The Advanced Water Sport and Leisure Centre Project at The Water Edge of Dabie Lake in Szczecin (Poland)

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Abstract. Szczecin is the town located in the Middle Ages in the 60 km distance from the Baltic Sea coastline. It is the unique town in Poland having in its limits over 30% of lake and river waters. The great potential of this fact has been used since ever for communication and transportation routes, for shipbuilding and port facilities. The XIX-century Szczecin was a significant industrial center, thanks to the location at Odra River and Dąbie Lake. The negative result of industrialization was the heavy water pollution. In the recent years the inner – city waters are on one hand partly subject of protection as an Odra River Natural Park, Natura 2000 restricted area, but on the other hand more and more used for leisure and water sports. European Funds contribution made possible a severe limitation of water pollution by installation of ecologically advanced sewage purification plants. It was also possible due to the elimination of the old-type industry in the town and its surroundings and increase of ecological consciousness. Better quality of the water in the Dąbie Lake and Odra River, on the edge to the city of Szczecin, attracts therefore touristic and leisure development and the growing welfare in Poland and Europe makes recreation facilities a new, attractive income source. The water-city edge project is aimed to transform the deteriorated brownfield at the Dąbie Lake Waterfront into the place for health care, leisure and sport activities on the higher level of quality and proficiency. The paper describes the project ideas and visions. This project, still in development, shows the possibilities of alternative leisure developments to sea-coastal ones at the Baltic Sea Coast. It represents the method of combining different positive features of the climate and waterfront locations with the investment opportunities, what could contribute to a success of the one common, overall idea of leisure and sport center on the city edge. It shows an example of the investments in the hotel/sport/recreation/health care branches. The conclusion of the paper aims to prove, the necessary changes in the town planning goals structure, taking more seriously into account: the preferences of active people (spending free time for leisure, recreation, nature observations, health care and water sport), economic opportunities (foreign and domestic investors) and overall climate change in the Central Europe Region.

1. Introduction

The topic of the water front of Lake Dąbie in Szczecin development has already been discussed many times [1]. Certain facts have made the projects presented today not only conceptual, but with a good chance of being implemented. This is due to several factors. First of all, changes in the structure of the industry and improvement of the city’s sewage system infrastructure have made the water in Lake Dąbie more clean than in the past. Secondly, economic development in Poland and raising the standard of living resulted in increased interest in water areas as an area of active recreation and water sports.
Thirdly, good cross-border cooperation with the neighbouring Federal Republic of Germany caused more visits of our western neighbours through waterways. However, one important aspect hinders the further development of tourism and water sports - the lack of adequate hotel infrastructure and recreation base in the area of the Dąbie Lake water front. The Chinese enterprise Tian Yu is planning to fill up this gap with a new challenging investment project on the waterfront of the Dąbie Lake.

Figure 1. Recreational arrangement of the natural environment of the Dąbie Lake – scheme of waterways, location of marinas, stop points for small vessels, placement of excavated output from the bottom of the waterways bed. Source: Szczecin Municipal Office

2. The research problem
The subject of the article is the approximation of the problems related to the possibilities and concepts of creation of the new leisure infrastructure at the Dąbie Lake waterfront post-industrial area. How should the transformation of degraded areas look like at the interface between the city and the natural complexes? The scientific problem is an attempt to determine the appropriate boundary between the need to preserve the natural environmental values of the Lake and adjacent areas and new areas of the city development, planned in order to improve the city's infrastructure standard and the quality of life of its inhabitants and visitors. This problem is the core of the discussion about Lake Dąbie between the proponents of the untouched natural landscape and non-interference in the area of the Dąbie Lake waterfront and the protagonists of the development and transformation of the Lake shores for the needs of water tourism development - sport and recreation. There is another important factor that should be taken into account in the considerations. It is a matter of development of the degraded Dąbie quarter (German Damm), once an independent city with a medieval origin, today, since 1939, a district of Szczecin. This district, due to the unsuccessful reconstruction after war damages, remaining on the sidelines of the main development of the city of Szczecin with increasing unemployment, has become a neglected suburban area, requiring the urgent implementation of revitalization mechanisms. One of the ways out of the economic deadlock would be a strong development impulse for this district. The planned modern water recreation and leisure center, could be the right solution to upgrade this part of the Szczecin city.
3. The characteristics of the Dąbie Lake

Dąbie Lake (German: Damscher See) is a delta lake of the Lower Oder Valley with an area of 54 km². From 1939, it is incorporated into the administrative boundaries of the Grand City of Szczecin, which makes it occupies 18% of its city area. It is the fourth largest lake in Poland and the largest in the West Pomeranian Voivodeship. It has a developed coastline with numerous bays, several islands and channels connecting them with the mainstream of the Odra River. The lake has a relatively small average depth of 2.6 m. Two rivers flow into Lake Dąbie, and from the mainstream of the Odra River - three canals and a branch of the Odra River - the Regalica River. In addition, Dąbie Lake connects with three passages with the main current of the Oder. Dąbie Lake is divided into the greater northern part, the so-called Dąbie Wielkie and the smaller southern part, Dąbie Małe. The bottom of the lake is mostly sandy, which was used to create several sandy beaches, including City Beach in the Dąbie district. The banks of the lake are mostly covered with reeds, ideal breeding places for many species of water birds. This extremely interesting topographic and hydrological system and landscape values of Lake Dąbie make it attractive for various forms of water sports and aquatic recreation, but it is also the seat of many species of birds and protected animals (eg white-tailed eagles, grey herons, chambers, wild geese, swans, as well as beavers, otters). For these reasons, the large area of the lake was covered by the Nature 2000 protection zone and the area of special protection of birds, the "Lower Odra Valley". However, it should be borne in mind that Lake Dąbie also plays an important economic role as the inner lake of the city of Szczecin and a key element of the system of inland waterways connecting them with waterways through the sea. A water track from the German port of Schwedt through the Regalica River to the Pomeranian Bay on the Baltic Sea has been run through part of the lake. The fairway is 14.5 km long, 150 m wide and 10 m deep. The Dąbie Lake is the only lake in Poland that can be reached by sea-going vessels. The lake is also located on the West Pomeranian Waterway due to excellent sailing conditions and infrastructure, which consists of 9 marinas [2]. Recreation and sports development around the Lake, however, should be regarded as not far enough, as for the growing needs and scale of opportunities given by the conditions of location of the Lake in the center of the Szczecin urban system.
4. Planning problems
Spatial planning should define the limits of investment interference and protected areas, but should also indicate the directions and possibilities of spatial development of the city. Most of Szczecin's local plans are restrictive or intended for one specific spatial solution developed in the Office of Spatial Planning without the possibility of introducing alternative solutions. The reason is maybe the lack of faith of local authorities in creative solutions to difficult urban development problems. The spatial planning system in Poland is unfortunately unfriendly to possible changes in the local law and in case of the need of changes, requires practically all the planning procedures to be repeated. In many cases, it means that potential developers and investors will withdraw from the investment. The assumptions of the local spatial development plans for Szczecin in the vicinity of Lake Dąbie assume the preservation of the extensive use zone associated with the protection of the natural landscape and species protection of birds and animals, but also allow the development of port infrastructure, unfortunately to a limited extent. Discussion of the problems resulting from the adopted local plans in the analyzed area of the city [3, 4] are:

- a provincial road, planned around the southern shore of Lake Dąbie ul. Nowoprzestrzenna [4],
- cubature and functional limitations of the building in direct contact with the front of Dąbie Lake [3],
- failure in revitalization activities in the context of the relation between the Dąbie district and the Dąbie Lake waterfront area.

![Figure 4. Marina of the camping in Dąbie Lake waterfront, [5]](image)

The whole southern shore of Lake Dąbie adheres to the developed port and city areas. The most important elements of the development of these areas are: Dąbie airport, 2 marinas, multi-family and single-family housing, camping, Scouts Sea Resort, City Beach, fishing settlement. Around the south shore of the lake runs a communal road connecting the center of Szczecin with the Dąbie district. Due to the transit nature of this way (from the left riverbank of Szczecin to the East and North), the extension of the road with better parameters, with collision-free intersections is planned. However, there are many...
doubts about such an extension. Its construction would destroy the existing housing estates structure located in the immediate vicinity of the Lake and would cut off the Lake Dąbie from adjoining developed urban areas. Implementation of this road requires a renewed discussion on the concept of integrating the waterfront of Lake Dąbie with the city.

Cubature restrictions in local plans favor in this area low and extensive development. From the point of view of shaping the urban landscape of the city’s intersection (Dąbie district) with the Lake landscape, such a solution lowers the city's status and blocks the possibility of creating a city’s image and functional center that uses the advantages of the aquatic context.

Functional limitations intended to reduce human pressure on the natural environment included, for example, limitation of the number of hotel rooms in the hotels at the waterfront to 100 beds in total. As a result, such limitations could make the planned investments unprofitable, and investors could resign from undertaking of the construction of hotels in this area.

Figure 5. Aerial view over the investment and Dąbie district in Szczecin. Source: Foto by Jacyk, [6]

5. The Hot Spring Bay concept
Already a few years ago, the Chinese company Tian Yu became interested in water-based areas at Lake Dąbie in the Dąbie district of Szczecin. For a long period of time, an appropriate planning formula [3] for a large hotel and recreation investment was worked out together with the City Hall and City Council. When these efforts were crowned with the success of adopting a local development plan for the area of the south-eastern shore of Lake Dąbie, the project works were commenced. The design of a 5-star hotel was commissioned to the Szczecin architectural office of architect Paweł Zaremba [7]. In the post-industrial area, regained on the edge of the Dąbie Lake, after the demolition of the former grain granaries, an impressive building with a seventeen-story accent in the form resembling a sailing ship, the “Spinaker”, was designed. The area where the object was located was surrounded by the former canals and quays of the grain port, creating an interesting and unique aquatic environment for the new facility. In the local spatial development plan, spatial conditions allowing for partial landing of water reservoirs (channels) as well as for construction in the space above the water surface were determined very precisely. The pedestrian-bicycle route, which is planned around the entire Lake Dąbie, was also integrated in the local development plan.
The investment area however showed an insular character, because the space around was built in random, temporary buildings and overgrown with bushes, what could have a negative image for the hotel. Tian Yu company has discussed with several architects to generate the spatial arrangement idea for the surroundings of the planned hotel. The aim was: firstly, to create urban space around the hotel premise, at the interface with the water landscape and the Dąbie urban district, and secondly to propose a function for the whole year use of the entire complex. Investors were aware of the seasonal nature of the use of the waters of the Dąbie Lake, which in the period from October to April is practically not available for water sports and aquatic recreation. During this period the use of the planned hotel complex due to its unattractive surroundings and a long distance from the center of Szczecin could be severely limited.

6. Results

The author’s design office urbicon Ltd. Has been asked to elaborate a concept for the arrangement of the surroundings of the planned Hotel. The proposed authors solution was based on two basic assumptions – the spatial and functional one. The proposed spatial assumption was to retransform the system of old channels around the planned hotel complex by creating a homogeneous water surface in the form of a circle, connected spatially and functionally with the Dąbie Lake. The dominant feature of this reservoir would be a planned hotel with its high accent in form of the apartments tower, called “Spinaker”. The circular form of the waterfront of the planned reservoir would create a water edge and ensure direct contact with water for residents and hotel guests, as well as the possibility of mooring motor yachts. Around the water reservoir, apartment, service and office facilities have been designed and connected with the service of tourism and sport, with forms adapted to the circular shape of the proposed wharf. In terms of functional assumptions, it was proposed that the complex of the whole new hotel and recreation complex should be based on the use of renewable energy sources in a wide range. The possibilities of such solutions were analyzed, taking into account solar energy, photovoltaic cells, wind and geothermal energy.
The analysis showed that the most favourable solutions would be:

- energetic wind generators, with vertical axes of rotation, with net protection against birds [9]. Their location would have to take into account the prevailing western directions of the wind and the necessity to extend their exposure as far as possible from the wind sheltered lake bays. The generators could power the hotel and recreational facility all year with electricity, assuming the possibility of compensation for surplus energy through the local electricity distributor (ENEA);
- geothermal energy from a deep borehole (about 1600-2000 m), from where it is possible to obtain thermal water with a temperature of about 70 °C. Thanks to this, it would be possible to supply heat to the entire hotel and recreation complex, as well as using excess heat, a large part of the city (Dąbie district). But geothermal water could provide much more. First of all, it would be possible to create a year-round aqua park with outdoor pools with temperatures of 27-35 Celsius, as well as the use of geothermal brine for therapeutic baths, which would allow the creation of a SPA therapy center.

Tian Yu accepted the spatial and functional solutions proposed by the author. The project was given a new marketing name: Hot Spring Bay. Immediate steps were also taken to bring these concepts to life. The company acquired additional investment areas surrounding the hotel and recreation establishment, contacts were made with the local thermal energy distributor, an application for geothermal drilling was made and, in the vicinity of the hotel and planned recreation, SPA and leisure facilities, a design company was selected for the tender to design the new thermal aqua park complex.

“The Hot Spring Bay hotel and apartment complex will change this part of Szczecin beyond recognition. In the place of old, neglected buildings and quays, a modern space will be created, which will attract tourists and lovers of active leisure all year round. The residents of Szczecin and the region will benefit from the public marina as well as SPA, conference and banquet services offered by the hotel” – one can read on the investment website [8].

The first stage of the planned investment complex will consist of three main facilities:

- The five-star Maritim hotel with nearly 460 rooms, (according to the recently signed intention letter with Maritim enterprize); [8]
- The "Spinaker" apartment building with 17 stories, next to the Maritim Hotel;
- The new marina complex, which will be run by the Sun & Sail Foundation (its founders are Tian Yu and Recca Investment companies). This element of the complex is already under construction. Its cost is PLN 12 million, of which PLN 4.8 million comes from co-financing from the Regional Operational Program. In all partial projects and in the overall design of the entire complex, sustainable development became the priority issue.

The further investment tasks are the thermal aqua park and apartment housing around the artificial bay with different amenities. This project will surely attract also other investments to the Dąbie district, which will be able to benefit from the new investment inputs. It will also foster the municipal plans to build better road and public transport connections. The project has a big scale of investment – as it is for the local market situation. But it has a strong driving forces, which consists of the beautiful natural environment, visionary architecture, unique functional amenities (thermal aqua park) and – what is very important – financial security covered by the Chinese capital.
Figure 7. Views of the planned Spinaker and Maritime Hotel, the one of the components of the Hot Spring Bay project, [10]

7. Conclusions

This project, still in development, shows the possibilities of alternative leisure developments to the sea-coastal ones at the Baltic Sea Coast, very popular in Poland. It represents the method of combining different positive features of the climate and waterfront locations with the investment opportunities, what could contribute to a success of the one common, overall idea of leisure and sport center on the city edge. There is a need of changes in the town planning goals structure, taking more seriously into account: the preferences of active people (spending free time for leisure, recreation, nature observations, health care and water sport), economic opportunities (investment readiness of foreign and domestic investors) and overall climate change in the Central Europe Region. The understanding, that the development of the city does not take place only through the creation of local plans is crucial. Local
plans are building the social and economic commitment establishing necessary spatial regulations, but the real driving force behind the urban development is synergy in the cooperation of many entities involved in the whole investment process from planning to realization and use. It should be expected that the success of this investment may permanently change not only the way how it should function at the Dąbie waterfront Edge, at the junction with the residential district, but also change the perception of this district in the context of the entire city. A new development impulse in the form of the geothermal aqua park and hotel complex may contribute to the year-round revival of this part of the city, to the improvement of local life conditions, elimination of unemployment, and may change the perception of this part of the city of Szczecin as declining and demanding social intervention.

The solutions presented in the Hot Spring Bay project are showing, that it is possible to adjust the investment processes to the prior ideas of the overall planning and opposite, to remodel the planning assumptions in order to save environmental values and achieve other values such as city cohesion, increasing its attractiveness, building local residents' identities and meet their expectations of improved life conditions. The precondition for the success is the synergetic co-operation of all parties involved in the planning and investment processes.

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