the city had arisen in the steppe opened and blown by winds. The unity of the city culture with the nature and its weak isolation from the rural neighbourhood was shown in the planned structure of Akmola. As well as the majority of the Northern and Central Kazakhstan cities, Akmola was consisted of the several administrative units: fortresses, villages, suburbs and large villages [1]. Besides three pastures were adjoined to the territory of the city - Northern, East and Western, that also gave out rurality to Akmola.

Ecological development of the city territory and adjoining to the city has begun with the end of the XIX-th century. In 1880 the first in the history of the city an architectural lay-out has been made and the town-planning plan was approved. The landing of the gardens in the city feature and the city refining by the green plantings has been made for the first time. Near the fortress the soldier's garden has been broken by the area, on the right bank of the river Ishim a city garden has been incorporated, and on left bank of the river Ishim the townspeople have broken the wood nursery. In three kilometers from the city on the coast of the Ishim on a city site in 7,5 dec the merchants of Akmola had been landed three gardens. At the end of the XIX-th century agricultural farms were created which were planted by trees with the pupils help and turned into green oasis in steppe. So near the city on the coast of Ishim Krasny Yar has been arisen. In 1910 the green plantings city parkways [2] for the first time have been set. The certain coloration in an ecological condition of the city was brought by the river Ishim. Flood of the river depends on an abundance of snows and opening of the river Nura. During of high water period r.Nura near Akmola incorporated with Ishim, giving it waters. During spring time, during floods, quite often those structural parts of the city which adjoined to the river were flooded: «Slobodka», and "Kazachya" villages. In the XIXth century in 1847, 1861, 1908, 1911 floods of Ishim were especially strong.

Environmental problems of Akmola had a natural character

and have been connected with the raised frivolity and floods of the river. Technogenic environmental problems in history of Akmola were not marked. Concentration of vehicles and the industrial enterprises in the city was not observed that's why to speak about these problems were unnecessary.

Tselinograd - the Soviet city of the XX-th century was developed under the Soviet urbanistics laws and within the limits of the Soviet urbanistic concept. The general plan for the development of Tselinograd was worked out in 1963 by the group of Leningrad architects, comprised the ecological component typical for the town-planning of the Soviet epoch [3]. First of all, in a basis of the town-planning concept precisely-function chart developments of the city has been put, assumed classical division of an industrial zone, an inhabited part and a zone of rest. In order to increase the comfort of the city environment and improvement of the city ecology the industrial zone has been born for a railroad line and in the streamside parts of the city were allocated the rest zones for the townspeople. Moreover, the territorial layer adjoining to the river Ishim kept a protogenic natural cultural layer.

The construction of the inhabited files forming microdistricts with the step system of the service was carried out to soften adverse influence on the ecology of the city life. Apartment houses and the quarters were planned in a view of optimum orientation on the parties of light and an attitude to the dominating winds, and also in a view of the land lay. The feature of building in the conditions of Tselinograd consisted in that apartment houses formed the closed domestic spaces for the neutralization of the constantly blowing winds.

The concept of the development of an engineering-transport infrastructure of the city has been advanced, expansion of the complex accomplishment of the city and scales of its gardening was supposed. The presence of the green plantings in cities actively clearing an atmosphere, reducing a noise level and negative influence of the winds, is one of the optimum ecological factors of the city environment. The green file of the city salutary acts on an emotional condition of the person. In Tselinograd it practically has been completely presented by "the cultural plantings" - parks, squares, lawns. But questions of gardening of city were solved irrationally. The landing material for the city gardening was delivered from the other areas of the republic and from RSFSR, that dearly managed to the city budget. Landing of the green plantings was made non-uniformly, and their acclimation rate was very low. In the ecological conditions of Tselinograd at a permanent care and protection from the damages it made 80-75 %, in an opposite case of 60-70 % of plantings were perished. Absence of an appropriate care and duly watering, bad quality of the landing material, ignoring of the soil conditions and agrotechnical receptions, bad protection brought to the ruin of more than 50 % of the plantings [4].

The most actual environmental problem of Tselinograd was a problem of water delivery to the townspeople. Up to the middle of 50<sup>th</sup> in the XXth century there was no centralized sanitary plumbing in the city. The basic sources of the city water supply were alluvial waters of

the Ishim, underground deposits waters of the northwest and the northeast ridge of the limestones. The need of the population in potable water was provided only in 12 %. On the average per person it was necessary 38 litres of water a day at sanitary norm of 150-250 litres [5].

The shortage of water has been connected not only with insufficient output sources, but also with an infringement of water intaking operation mode constructions. Taking into account an absence of the technical waterpipe, the significant share of water was spent for the needs of the industrial enterprises while the townspeople and food enterprises lacked some water. Planting water supply systems of the city were distributed between the departmental organizations. Departmental dissociation of water maintenance services influenced seriously on the organization of water sources operation. Sanitary-and-epidemiologic conditions in the city on a regular basis became complicated because of water lack. The disease level by the sharp intestinal infections which took place at the unsatisfactory organization of an economic-drinking water supply, in Tselinograd was in 1,4 times above, than in the average within the country [6]. Health of the townspeople as the objective and convincing parameter of an ecological condition of the city, is its major social-economic consequence and defines the leading directions on an improvement of the environment quality. Not casually therefore, the Ministerial council of the USSR in 1964 has accepted the special Decision « About urgent measures on improvement of water supply and water drain in Tselinograd ». Concrete measures were outlined in it on an increase in daily capacities of water supply sources, an expansion of the network of an economic-drinking waterpipe and the city water drain, and also the organization of time dump of the economic-fecal waters in the lake Taldy-Kol [7]. By the construction of Vyacheslavsk water basin in 1967 the problems of the city water supply have been solved only partially. In the 70-th missing volumes of water were compensated from the channel Irtysh-Karaganda.

The problem of the city clearing was sharp. Owing to the absence of the storm water drain high standing subsoil waters were observed. In such conditions the majority of basements of city structures became a source of an infection distribution. Operation of the power communications became complicated, there were some failures. In the 70th on the left bank of Salty beam clearing constructions have been built, and also the construction of additional clearing constructions on the left bank of the Ishim has begun, in an area of the store-lake Taldy-Kol.

Thus, the questions of ecology always remained actual for Tselinograd. Its indecision promoted the formation of the city anthropogenous landscape mismatching sanitary norms of the ecological equilibrium of the city environment. The decision of the environmental problems in the city was not beyond the Soviet concept of the town-planning, was shown in unchanging of the city microhabitat of dwelling, and taking into account the town-planning of the natural and technogenic ecological conditions with the purpose of mitigation and elimination of ecology adverse influenced on the city life. The idea of purposeful formation of ecologically safe city microdistricts practically has not been realized.

With the transfer of capital of sovereign Kazakhstan from Almaty to Akmola in 1997 the city has entered qualitatively

into the new stage of the social and economic, political, cultural development. According to the basic principles of urbanistics, the changed environment of the city development and purchasing by the city of the administrative functions of the young developing state capital, dynamism to the city development has been given. The town-planning plans of Astana differ by scale and by integrated approach of the offered technological decisions. The global and local tendencies, the heritage and innovations, the rigid parameters (financing, infrastructure, transport availability) and such factors which are difficult to analyze, as the quality of the city environment have been incorporated in them. On the architects plan, the young capital should advance all systems of the city life ability: from the organization of housing and communal services, up to the modern systems of transport, the technologies of the life quality maintenance and so forth.

### III. CONCLUSION

The new development has received the decision of an ecological component in the realization of Astana project, directed on the change of the region ecology, creation of the pure air tank by an erection of " the green belt » around the city and, as a consequence, the formation of a favorable microclimate. All this in aggregate should deduce on the new quality an urbanization of the city population level, as a parameter of the townspeople satisfaction by the conditions of the city environment. At the same time, non complexity and stippling of the new inhabited files buildings in the right-bank (historical) part of the city, often practiced in the first years of the new capital's becoming, not only has changed its cultural shape, but has complicated an ecological situation on the right bank. The density of the residential buildings, their chaotic arrangement on the parties of the light limits the solar energy hit in the domestic houses. Transport congestion of the narrow streets in an old city conducts to air and noise pollution of the city environment. The density of the housing estate excludes an opportunity of the noise protective screens construction, an expansion of the highways and trees landing reducing the city noise level. An expert application in the buildings leaving on the most brisk highways, new noise absorbing materials and vertical gardening of the houses has not received distribution. The newest technologies of the buildings erection and engineering constructions, adapted for the local natural-climatic conditions, are applied only at the construction of objects on the left bank of the city. In this sense the ecology of Astana city environment is still far from the perfect and demands the high-grade decision.

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