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Research paper

Potentials and opportunities for revitalisation of post-harbour areas based on the Port of Żerań in Warsaw case study

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Abstract: The revitalisation of post-harbour and waterfront areas is an issue that has been subject to intensive public discussion over the recent years. The topic is becoming increasingly popular due to the high value of post-harbour areas. They are distinguished by their aesthetic, environmental and recreational qualities. The possibilities for developing such areas are considerable: residential development, waterfront park areas, public spaces, a variety of service developments. So far, many successful projects of such transformation have been carried out. This article focuses on an analysis of the conditions and potential of the Port of Żerań in Warsaw and the possibilities for its transformation. The study was carried out by desk research using available spatial data and information provided in scientific publications. A survey was also carried out on a group of 146 Żerań residents. The results of the analyses showed that the local environment is under heavy anthropopressure and the social and technical infrastructure is in very poor condition, while the area also has many advantages and significant development potential. The most important of these include the convenient location, the favourable ownership situation, the multitude of areas not yet developed and the presence of elements related to former activities. The current condition of the harbour offers opportunities for development in both recreational and leisure and residential directions. It is also possible to create a mixed-use neighbourhood, and the potential development would have a positive impact on the entire neighbourhood.

Keywords: post-harbour areas, revitalisation, the Port of Żerań, redevelopment, environmental conditions

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1. Introduction

The revitalisation of degraded areas in cities has a very significant impact on their development. Urban development is multidimensional and dependent on many factors, while the number of variables influencing its disruption is basically unlimited [1]. Particularly key from the point of view of needs are post-industrial, post-military, post-oil and post-harbour sites [1]. This topic is becoming increasingly popular in an era of on-going urbanisation and the search for new space to enhance in the city. Post-harbour areas are often distinguished by their numerous aesthetic, environmental and recreational values, as well as their favourable location. Consequently, directions for the possible development of such areas are elaborated: from residential sites, waterfront parks, public spaces, service areas offering workplaces to land reserves used in emergency situations such as the pandemic [2], or the refugee crisis [3]. The complexity of the issues related to the need for the rational management of port and post-port areas has been captured in the name of a separate scientific field, port geography [4].

The transformation of post-harbour areas is a trend that has been present for many years in developed countries in Western Europe and around the world [5]. Areas of former docks, peninsulas, islands and platforms of river and sea ports are revitalised. The need for this process is associated with technical and economic transformation worldwide. It stems from the need to build new ports due to the unsuitability of old ones for container transport and the relocation of shipbuilding to Asian countries [6]. Ship freight traffic is moved out of city centres, consequently old urban docks are becoming degraded. Revitalisation of such areas is necessary. City authorities see many benefits in these activities, as the post-harbour areas make a very attractive space for the development of housing and office buildings [7]. Such development helps to limit the phenomenon of suburbanisation and fits in with the concept of the compact city [8]. It is possible to attract a lot of private investment, which can contribute to significant financial returns for the city [9]. It is also a potential to create interesting public spaces and amenities on post-harbour areas, the location of which intensifies tourism [10].

However, undertaking such transformations requires huge financial and organisational resources. For this reason, among others, such ventures have not been popular in Central and Eastern European countries to date. They involve considerable risks and a long-term financial investment [11]. The revitalisation of post-harbour sites does not always turn out to be successful, so areas should be selected for redevelopment after a number of analyses of the development conditions have been carried out. Location and transport accessibility are very important and determine the potential for development. Areas located in the very centre of an urban agglomeration are more likely to become a new cultural, educational or office centre [12]. If the area is located outside the centre of the city, the public transport connection to the centre has additional value and the area has a greater chance of being used for housing or recreational areas. The chances of a successful revitalisation process increase when favourable development is available in the vicinity of the site e.g. developing multi-family housing [13]. An element that can significantly contribute to prolonging the revitalisation process and increasing costs is the unfavourable ownership situation. The

presence of many small plots of privately owned land and plots with undetermined owners results in a prolonged buyout process. The most favourable situation occurs when large plots of land owned by the city are available. Successful redevelopment is also facilitated by the presence of historical elements indicative of former use [14]. Such elements create interest and contribute to the identity of the area. Before selecting a revitalisation site the environmental conditions should be analysed. Nowadays they are often overlooked or hardly taken into account, especially in the case of waterside areas [15]. The presence of soil, water and air pollution is important. For some sites, high levels of soil contamination and consequently costly remediation may call into question the viability of the investment. However, land remediation is often necessary for the site to be reused. Nowadays, with cities needing new spaces in central districts [16], contaminated brownfield sites should not be excluded from redevelopment simply because of the high cost of conversion. As the example of Thames Barrier Park in London shows, it is possible to develop a heavily contaminated site as a public green space so that it also benefits economically [17]. In addition, not every investment by the city has to bring a direct profit to the budget, as elements such as residents' comfort, health and social satisfaction often cannot be priced, but are significant.

The spectrum of port activities cannot be forgotten either, which directly affects the labour market in the port city. The port generates both direct employment as well as from facilities indirectly related to port activities [18]. When giving a new function to an area, it is therefore necessary to balance possible economic and social losses in this respect.

The above-mentioned conditions have been analysed for the Port of Żerań (Warsaw, Poland), which shows that the revitalisation of this post-harbour area would bring many benefits to the local community and the city as a whole.

Desk research was complemented by an analysis of successful cases of post-harbour area revitalisation. Some of these had a significant impact on the functioning of entire cities, while some were of local importance. A list of cases with descriptions is provided below (Table 1).

Table 1. Case studies of the revitalisation of post-harbour areas

Location	Type of transformation	Features of the revitalised area	Literature
Royal Victoria Square (London, United Kingdom)	The former harbour area has been transformed into an open public space with a high proportion of greenery and elements that relate to the history of the site. The area is now visited by local residents as well as tourists.	An area located about 10 km from central London, very well connected (proximity to the airport, underground), with uniform ownership, contaminated, with potential to use elements of the harbour cranes for redevelopment.	[19, 20]

Continued on next page

Table 1 – *Continued from previous page*

Location	Type of transformation	Features of the revitalised area	Literature
Thames Barrier Park (London, United Kingdom)	The degraded, heavily polluted former dock and petrochemical plants area was transformed into a waterside urban park serving the residents of a nearby residential area. The park was awarded in 1995 in an international competition for the design of an urban park.	An area located approximately 10 km from central London, very well connected (proximity to airport, rail), with uniform ownership, contaminated, with the potential to use elements of the former docks in the park structure.	[17, 20]
Eastern Docklands (Amsterdam, Netherlands)	The disused port area has been transformed into a compact mixed-use neighbourhood with housing of varying standards (30% of the housing is social housing), with active use of the quays and development facing the water body.	An area located in the city centre, well connected, with a uniform ownership structure, contaminated, with the possibility of using the former dock structure.	[6, 21]
Norra Älvstranden (Gothenburg, Sweden)	The former port and shipyard area was transformed into a compact mixed-use district with a university campus. A large part of the district has been allocated to green spaces and traffic has been restricted.	An area located in the city centre, well connected, with a uniform ownership structure, contaminated, with the possibility of using the former shipyard basins.	[6, 22]
Sluseholmen (Copenhagen, Denmark)	Part of the harbour area has been redeveloped, part has been allocated to high-standard residential areas and part to an office district and shopping centre.	The area is located about 3 km from the centre of Copenhagen, moderately connected (metro planned), with the possibility to use the canals and elevations of former buildings.	[23]
Västra hamnen (Malmö, Sweden)	The former harbour and factory area has been transformed into a mixed-use sustainable neighbourhood that is powered by 100% renewable energy. Pedestrian-friendly streets have also been introduced. It is now considered the city's most luxurious neighbourhood.	An area located in the city centre, well connected, with fragmented ownership, contaminated, with preservation of port and quayside functions.	[24]

Continued on next page

Table 1 – *Continued from previous page*

Location	Type of transformation	Features of the revitalised area	Literature
Hafencity (Hamburg, Germany)	The former city port area has been transformed (still in process) into a modern mixed-use district. There are numerous public spaces, various service facilities and housing for social groups of varying wealth.	An area located in the city centre, well connected, with a fragmented ownership structure, contaminated, with preservation of both typical harbour spaces and quays, as well as historic industrial buildings.	[25, 26]
Park of Nations (Lisbon, Portugal)	The former harbour petrochemical plant area was transformed into a multifunctional district with public spaces and facilities of urban and regional importance. The starting point was the organisation of the international exhibition EXPO'98 and the process itself is called re-revitalisation.	An area located about 15 km from the centre of Lisbon, but very well connected (proximity to the airport, railway, metro), with the possibility of creating a new local centre, heavily polluted, with the potential to use elements of the waterfront to create a new public space.	[27, 28]
Port Adelaide (Adelaide, Australia)	The revitalisation of the harbour involves the creation of 2,000–4,000 homes along with extensive pedestrian-friendly spaces and a large proportion of public open space. The concept also includes the provision of 1,000–1500 jobs.	The area is approximately 15 km from Adelaide city centre, but well connected, with the potential to create a new local centre, and with the potential to use elements of the quay and elements of the harbour cranes for redevelopment.	[29]

Source: own elaboration.

2. Materials and methods

The analysis was carried out for the 126.89 ha area of the Port of Żerań, which is located on the right bank of the Vistula River in the Białołęka district of Warsaw (Poland) (Fig. 1). The site was used as a transshipment port for construction raw materials in the 20th century. Today, the port is surrounded by multi-family housing; industrial and service buildings and railway areas.

The study was carried out using the desk research method. Spatial data concerning current land development and land use (BDOT – Database of Topographic Object) [30], historical aerial photographs (resources of the Warsaw City Hall) [31], Sentinel 2A satellite images (USGS 2016, USGS 2022), numerical terrain model with spatial resolution of

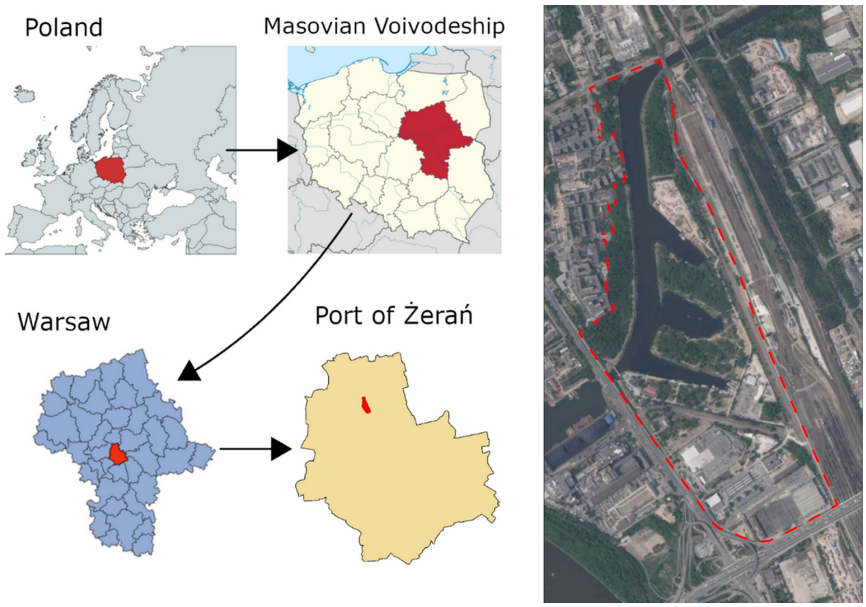

Fig. 1. Location of the study area; Source: own elaboration

1m (GUGIK – Central Office of Geodesy and Cartography) [32], land ownership maps (resources of the Warsaw City Hall) [33], planning and strategic documents for the city of Warsaw (resources of the Warsaw City Hall) [34], data and maps on geology and natural environment hazards (GDOŚ – General Directorate for National Roads and Motorways, PIG – Polish Geological Institute) [35], flood hazard maps (ISOK) [36] and statistical data (GUS – Central Statistical Office) [37]. Spatial data were processed and visualised in GIS technology using ArcGis Pro software.

The results obtained were analysed in order to determine the needs for transformation of the Port of Żerań area. A field inventory was also carried out and an anonymous survey of residents of nearby settlements conducted from 9 to 13 October 2022. The results of the research were used to develop conclusions that provided the starting point for the formulation of revitalisation measures [38].

3. Results

The study area has been located entirely within the boundaries of the City of Warsaw since 1951. At that time the area was used for agriculture and the Bródnowski Canal was located there. The decision to build the Port of Żerań and Canal in its present form was taken in 1955. The canal and the harbour were opened in 1963 (Fig. 2) and fulfilled their original function for about 30 years [39]. In the following years, transshipment activities were gradually reduced and were completely abandoned in the early 21st century. Despite this,

there are still elements in the area that illustrate the former function of the site (moorings, metal chains and metal pipes). Old, rusty vessels can also be found here (Fig. 3). With the end of the harbour's activities, the intensity of industrial activity in the surrounding area decreased significantly. In the second decade of the 21st century, multi-family housing began to appear intensively in Żerań. Several housing estates were built, such as: Riviera Park, Port Żerań, Osiedle Nadwiślańskie, Atal Marina.

Fig. 2. Opening of the Żerań Canal 28.04.1963; Source: https://fotopolska.eu/111691,obiekt.html?map_z$=$17{&}f$=$1379105-foto

Fig. 3. Old vessels at Żerań Port on 7 May 2022; Source: own elaboration

No residential development has appeared in the analysed area itself to date. The major part of the area (24.89%) is made up of forest and wooded areas. A large share is also made up of managed greenery (19.49%) and surface water (18.16%). A smaller share is accounted for by undeveloped industrial and warehousing land (8.47%), industrial and warehousing

buildings (7.97%), squares (7.63%), railway land (7.13%), service buildings (5.24%) and arranged greenery (1.01%) (Fig. 4) [17].

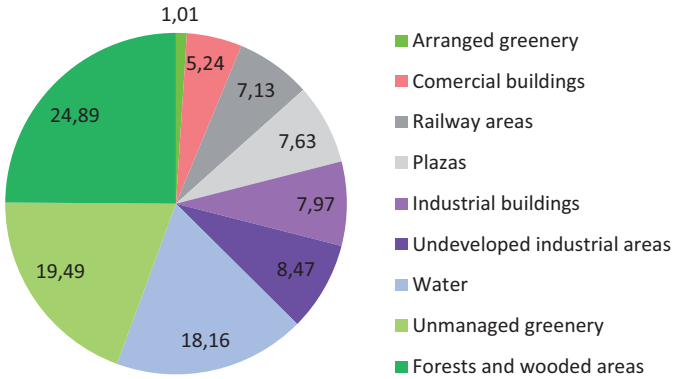

Fig. 4. Land use structure in the study area; Source: own elaboration based on BDOT10k Database of Topographic Objects

Most of the former Port's land is owned by public entities: the City of Warsaw (41.6%) and the State Treasury (41.3%), while a significant portion of the State Treasury land is granted in perpetual usufruct (20.4 out of 52.4 ha). The remaining plots (17.1%) belong to private owners, the largest of which are owned by Auchan (9.17 ha) and Promack (7.97 ha) (Fig. 5) [33].

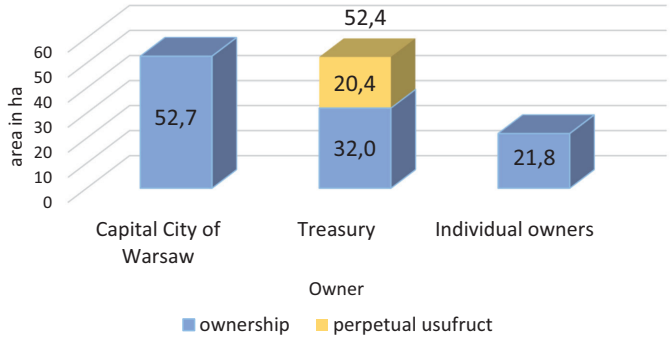

Fig. 5. Ownership structure in the area of the Port of Żerań; Source: Own elaboration based on land ownership map of the capital city of Warsaw

The Port of Żerań well connected to the city centre from the point of view of access to public transport. It takes 25–30 minutes to get to the centre by public transport and 33 lines of public transport (29 bus, 2 tram, 2 railway) run near the area. Nearby, there is also a communication route leading from Warsaw to Białystok (S8 expressway) and a Park & Ride car park, where you can leave your car to change to public transport, implementing the idea of a multimodal transport system.

The Port of Żerań is subject to anthropopressure from a number of industrial plants. In the vicinity, the Żerań Combined Heat and Power Plant is located, a warehouse for hazardous substances, two waste disposal facilities and a discharge of treated sewage into the Vistula River. There are several industrial sites in the area itself, including a waste recovery and disposal facility. On the left bank there is an area with soil contamination associated with industrial production. Substances such as lead, ethylbenzene, mercury, xylenes, benzofluoranthene, styrene, benzopyrene are present there [35]. However, the concentrations of these elements do not exceed the site approval standard for recreational and leisure development [40]. Aerosanitary comfort in Żerań is good. The annual average concentration of PM2.5 in the study area is 17.5–20.5 $\mu m/m^3$, while that of PM10 is 20–30 $\mu m/m^3$. On the other hand, the annual average concentration of nitrogen dioxide is 20–30 $\mu m/m^3$ [41]. These values correspond to the statutory standards. The Port of Żerań is strongly affected by noise from busy traffic arteries. Its average long-term immission level exceeds 50 dB in most areas. The operation of the crushing plant, which also emits noise, is also a problem [42].

The canal-side trees are littered (Fig. 6) and debris sites can also be found there. Groundwater quality in the harbour area is poor and the water requires complex treatment. Quality indicators exceed the requirements for drinking water in calcium (Ca), nitrite (NO_2) and sulphate (SO_4) [43]. The water in the canal is contaminated with construction waste and rubbish (Fig. 6 and 7). The soil pH at a depth of 0.0-0.3 m is alkaline and ranges from 8.0–10.3 [44]. The geochemical condition of the soil is very good for most of the area and meets the standard of a protected area.

Fig. 6. Litter in the Port of Żerań area on 7 May 2022; Source: own elaboration

The condition of the greenery is poor and has deteriorated over the last six years. This was shown by an analysis of the Normalized Difference Vegetation Index (NDVI). It shows the amount of chlorophyll and biomass in plants. A higher value of the index indicates a higher amount of chlorophyll and biomass and, consequently, a better state of greenery. The NDVI value for the green area on the left bank of the channel dropped from 0.61–0.78 to 0.3–0.61. The value of the index for the wooded area located in the north-eastern part of

Fig. 7. Litter in the Port of Żerań area on 7 May 2022; Source: own elaboration

the site dropped from 0.45–0.78 to 0.15–0.6, while the NDVI of the green area located at the southern bay dropped from 0.3–0.78 to 0.15–0.5 (Fig. 8). The biologically active area in the southern part of the analysis area has decreased.

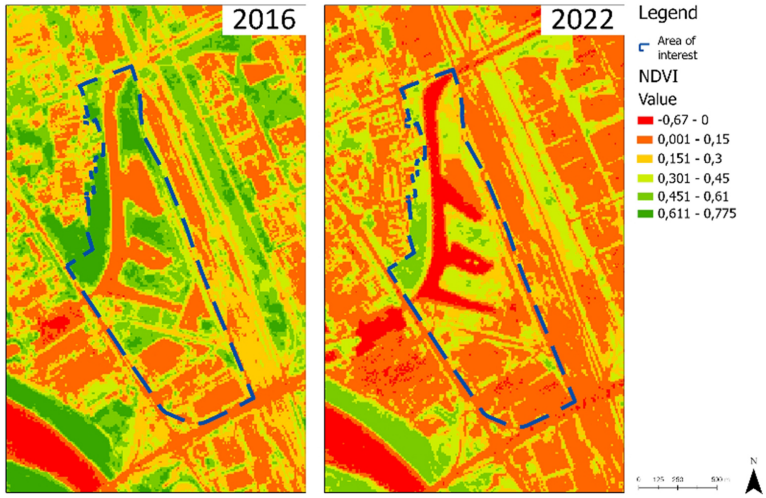

Fig. 8. NDVI in the Port of Żerań area in 2016 and 2022; Source: own elaboration based on Sentinel 2A data

The main tree species present in the analysis area are oak, poplar, lime, maple, white robinia and ash-leaf maple [45]. White robinia and ash-leaf maple are invasive, non-native species that are dangerous to the native flora. Poplars are currently dying and moving into a phase of declining forms due to their age [46]. They will need to be removed in the near future, resulting in a significant reduction in the number of trees that constitute the waterside vegetation.

In the area of the project study, the dominant substrate is the sands of the lower Vistula floodplain terrace with an admixture of gravels originating from the Pleistocene. In the south-western part of the area, there are also lightweight silts on fluvial sands. Rainwater infiltration conditions are very good. The genesis of these areas is inextricably linked to the Vistula flowing nearby [47].

The presence of the Żerań Canal results in a significantly different landform (Fig. 9). The water level in the Żerań Canal is usually about three metres higher than in the Vistula. The left bank of the canal is steep. The difference in height between the water level and the top of the slope is 2–4 metres. The right bank is more diverse. The northern shore of the northern bay and the southern shore of the southern bay are harbour jetties located about two metres above the water level. The remaining shores are natural and slope gently down to the water [32]. This landform largely offsets the flood risk. Flooding of the harbour is only possible if the flood embankment on the Vistula is completely destroyed [36].

Fig. 9. Landforms in the Żerań Canal area on 7 May 2022; Source: own elaboration

The technical condition of the buildings in the study area is very poor. Many old, unrenovated objects are located here. Three buildings out of about 50 in the port area are completely unused. The worst condition of these is the building of the former GlobalExpo convention centre. It is distinguished by broken and cracked windows, damp patches on the façade, numerous graffiti and falling plaster (Fig. 10). Most of the remaining buildings are currently used to store construction materials or sports equipment of local sports clubs. The Port area lacks a bridge to allow residents to cross to the other side of the canal. The roads in the southern part of the analysis area are in very poor condition and cycling infrastructure is limited to a single path along the site boundary.

A total of 146 people took part in an anonymous survey conducted from 9 to 13 October 2022 on a group of Żerań residents using Facebook. Apart from answers to questions about preferences related to the Port of Żerań area, no personal or sensitive data was collected from participants. Residents were asked whether they agreed with the following statements (with responses allowed for ‘definitely no’, ‘rather no’, ‘hard to say’, ‘rather yes’, ‘definitely yes’):

– The harbour and the Żerań Canal offer many leisure activities.
– There is a lack of a cultural institution on the Żerań Canal.

Fig. 10. GlobalExpo convention centre building on 7 May 2022; Source: own elaboration

The first question was answered "definitely no" and "no" by the majority of residents (13.7% and 38.4%). Less than 40% of respondents had the opposite opinion ("definitely yes" and "rather yes" answers were indicated by 9.6% and 30.1% of respondents) (Fig. 11). The survey also included a question about whether there was a lack of a cultural institution in the vicinity of the Port of Żerań. When asked whether there was a lack of cultural institutions in the vicinity of Port Żerański, respondents who gave an affirmative answer constituted the vast majority ("definitely yes" – 39.7%, "rather yes" – 28.8%). One in four residents gave a negative answer (Fig. 12).

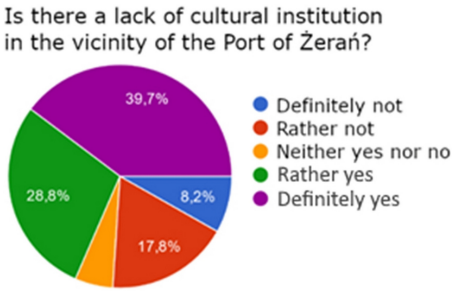

Fig. 11. Results of the survey – part I; Source: own elaboration

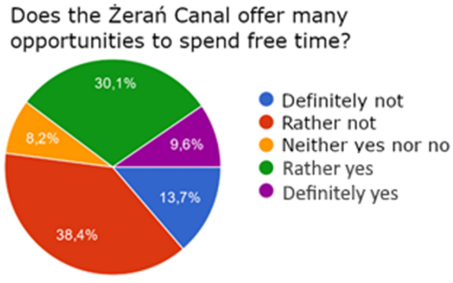

Fig. 12. Results of the survey – part II; Source: own elaboration

4. Discussion

The Port of Żerań is an area with many problems. It is subject to strong anthropopressure as a result of growing residential development and intensive industrial activity. Nearby plants emit air, water and noise pollution. The Port area is directly bordered by the complex of the Żerań Combined Heat and Power Plant (Fig. 13).

Fig. 13. View of the Żerań CHP plant on 7 May 2022; Source: own elaboration

As a consequence, groundwater and soils, for which infiltration conditions are very good, are contaminated. The area is also littered. Under such conditions, greenery is unable to develop properly. The presence of invasive species leads to replacing native flora. Consequently, the quality of the greenery and the presence of chlorophyll decline. The degradation of green areas and the constant exposure to noise have a negative impact on animals. There is a gradual decline in the biodiversity of green areas along the Żerań Canal. However, the problem of the Port is not only environmental. The technical and social infrastructure is in a terrible condition. Many buildings have damaged facades and some also have broken windows. Roads should be renovated and expanded by infrastructure for cyclists. The Port of Żerań lacks a cultural centre and an area for attractive leisure activities. Despite many negative conditions, many positive aspects and the area's extraordinary potential on a regional scale should be appreciated. One of its greatest assets is its location. The area is located in a flourishing district, relatively close to the centre of Warsaw and is well connected with other parts of the city. The Port area retains elements that illustrate its industrial history, which is a significant asset in creating the identity of the place. Most plots of land belong to the City of Warsaw and the State Treasury. This gives more freedom to carry out transformations and could accelerate the revitalisation process. The area is mostly undeveloped, so it is possible to plan the space with great freedom. The relief of the surface prevents flooding, and the canal itself has great ecological potential. The growing population of Żerań necessitates the creation of a new park and there is no area more suitable for this purpose than the Port of Żerań.

5. Conclusions

The development opportunities of the Port of Żerań are extensive, as the site has extraordinary potential and its area covers 126.89 ha. One of the most important problems to be solved is the poor condition of the natural environment and the declining biodiversity. A number of environmental measures and eco-solutions can be a solution in this case [48]. The problem of increasing anthropopressure and decreasing biologically active area can be addressed by introducing blue and green infrastructure elements, which will also contribute to reducing the negative effects of extreme weather events related to climate change. Bioretention basins and container rain gardens can be used in areas with high groundcover, while bioretention ditches can be used along pedestrian and cycle routes, which will have a positive impact on the aesthetic value of the space. Green walls, roofs and rain barrels can be used to increase water retention, while noise barriers would reduce noise impact. The condition of the air can be improved with air-purifying murals made of paint infused with titanium particles [49]. Piezometers could be used to monitor groundwater levels. Invasive species should be cut down to protect the biodiversity of native species [50]. Naturalising the canal and introducing more aquatic vegetation species would create natural aquatic habitat, increase biodiversity and improve water chemical condition [51]. As the case of Thames Barrier Park in London shows, it is possible to adapt a heavily polluted site to serve a recreational function [17].

The considerable area of the site offers a possibility of introducing an entertainment function in addition to the recreational function. The construction of an expanded water sports centre and other sports services is possible. The harbour docks and numerous terrain reserves are conducive to such an investment and its implementation would contribute to the popularisation of active leisure. Currently, the Żerań Canal is used for water sports mainly by academic associations. It is possible to organise a public open space, as in the case of Royal Victoria Square in London, which would invigorate local cultural life [19]. Historic remnants of former activities would further enhance the space.

The area is also attractive for multi-family housing developments, fulfilling the principles of passive building and dematerialisation of construction by replacing some components made of traditional materials and conventional thicknesses with thinner structures [52]. Both luxury and mixed-use developments with social housing (as in the case of Eastern Docklands in Amsterdam [6]) are possible. Along with the creation of new housing, the social and technical infrastructure would need to be adapted. Żerań lacks a community centre and a primary school. The roads need modernisation and there is a lack of footbridges and a road bridge over the canal. If the above problems were solved and the service buildings in the southern part of the analysed area were modernised and extended, the area could be considered as a modern mixed-use district, as in the case of Hafencity in Hamburg [26] and Park of Nations in Lisbon [27]. The prefabricated elements of the development with their volumes could further relate to the industrial past of the port.

As part of an innovative technical solution, solar panels could be installed on the roofs of urban residential and commercial buildings to provide electricity to residents. Excess energy generated in the warmer months would be fed back into the municipal grid, in return

for which residents will receive lower electricity bills in the winter months. The solar panels would be equipped with a rotating system that will adjust the positions of the solar panels according to the position of the sun in the sky to maximise energy intake, following the example of the Vauban district in Freiburg, Germany (Figure 14).

Fig. 14. Solar panels on multi-family housing in Vauban;
Source: https://travelfeed.io/@izzynoel/vauban-germany-the-worlds-first-sustainable-living-suburb-1530665550

In the case of the location of an educational facility in the area of Port Żerański, the building can be equipped with a system to capture and store rainwater in an underground tank, based on the idea of sustainable drainage systems [53]. The installation will consist of gutters, pipes, pumps and a tank with a filter (Fig. 15). The stored liquid will be used for flushing water in the school toilet and for watering the school garden. The use of rainwater in the educational establishment will also help to create awareness among students of the importance of rational water management.

Fig. 15. Rainwater interception system;
Source: http://ekoszkieletowy.pl/2018/09/17/odprowadzenie-wody-deszczowej/

The development of the Port of Żerań would have a positive impact on the functioning of the entire district. Considering the extensive potential of the post-harbour area, a prolonged lack of action to develop the area is a waste of an opportunity to develop this part of the city. The neighbourhood's population is growing steadily [54], so there is a need to allocate land for new service centres and parks. It is the responsibility of the public authorities to provide a suitable living environment, while the redevelopment of the area is linked to the model of a compact city and overdevelopment. Creating space in this way has a positive impact on citizens' health and spatial order [55]. It also reduces the phenomenon of suburbanisation, which has many negative environmental effects [56, 57].

A new Land Use Study for Warsaw is currently under development. Establishing appropriate development directions is a huge opportunity for the development of the Port of Żerań. In June 2023, the draft Study was at the stage of being displayed for public inspection. As part of the envisaged directions of development, it envisages the creation of a local centre in the area of the Żerański Port consisting of areas of multi-family housing with permissible services, areas of universal services and public green areas [58]. An effective tool for the development of the area could be a Master Plan or a Revitalisation Project, however no revitalisation programme for the Port area is likely to be enacted by 2030 due to the Municipality Revitalisation Programme for Warsaw currently under preparation [59].

Taking into account the above-mentioned conditions and guidelines in the spatial planning of degraded post-harbour areas may make it possible to successfully reclaim often undeveloped and neglected spaces located in attractive parts of cities. Their comprehensive revitalisation will then make it possible to create places that are functional from the point of view of the local community, offering places to live and work, as well as green public spaces offering a wide range of leisure activities. This applies both to the example of the Port of Żerań in Warsaw discussed, but also to all other post-harbour areas, not used according to their original purpose.

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Potencjał i możliwości rewitalizacji terenów po portowych na przykładzie Portu Żerań w Warszawie

Słowa kluczowe: tereny po portowe, rewitalizacja, Port Żerań, odbudowa, warunki środowiskowe.

Streszczenie:

Rewitalizacja terenów po portowych i nadwodnych to zagadnienie, które w ostatnich latach poddawane jest coraz większej dyskusji społecznej. Temat ten staje się coraz bardziej popularny ze względu na wysoką wartość terenów po portowych. Wyróżniają je walory estetyczne, środowiskowe i wypoczynkowe. Możliwości zagospodarowania takich terenów są znaczne: zabudowa mieszkaniowa, tereny parków nadwodnych, przestrzenie publiczne, różnorodna zabudowa usługowa. Do tej pory przeprowadzono wiele udanych projektów takich przekształceń. Niniejszy artykuł skupia się na analizie uwarunkowań i potencjału Portu Żerańskiego w Warszawie oraz możliwościach jego przekształceń. Badanie przeprowadzono metodą desk research wykorzystując dostępne dane przestrzenne i informacje zawarte w publikacjach naukowych. Wykonano również badanie sondażowe na grupie 146 mieszkańców Żerania. Rezultaty analiz wykazały, że na lokalne środowisko oddziałuje silna antropopresja a infrastruktura społeczna i techniczna są w bardzo złym stanie, natomiast teren ma

również wiele zalet i znaczący potencjał rozwoju. Najważniejsze z nich to dogodna lokalizacja, korzystna sytuacja własnościowa, mnogość terenów jeszcze niezagospodarowanych oraz obecność elementów związanych z dawną działalnością. Aktualny stan portu daje możliwości do zagospodarowania go zarówno w kierunku rekreacyjnym i rozrywkowym, jak i mieszkalnym. Możliwe jest również stworzenie wielofunkcyjnej dzielnicy, a potencjalne zagospodarowanie wpłynęłoby pozytywnie na całą dzielnicę.

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