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account the requirements of video-environmental aspects. In our opinion, the approach should be methodical, gradual, meet certain criteria, and the solution to this problem should be scientifically sound.

Thus, to solve this problem, we propose to integrate SAFs with elements of green infrastructure, because the presence of landscaping in the urban environment is a means of harmonization by increasing the color and variety of textures of architectural surfaces.

The lack of territories makes an interesting proposal to interpret the designs and technologies of vertical landscaping to create permanent and temporary SAFs for different functional purposes. Now it is a generally accepted world practice to move parks, gardens, boulevards from the ground level to the roofs or facades of buildings. Thus, the green architecture makes the city not only environmentally friendly but often hides the vagueness of architectural facades behind the "mask" of vegetation.

Green infrastructure's important elements are not only the greening and existing buildings landscaping but also the introduction of new natural elements in the urban environment. These can be greenery along roads, streets, and railways; small urban green areas and green playgrounds; parks and city lawns; green routes; recreational and urban gardening facilities; providing easier access to city parks, forests, and natural wildlife areas.

## Actual socio-economic problems with water resource management of Black Sea estuaries on climate change condition

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In the north-west area of the Black Sea (as part of the Odessa region in Ukraine) are known closed estuaries-reservoirs - Khadzhibey and Kuyalnik. They are unique in origin of a natural formation. These estuaries were formed when the wellhead areas of the rivers Small Kuyalnik (Hadzhibey) and Big Kuyalnik (Kuialnitsky estuary) were flooded due to the lowering of the coastal strip of land. Estuary separated from the sea bay the pour 7 km long, so that they:

- Have little or no connection with the sea,
- Characterized by slow water exchange,
- Receive minimum inflow of fresh water from small rivers.

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We also know that the Kuyalnitsky estuary is an important recreational and spa subject to state and global significance.

Modern hydrology regime of the Hadzibeevsky and Kuyalnitsky estuaries is due to natural and anthropogenic factors and characterized by their intense economic use. For Hadzhibey, since the beginning of the last century, there was an intensive discharge of municipal waters from Odessa (biological treatment plant "North"). This led to a significant increase in the levels of water in the estuary, which threatened to destroy the dam that separates the estuary from the sea, with the possible flooding of residential areas and enterprises of the Peresip area (total area of 25 km<sup>2</sup>), as well as the road, on the dam, especially in disastrously high water years.

The ecological crisis of the Kuyalnitsky estuary is caused by the regulation the water flow r. Large Kuyalnik (since 1960) a significant number of ponds and reservoirs now. They are designed to provide water to irrigation systems and management needs. This led to a catastrophic shoaling and silting of the reservoir estuary, reducing the water level and the depth, as well as an associated increase in water salinity.

The general task of study is estimation of filling the closed estuaries-reservoirs in north-west area of the Black Sea, and long-term forecasting condition of during the spring period of year.

The first stage was an analysis of conditions of the Hadzhibeysky estuary in the presence of an exceptional the spring flood and rain floods of exceedance probability ( $P = 1\%$ ).

The second task - was to develop a methodology for the long-term forecasting of filling of the Hadzhibeysky and Kuyalnitsky estuaries during the spring flood, which is the most abundant phase in the hydrological regime into the territory.

During the study, these problems were solved and method of long-term forecasting was realized by the authors in operational work at the Hydrometeorological Centre of the Black and Azov Seas.