Urban development in the republic of Iraq. Ecological assessment, development stages. Impact of the planned object on the environment

A M Abuali*, A A Al-Shaybann, R Buragba
Belgorod State Technological University named after V.G. Shukhov, 46, Kostyukov str., Belgorod, 308012, Russia
E-mail: aaljalj6 @ gmail.com

Abstract. The article outlines the stages of urban development in the Republic of Iraq on the example of the province of Najaf. The stages of the environmental assessment development are consecrated and the types and mechanisms of the planned activity impact on the individual components of the environment are considered.

It was concluded that, in order to reduce the environmental tensions, it is necessary to continuously assess the effects of the impact both actual and planned on the natural environment and to find the optimal solutions to prevent possible adverse effects, the consequences of which may cause the negative changes in the environment. The environmental issues and environmentally prudent planning are of particular relevance.

Introduction
At present, Iraq is going through an important and delicate stage in its history, when the scourge of war affects all its areas, and therefore the development plan must play its role in leading the country towards progress. Construction is at the development fore-front, it is the locomotive pushing for changes in trends in the urban development. The urban projects for the new city of Najaf, which is one of the largest cities in Iraq, as one of the examples of urban development in the state of Iraq. The religious traditions and heritage are the most important features of their development. The given study aimed at achieving a scientifically realistic method based on the accurate scientific data and statistics, using the example of the city Najaf, to create an integrated and balanced environment for the future generations and to achieve long-term and sustainable development goals and achieve returns - this will contribute to the development of the Republic of Iraq.
Main Part
The city of Najaf is located on the edge of the western plateau of Iraq, southwest of Baghdad. Its architecture went through three stages:

1- The architecture of Al-Bukhiyah, which lasted from 938 to the XIV century, represents the prosperity of the city of Najaf, where the first wall surrounding the city was built. Then Abu Mohammed bin Sahlan built the second city wall in 998;

2- Between the XIV and the middle of the XVIIIth centuries. The map of the Najaf province for centuries, when its architecture was outdated and its purity was lost because of the wars between the Turks and the Persians;

3- The last period, beginning in the middle of the 18th century, in which the construction and architecture flourished in Najaf, and there were many changes in architectural and cultural development after it was a subordinate part of the province of Karbila.

The city of Najaf was the Abbasid capital of the Caliphate and the capital of the Islamic state, which qualifies the city of Najaf as a part of a comprehensive tourism system at the regional level in the state of Iraq. The location near Baghdad, in which the famous Abbasid Palace is located, is an important advantage. And the city itself has many museums, many exhibits of which, unfortunately, were stolen due to insecurity, and Najaf is also located on the border with the mountain, which includes the ancient ruins of Babylon. The strategy of attracting and settling the population in the Najaf city is based on maintaining the local identity of the historical city of Najaf.

Environmental assessment is the process of systematically analyzing and assessing the environmental consequences of the planned activity, consulting with interested parties and taking into account the results of this analysis and consultation in planning, designing, approving and implementing this activity [6] [12]. The development of the environmental impact assessment process can be divided into four phases [1] [11]:

1. Starting point: detecting project environmental risks leading to the development of political laws and frameworks for the environmental impact assessment in the United States in 1969. In other industrialized countries, such as Australia, Canada and New Zealand the assessment systems were introduced by the Environmental Impact Assessment (EIA), the states adopted it, have a clear methodology for the EIA process in 1975.

2. The stage of using high technologies in the process of environmental impact assessment, such as the risk assessment and the development of guidelines in implementation processes, such as the process of examination and scope, as well as taking into account social influences. In some leading countries
the opinion of the population (social participation) has begun to be taken into account on this issue. This led to creativity and innovation in the practice of environmental assessment in the 1970s – 1980s.

3. The stage of integration and practical use of experience and practice in the framework of the environmental impact assessment review, which led to the modernization and updating of scientific and institutional structures, coordination of impact assessment and other parallel processes, such as land use planning. Attention has been paid to the inclusion and absorption of the changes in the ecosystem, as well as accumulated effects, and the introduction of monitoring, auditing and control mechanisms that began in the years 1980-1990.

4. Strategic Environmental Assessment Phase: This last phase led to the reflection of sustainable development and the incorporation of sustainability concepts and criteria into the environmental impact assessment and the strategic environmental assessment.

The research contents

- The object’s impact on the environment estimation
- The analysis content
- Economic calculations

The research contents:

- The environment condition characteristics in the territory of the object’s location
- The main pollution sources and their characteristics
- The planned object’s impact forecast on the environmental components
- The emergency situations’ probability and their consequences
- Change of the environmental parameters under the planned object’s exposure
- Ecological and social consequences of the object’s construction and maintenance

The object’s impact on the environment estimation:

- The household activities possibility
- The characteristics and the volume of natural resources use
- The waste amount and the conditions of their elimination
- The waste and intermediate products use possibility
There is no single method that could meet the requirements of all the stages of the strategic environmental assessment process, since each stage requires its own methods, different from the previous or the next stage. The methods, processes, procedures, deadlines and administrative requirements for the application of EIA should be consistent and appropriate to the specific circumstances associated with the proposed policies, plans and programs [11]. The most common methods of impact analysis are: Computer modeling, Simulation Modeling, Matrices, Swat Analysis (SWOT) [2] [13].

For a clear understanding of the impact of the planned activity on individual components of the environment, let us consider in more detail the types and mechanisms of this impact on individual components of the environment. [2] [10] [13]

**The impact of the planned object on the air**

The main type of the industrial facilities impact on the state of the air basin is air pollution with emissions of pollutants [3] [4]. When developing an impact assessment, the types and the amount of pollutants emitted into the atmosphere by the projected object determined by analogous objects.

1. The analogue data is recalculated in accordance with the characteristics of the designed object. To characterize the sources of air pollution, a location scheme should be prepared.

2. The stage of using high technologies in the process of the environmental impact assessment, such as risk assessment and the development of guidelines in implementation processes, such as the examination process and scope, as well as taking into account social influences should be implemented. In some leading countries the opinion of the population (social participation) has started to be taken into account on this issue. This led to creativity and innovation in the practice of environmental assessment in the 1970s – 1980s.

3. The stage of integration and practical use of experience and practice in the framework of the environmental impact assessment review, which led to the modernization and updating of scientific and institutional structures, coordination of impact assessment and other parallel processes, such as land use planning. Much attention has been paid to the inclusion and absorption of changes in the ecosystem, as well as accumulated effects, and the introduction of monitoring, auditing and control mechanisms that began in 1980-1990.

4. Strategic Environmental Assessment Phase: This last phase led to the reflection of sustainable development and the incorporation of sustainability concepts and criteria into environmental impact assessment and strategic environmental assessment.

There is no single method that could meet the requirements of all stages of the strategic environmental assessment process because the balance of the environment is aimed at creating areas of regional and international cooperation and has already achieved significant success in this area currently in Iraq and can be summarized as follows: collaboration with the United Nations Environment Program.

**Summary**

To reduce the environmental stress, it is necessary to continuously assess the effects of the impact, both actual and planned by the settlements, on the environment and seek optimal solutions to prevent possible adverse effects, the consequences of which might have negative impact on the environment. The territorial planning In Iraq is aimed at determining the territorial planning documents the designation of territories, based on a combination of social, economic, environmental and other factors, in order to ensure the sustainable development of territories, the development of engineering, transport and social infrastructures, to ensure that the interests of citizens and their associations are taken into account.

**References**

[1] Astafieva O E, Pitruk A V 2013 Legal foundations of nature management and environmental protection (SINTEG, Moscow).

[2] Beshentsev A N 2008 Geo-informational assessment of the environmental management (Moscow).
[3] Bryukhan F F, Grafkina M V, Sdobnyakova E E 2017 *Industrial ecology* (Textbook, Moscow Forum).
[4] Larionov N M, Ryabyshenkov A S 2004 *Industrial ecology* (A textbook for bachelors).
[5] Lyukshinov A N 2004 *Strategic management in the system of factors of effective management and environmental management* (Unity-Dana, Moscow).
[6] Protasov V F 2005 *Ecology: terms and concepts, standards, certification, regulations* (Finance and Statistics, Moscow).
[7] Sadovnikova L K, Orlov D S, Lozanovskaya I N 2006 *Ecology and environmental protection during chemical pollution* (Higher. school, Moscow).
[8] Trofimenko Yu V, Evgenyev G I 2006 *Ecology: Transport Construction and Environment* (Academy, Moscow).
[9] Whittaker R 1980 *Communities and Ecosystems* (Progress, Moscow).
[10] Khomich V A 2006 *Ecology of the urban environment* (Publishing House of the Association of Construction Universities, Moscow).
[11] Hotuleva M V, Volostnov D V 2009 *History and legislative prerequisites for the development of SEA*.
[12] Cherp O M, Vinichenko V N, Hotuleva M V, Molchanova Y P, Dayman S Yu 2010 *Environmental Assessment and Ecological Expertise*.
[13] Ashihmin T Ya 2005 *Environmental monitoring* (Academic Project, Moscow).
[14] Denisov V V 2016 *Ecology, IC “MarT”* (Rostov-on-Don).