

DIGHOMI FLOODPLAIN DEVELOPMENT PROJECT. METHODOLOGY IN THE DIRECTION OF URBAN PLANNING AND TOURISM INFRASTRUCTURE DEVELOPMENT

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Abstract: Dighomi floodplains is an outstanding and unique area within the administrative borders of Tbilisi, which deserves special attention due to its size (190 ha) and biodiversity. In the case of proper urban development, the mentioned section can become the main recreational oasis for a city with a "heavy" ecological balance. As a result of the unplanned and reckless economic activities during the last two decades, the mentioned area has faced serious environmental problems. Determining the future policy of restoration and development of Dighomi floodplain depends greatly on the correct assessment of its current condition; Only after this action it will be possible to establish a full-fledged program of its urban development, the goal and the objectives of the project.

The aim of the project is to create a spatial-functional model based on the analysis of multimedia research results, the realization of which guarantees the sustainable development of Dighomi floodplain.

The implementation of the research works of the current project in the direction of urban planning and development of tourist infrastructure implies the realization of the following tasks:

- Determination of the functional zone and city planning coefficients of the research area;
- Determination of development prospects of the territory according to the General Land Use Plan;
- Analysis of the urban planning situation in the surrounding areas;
- Assessment of protected areas integrated into the urban environment;
- Evaluation of the development prospects of the city tourist infrastructure in the project area;
- Evaluation of the investment value of the project, taking into account the characteristics of the urban management of the banks of the Mtkvari River.

Keywords: Urban development, functional zone, ecological safety, biodiversity, Master Plan of Tbilisi.

THE PROBLEM OF THE DIGHOMI FLOODPLAIN

The Dighomi Floodplain is an outstanding and unique area within the administrative borders of Tbilisi, which deserves special attention due to its size (190 ha) and biodiversity. In the case of proper urban development, the mentioned section can become the main recreational oasis for a city with a "heavy" ecological balance. As a result of the unplanned and reckless economic activities during the last two decades, the mentioned area has faced serious environmental problems. Determining the future policy of restoration and development of Dighomi Floodplain depends greatly on the correct assessment of its current condition. Only after this action, it will be possible to establish a full-fledged program of its urban development (Fig. 1).

The ecological state of the project area at the current stage can be characterized as very difficult. The high level of pollution of the river waters is due to the presence of a large amount of untreated wastewater, especially from industrial enterprises and settlements on the left bank. These streams flow into the river from damaged sewers and combined drainage systems. Chemical waste is not recycled. On the right bank, until recently, there was an uncontrolled dumping of industrial and construction waste. Unauthorized

extraction of inert material in large volumes from quarries located in several places on the same bank. The situation is aggravated by the following circumstances:

1. There is no defined institutional accountability and Integrated Planning in the part of water resources management;
2. Water Quality and Green Cover Condition Monitoring Data are very limited and there is no transparency in their assessment process;
3. The results of the Flora and Fauna assessment are not published regularly;
4. The society does not have information about the Prospects of Urban Development in the study area.

The agreement of urban development projects and the issuing of construction permits were and are being carried out without taking into account a public opinion, to the detriment of the interests of the city. The described situation has had a very negative impact on the condition of the unique landscape and vegetation cover of Dighomi Floodplain. The reduction of the area of the forest massif especially during the last two decades is remarkable.

PROJECTS THAT ARE RELEVANT TO THE CONTEXT

In the research project, the following documents are considered as the main documents: design and estimate documentation, multidisciplinary studies and programs carried out currently, which are relevant to this project and the spatial development of the Mtkvari riverbed. These issues are devoted to: the project funded by the European Union in 2012¹ (Fig. 2-3); the project funded by the Asian Development Bank in 2021;² and also, the scientific work of G. Giorgadze, carried out in the format of the Thessaloniki International Conference.³

The dangers of the destruction of the Dighomi Floodplain and the possible ways of prevention were studied in detail within the scope of a comprehensive study, which was carried out by the initiative of the Dighomi Floodplain neighbourhood community and with the financial support of the Open Society Foundation in 2021.

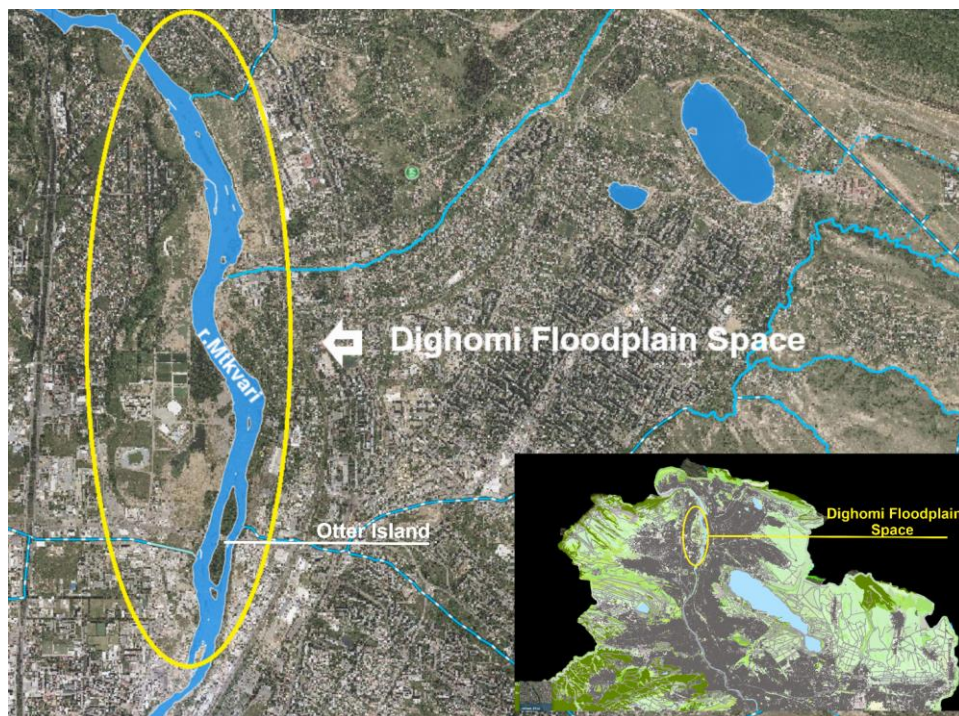


Fig. 1. Dighomi Floodplain Space and location on the Master Plan of Tbilisi (Collage by G. Giorgadze 2023).

¹ *Ensuring the Improvement of the Mtkvari River Management in the Tbilisi Area*. AGRECO G.E.I.E. in cooperation with European Consulting for Developing Countries (ECFDC), Reference: 061310 (EC Ref 2012/294630).

² *Feasibility Study on the Development of Public and Tourist Transport Services on the Mtkvari River in Tbilisi*. Royal Haskoning DHV, Spectrum. Reference: BH1783-RHD-ZZ-ZZ-RP-Z-0003. Rotterdam, 2021.

³ Giorgadze 2021.

THE MAIN GOAL AND OBJECTIVES OF THE CURRENT STAGE

The aim of the current project is to create a Spatial-Functional Model based on the analysis of multimedia research results, the realization of which guarantees the sustainable development of Dighomi Floodplain.

The main tasks that will be undertaken in order to achieve this goal are as follows:

- Development of natural environment rehabilitation measures, focused on the ecological safety of the unique natural habitat, which can be implemented under the conditions of Tbilisi;
- Elaboration of the technical task for the landscape architecture project of urban development, which is permitted by the current legislation of Georgia, determined by the General Land Use Plan of Tbilisi, and meets the requirements of International Conventions;
- Determining the types of urban tourist infrastructure facilities and fixing their location in the area of Dighomi Floodplain based on the assessment of the expected impact on the environment and possible risks;
- Implementation of investment planning with strict compliance with the requirements of sustainable development and a safe natural environment; Preparation of investment proposals for strategic partners.

RESEARCH PROFILE

The implementation of the research works of the current project in the direction of urban planning and development of tourist infrastructure implies the realization of the following tasks:

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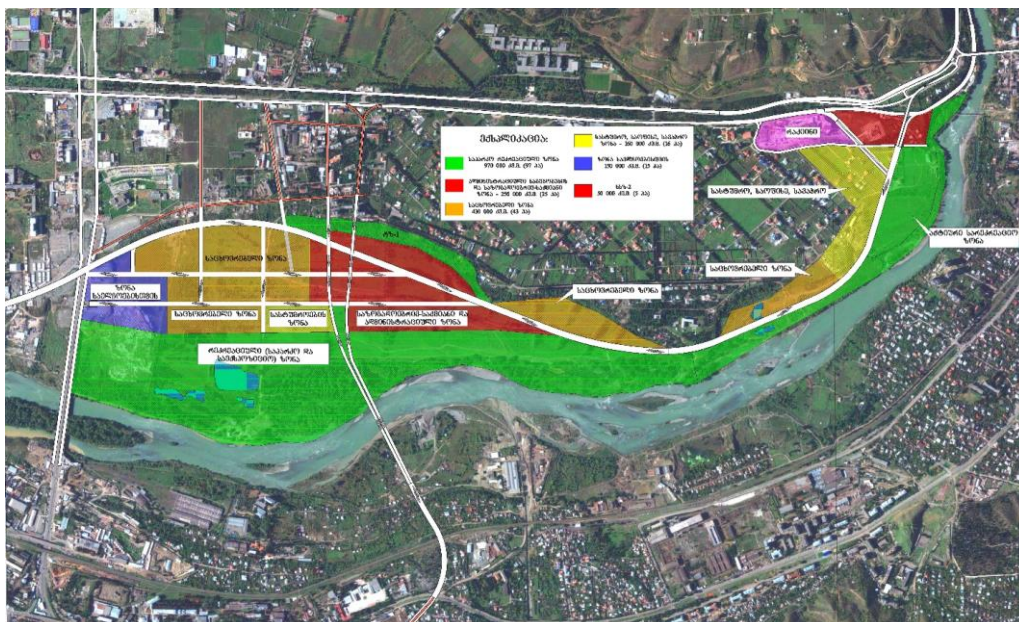


Fig. 2. Evaluation of prospects for restoration and development of Dighomi Floodplain in the EU project: *Ensuring the Improvement of the Mtkvari River Management in the Tbilisi Area*. ECFDC Reference: 061310 (EC Ref 2012/294630), 2012).

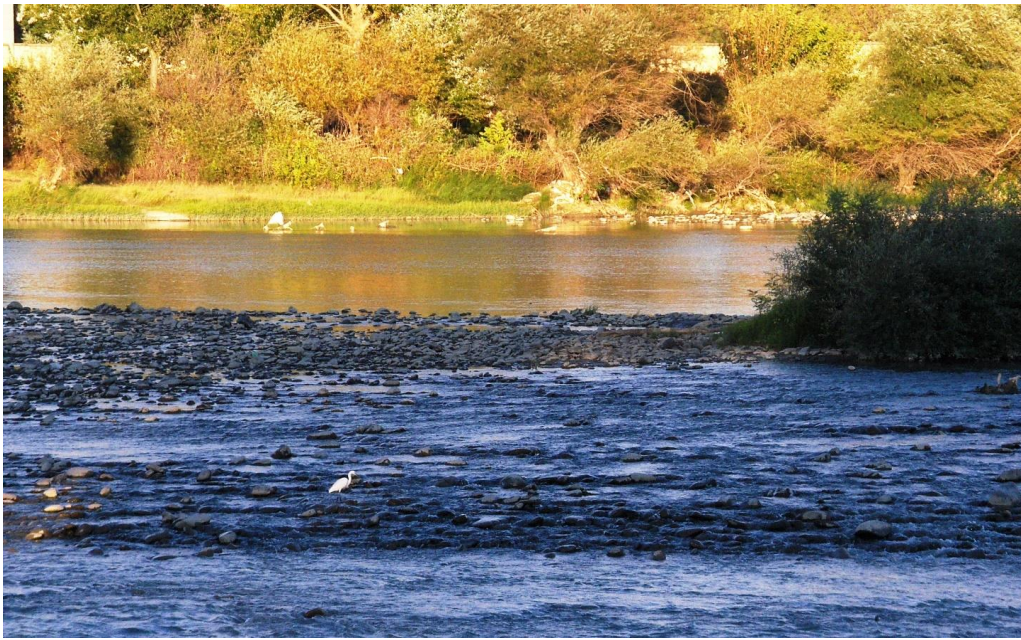


Fig. 3. Migratory birds in the Digomi Floodplain. The Stork is resting on the rocks in the Mtkvari River (Photo by Giorgadze 2012).

ANALYSIS OF FOREIGN PRACTICE

Among the best practices for sustainable development in green urbanism, some prominent examples stand out, both in terms of research and analysis and in terms of spatial planning: *Elbe River Levee Setback Project (Germany): Flood Risk Management and Recovery Components*.

The Project originated primarily with a conservation focus in a biosphere reserve. A catastrophic flood on the Elbe in 2002 drew attention to the area and put flood protection on the public agenda. During subsequent major floods, the Federal Institute of Water Resources Engineering and Research (BAW) conducted field measurements that demonstrated the beneficial effects of levee setbacks in reducing peak flood and thus flood risk.⁴

The Project established approximately 80 ha of floodplain forest, which was added to the area planted by the previous LIFE-project. In addition, 45 ha of shallow water bodies were excavated to restore aquatic and semi-aquatic habitat, as well as to provide bank building materials. Surveys to evaluate the success of the project have documented the return of many aquatic species and other birds, as well as a diversity of habitat types. In Germany, the project continues to be cited as a successful example of the synergistic implementation of conservation and flood risk reduction objectives.

THE UNEXPECTED HOPE OF OTTER ISLAND

There is a new opportunity to start a detailed study of the state and development prospects of the Dighomi Floodplain. This opportunity was provided by the Asian Development Bank (ADB) via the Tbilisi Development Fund. In the tender announced by this State Institution, the winner was determined - SMEC International PTY Limited (Australia), Georgia Branch Office, which will soon begin to implement the Research Project: *Development of Strategy for Dighomi Floodplain Rehabilitation*.

A unique landscape oasis within the features of an urbanized environment will receive the opportunity for a decent existence.

The Otter Island will survive.

⁴ Alexy, Faulhaber 2011; Faulhaber 2013.



Fig. 4. Dighomi Floodplain today. Otter Island waiting for decisions on rehabilitation
(Photos by G. Giorgadze, 2023).

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