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USING POLAND'S EXPERIENCE IN REVITALIZATION FOR THE RECONSTRUCTION OF UKRAINIAN CITIES DESTROYED BY THE WAR

WYKORZYSTANIE DOŚWIADCZENIA POLSKI W REWITALIZACJI DO ODBUDOWY ZBURZONYCH PRZEZ WOJNĘ MIAST UKRAINY

Abstract

The topic of the article is the study of the problem of the post-war use of the industrial territories of the South and East of Ukraine, which suffered the most destruction. The purpose of the article: to analyze using of the Polish experience of revitalization for the reconstruction of industrial territories of Ukraine. For this, the methods of historical analysis, comparative analysis, the method of field surveys and photo-fixation are used.

Keywords: factories, Poland, revival, Ukraine, war

Streszczenie

Tematem artykułu jest studium problemu powojennego użytkowania najbardziej zniszczonych terenów przemysłowych południowej i wschodniej Ukrainy. Cel artykułu: analiza wykorzystania polskich doświadczeń rewitalizacyjnych do odbudowy terenów przemysłowych Ukrainy. W tym celu stosuje się metody analizy historycznej, analizy porównawczej, metody badań terenowych i fotofiksacji.

Słowa kluczowe: fabryki, Polska, odrodzenie, Ukraina, wojna

1. INTRODUCTION

The war started by the Russian Federation in Ukraine completely changed the world order and its scale can be compared to the Second World War. The absurdity of this war lies in the fact that the Russian Federation, which considers itself the heir of the Soviet Union, declared the slogan "Never again" from various public platforms and advocated peace initiatives.

The tragedy of this war can be explored in several directions :

- confrontation of the Ukrainian army with the invading Russian army;
- the tragedy of the civilian population in cities and villages;
- problems of temporarily occupied territories and resistance;
- infrastructure destruction;
- destruction of buildings and structures;
- destruction of architectural monuments;
- ecological problems and destruction of the natural environment;
- protection of monuments during the war;
- proposals for post-war reconstruction.

Since humanity did not have the experience of similar war after the end of the Second World War, all the aspects outlined by us are actually innovative directions, the war in Ukraine has its own specifics.

We will focus on only one aspect, namely the problem of the post-war use of territories in the South and East of Ukraine, since the destruction and scale of destruction in these territories – infrastructure, residential, public, industrial buildings – is the greatest in comparison with other territories of Ukraine.



Ill. 1. Destroyed plant in Mykolaiv region. Photo by Serhii Belinskyi, 2022.



Ill. 2. Destroyed school in Mykolaiv region. Photo by Serhii Belinskyi, 2022.

Historically, Donbas was an industrial region focused on the extractive industry, so the cities were focused on coal mining and metallurgy.

The problems of these territories intensified after 2014 with the formation of the so-called Donetsk People's Republic and Luhansk People's Republic. Confrontation with Ukraine and focus on Russia led to the closure of mines and enterprises and the migration of the working population either to the controlled territory of Ukraine or to Russia.

The second wave of the decline of the industrial territories of Donbass and the South is connected with the full-scale war of Russia against Ukraine. Here are a few such examples. Historically, the city of Soledar, which was part of the Bakhmut City Council until 2016, specialized in salt mining since the 17th century. Small-scale mining gradually acquired industrial scale from the 19th century, when industrialists started active construction of salt mines in the region. The development of the salt-mining industry continued both during the Soviet years and during the years of independence. With the beginning of the Russian-Ukrainian war, the city was shelled, residents were evacuated, and in May 2022, the building of the "Artemsil" mine was destroyed. Since the end of January 2023, the city has been under Russian occupation.

Bakhmut, the former Artemivsk, the industrial center of Donbas, for which and around which the fiercest battles are fought, is mentioned in all the news today.



Ill. 3. The battle near Bacmut. Photo by Serhii Belinskyi, 2023.

Since 1951, the "Artemivsk Champagne Factory", the largest in Europe, has been located here, and since 1954, a non-ferrous metallurgy plant has been operating (then a non-ferrous metal processing plant), the "8 Bereznya" factory has been operating since 1960. The city specialized in the extraction of rock salt, the production of building materials, machine building, light and food industry. As of 1975, 64 industrial enterprises were working in the city, among them JSC Artemivsk Machine-Building Plant "VISTEK", OJSC "Makiivskyi Zavod Metalokonstruktsii" (former plant "Dorindustriya"), Artemivsktransbud, "Artemivsk

Champagne Factory", LLC Artemivsk Machine-Building Plant "PROMMASH"; LLC "Zavod tsvetnykh metallov".

Avdiivka is located not far from Donetsk. In 1946–1963, the Avdiivka ceramic plant worked here, the main enterprise before the Russian-Ukrainian war was a coke chemical plant (Avdiivka Coke Plant), which was considered the largest producer of coke, sulfuric acid and mineral fertilizers in Europe. In addition to it, a factory of reinforced concrete products and building details operated in the city; Construction and installation department "Donkoksokhimbud", JSC "Avdiivka Metal Construction Details Plant (AZMK)"; "Buddetal" plant, Avdiivka experimental plant of non-standard equipment, electromechanical plant; quartz sand quarry; railway transport service enterprises — Avdiivka experimental plant of non-standardized equipment (AEZNO); mushroom growing enterprise "Miko-food"; food factory; confectionery and sausage shops; factory for the production of wet wipes "Delita", factory of sewing and haberdashery. More than 70% of working citizens were involved in the industrial sector of the city.

Russian troops practically destroyed the city of Mariupol in the south of the Donetsk region, which occupied a leading position in Donbass in the production of metallurgy and finished metal products (Mariupol Metallurgical Plant, "Azovstal"), in the production of machine-building ("Azovzagalmash", Mariupol Heavy Machine-Building Plant, Ship Repair Plant, Elektrobutprilad Plant, Thermal Plant, Azov Electrostal, Mariupol Research and Experimental Plant, "Magma" Plant).

Today, most of these enterprises are damaged, destroyed in whole or in part, and the percentage of destruction at the end of the war remains unknown.

However, taking into account the huge losses caused to the industry, the following questions are already being raised today:

- is it expedient to rebuild such a large number of enterprises focused on the use of coal, if humanity saves for renewable sources of energy – wind, solar, even nuclear;
- is it expedient to rebuild all the destroyed cities and settlements, which were historically focused on coal mining and harmful industries and for whom to rebuild them, since the population has left;
- in which cases it is expedient to rebuild enterprises with preservation of their previous function, but with modernization, in which cases it is impractical to rebuild them, and in which cases they should be revitalized, while referring to well-known foreign examples of revitalization.

Therefore, the authors of the article focused on the study of the problem of the post-war use of the industrial territories of the South and East of Ukraine, which suffered the most destruction .

The topic of the article determined the corresponding goal: to analyze the use of Polish experience of revitalization for the reconstruction of industrial territories of Ukraine. For this, the methods of historical analysis, comparative analysis, the method of field surveys and photo fixation, and the grapho-analytical method are used. The method of historical analysis allows to trace the history of industrial development of the territories of the South and East of Ukraine, the method of comparative analysis proves the difference between monuments of industrial architecture in Poland and monuments of industrial architecture in Ukraine, the method of field surveys and photo-fixation is the basis for project proposals and conclusions. The grapho-analytical method represents specific proposals for the revitalization of industrial facilities in Ukraine.

2. FEASIBILITY OF REVITALIZATION OF INDUSTRIAL ENTERPRISES OF CERTAIN INDUSTRIES

In order to specify the direction of the research and narrow down the overview of the researched aspects, the authors first of all analyze the effectiveness and expediency of reprofiling enterprises of various profiles. At the same time, they were based on the reference literature and on the author's research of Oleksandr Ivashko.

The topic of repurposing unprofitable or non-working industrial enterprises is relevant not only for the post-war recovery of Ukraine, but also for many developed countries of the world. These aspects described, for example, in monographs "Old Buildings. New Design" (Charles Bloszies), "Converted Industrial Buildings" (Tamara Rogic). Today, several directions of repurposing such objects can be distinguished: creation of industrial or technical museums on the basis of these institutions, transformation of individual objects into a work of art without a certain functional content (these options are appropriate if the specifics of the industry of the industrial object do not require redevelopment or the territory for the object is too large for carrying out restoration measures), repurposing former industrial objects for a public function or housing. For example, repurposing for housing is traditionally associated with the concept of the loft, which originated in the USA and was caused by the gentrification of previously depressed industrial areas of New York. Over time, the term "loft" spread not only to repurposed industrial and warehouse buildings, but also to the residential reconstruction of any building, which is characterized by the use of unplastered brick surfaces, high ceilings, the possibility of free planning and the formation of mezzanine floors.

The revitalization of former industrial enterprises for public functions is also becoming widespread. One of the modern directions is the organization of art creations based on them, where cultural and artistic and business processes are combined .

Today, many countries of the world have accumulated experience in such artistic repurposing, especially on the basis of monuments of industrial architecture that have historical value. However, if we talk about the conditions of Ukraine, the profile of the company will play an important role, since it directly affects the planning of the industrial territory, the structural schemes of the buildings and, accordingly, the possibility of their redevelopment for new functions.

According to O. Ivashko's general list of directions of industrial enterprises, the following industries are represented in Ukraine: ferrous metallurgy, non-ferrous metallurgy, chemical and petrochemical industry, gas industry, mechanical engineering, electronic, radio engineering and instrument-making industry, pulp and paper industry, woodworking industry, construction industry, textile industry, light industry, food industry.

At the same time, the positive effect of repurposing depends on good transport accessibility and proximity to highways and public transport stops, taking into account the profile of the enterprise, which determines the profitability of such measures, calculating the number of visitors and for whom the revitalized object is intended.

If it is based on O. Ivashko's universal formula for the successful repurposing of industrial enterprises into art formations, then:

– it is not a plant which cannot change in function and which has a large site area (ferrous metallurgy, non-ferrous metallurgy, chemical and petrochemical industry, gas industry, mechanical engineering, electronic, radio engineering and instrument-making industry, pulp and paper industry, woodworking industry, construction industry, textile industry);

– it is not a plant outside the big city due to its harmfulness and non-environmental nature (the same list);
– it is not a plant with a large one-story building with a whole complex of accompanying buildings on the site and a complex system of entrances and structures and equipment that cannot be disassembled and replaced (the same list);
– it should be a three- to five-story building or a building with variable floor levels of parts with the possibility of full or partial redevelopment.

In the joint research of the authors of the article and O. Ivashko, the scope of the necessary reconstruction measures for the repurposing of industrial objects of various profiles into art formations was analyzed .

In particular, it was determined that Ukrainian enterprises of light industry (tailoring, footwear) are mainly enterprises of the Soviet period, located in a three-story building with a combination of reinforced concrete and metal structures, several large rooms and small-scale construction, therefore, for their repurposing, it is necessary to arrange additional entrances, corridors, stairs, as well as making adjustments to the typical rectangular plan and facades according to typical projects.

The buildings of food industry enterprises (bread and bakery, confectionery, alcoholic and non-alcoholic beverages) are multi-story and have 1, 2, 3 floors, their structural scheme is characterized by a variable pitch of columns, a combination of several large halls and small-scale construction, a prefabricated reinforced concrete frame, which in the case their repurposing as an art function requires the arrangement of additional entrances, corridors, stairs, diversification of typical facades and plan – rectangular or L-shaped.

The authors, together with O. Ivashko, investigated the effectiveness of repurposing enterprises of various industries for the art function and proved that, despite the fact that there are certain exceptions, the most effective is the repurposing of light and food industry enterprises, household service establishments and trade and warehouse buildings .

3. RESEARCH AND IMPLEMENTATION OF THE POLISH REVITALIZATION EXPERIENCE AS A BASIS FOR POST-WAR UKRAINE



Ill. 4. “Manufaktura” in Lodz. Photo by Yulia Ivashko, 2022.

The main feature of Polish examples of revitalized industrial facilities and industrial facilities in the South and East of Ukraine is that in Lodz, Warsaw, Cracow, Poznan, these are objects that are architectural monuments, and dating back to the 19th and 20th centuries, they were built according to individual projects and are distinguished by high architectural properties . During 2016–2023, Y. Ivashko and O. Ivashko studied the experience of repurposing European industrial enterprises for an art function, mainly in Poland (Lodz, Cracow, Warsaw, Poznan) and, based on the Polish experience of revitalization, proposed options for the aestheticization of facades and planning the days of former Soviet enterprises in Ukraine.

In particular, based on the study of such objects as "Manufaktura", "Monopolis", "Off Piotrkowska", "Art incubator" in Lodz, "Stary Browar" in Poznan, "Browar Lubicz" in Cracow, the main trends were highlighted in the modernization of the historical industrial building in relation to the architectural image :

- infusing a modern "twist" into the red face brick while blending it with contemporary materials and structures;
- brickwork of completed modern volumes;
- dominance of the red brick theme – metal open structures – large glazed surfaces – siding;
- the reception of contrasting the lower and central part of the front red brick and finishing with modern materials, for example with gray siding.



Ill. 5. "Browar Lubicz" in Cracow. Photo by Yulia Ivashko, 2022.

Based on the analysis of the trends used in Poland in the revitalization of industrial facilities, O. Ivashko developed the concept of repurposing the former Richert brewery on Podol in Kyiv for an art function. This project concept can be proposed for those enterprises in the

East and South of Ukraine that will be decided to be preserved, revitalized and modernized. The presented concept was a generalization of Polish experiences of revitalization for various functions. It was developed for the artistic function as the main one with the simultaneous presence of secondary functions. This direction of revitalization is especially relevant for the East and South of Ukraine, where there has always been a lack of such modern institutions of artistic direction .

At the time of concept development, the brewery complex is still in an abandoned state of disrepair, while the main building and chimney are monuments of industrial architecture. The conceptual project envisaged the preservation of valuable historical buildings of the industrial site, the demolition of low-value Soviet-era extensions and reconstruction with re-planning, where the interior space in the historic building is accordingly divided according to the new function. In the workshop and administrative part, corrections are made in the number and location of stairs with the addition of elevator shafts in accordance with the current fire prevention and evacuation standards. On the site of the demolished low-value building, a new part is being built on the side of the yard, in modern materials and constructions.

Engineering and geological conditions determined the functional zoning of the complex by levels: in particular, in the basement part under part of the building there are technical and storage rooms, on the first floor there are offices and shops of small businesses, commercial establishments and event spaces with the possibility of their transformation. O. Ivashko proposes to allocate the second floor for exhibitions, and place food courts on the third. On the side of the yard, a co-working space for 280 seats is planned.



Ill. 6. “Stary Browar” in Poznan. Photo by Yulia Ivashko, 2023.

The facade brick cladding of the main facade was borrowed directly from Polish historical industrial objects, the use in the completed part of the pitched roof in combination with dark gray siding and brick walls of the first floor emphasize the industrial image of the building and strengthen the connection with the historical past.

According to the Polish examples, it was proposed to clear the main entrance from later layers. The Polish revitalisation experience was used to combine restored historical parts and modern additions – acute-angled and rectangular volumes using a frame and modern building materials. Thus, the main proposal of the conceptual project consisted in the contrasting separation of the historical part (small-scale, built of bricks, with small decoration) and the modern part (large-scale, with large planes of glass and the use of metal).

At the same time, restoration of historical brickwork, desalination, elimination of excessive moisture and biodamage, addition of losses in masonry are proposed. In the historical part, it is proposed to preserve the fine-grained structure, and hence the location of small trade establishments and art workshops. In the two-story modern extension from the side of the yard, a co-working space is provided with the arrangement of an additional entrance to the modern volume from the side of the historical chimney, which is preserved, restored and decorated with murals in the style of street art, through a large two-light atrium with escalators, the model for the solution of which was the Polish objects "Manufaktura" in Lodz and "Stary Browar" in Poznan. According to the model of these objects, the interior spaces are decided with open structures, an atrium with bypass galleries to the height of all three floors, which is illuminated by an upper skylight.



Ill. 7. Project of revitalization of Richert's brewery for art-function. Author O. Ivashko, 2021.

Based on the analysis of Polish revitalization experiences, the following set of functions was proposed: exhibition-museum, educational, office, event-focused, retail, public catering.



Ill. 8. Atrium in “Stary Browar” in Poznan. Photo by Yulia Ivashko, 2023.

4. CONCLUSIONS

Despite the fact that the war in Ukraine continues, certain measures are already being taken to rebuild the destroyed area. The main feature of the post-war reconstruction of the South and especially the East of Ukraine, which suffered the greatest destruction, is that these were historically industrial areas, which in the East were tied to the coal mining industry. Even before the war, problems related to the unprofitability of mines and the transition of civilized countries to renewable energy, the so-called green energy, were already brewing in these territories. The war led to the decline of territories, the majority of the population of Donbas either left or died, mines were flooded, businesses and cities were destroyed. It

should be taken into account that the cities in Donbas and partially in the South were created specifically for the location of a specific industry, most often harmful.

Thus, the following aspects should be taken into account during the post-war reconstruction of Ukraine. The first is the loss by Donbas of the importance of an industrial region aimed at the use of coal mined here. The outflow of the able-bodied population, which was previously involved in coal mining, follows directly from this. The second is the complete destruction of many industrial cities of Donbas (Bakhmut, Avdiyivka, Soledar, Maryinka, etc.). That is, it is actually the clearing of the territory and the planning of completely new cities and settlements. And here arises the aspect of the expediency of reconstruction, whether it is necessary to rebuild all the destroyed cities and who will live in them.

Already in the media, there are statements that it is impractical to rebuild all the destroyed settlements on the old places, especially in case of loss of jobs, and production base. After solving these economic and town-planning problems, the expediency of reconstruction comes to the aspect related to the reconstruction of destroyed and damaged enterprises. At the same time, it should be taken into account that the absolute majority of enterprises are from the Soviet era, that is, built according to typical projects. And here it is worth evaluating which of them should be rebuilt with modernization and preservation of the previous function, which should be demolished, and which can be repurposed.

The authors analyzed the Polish experience in the repurposing monuments of industrial architecture. Despite the fact that there are almost no monuments of industrial architecture in the East and South of Ukraine, they date from the Soviet period, but in certain cases it is possible to use the Polish experience and various facades of these enterprises and carry out their redevelopment.

References

[1] Boix R. et al., Comparing creative industries in Europe, "European Urban and Regional Studies" 2016, vol. 23, no. 4, pp. 935–940.

[2] Dmytrenko A., Ivashko O., Ivashko Y., Development of Creative Economy Objects as a Means of Industrial Territories Revitalization, V. Onyshchenko et al. (eds.), Proceedings of the 3rd International Conference on Building Innovations, Springer, Cham 2022, pp. 487–495.

[3] Dyomin M. et al., Development trends and problems of large ukrainian historical cities in the twentieth and twenty-first century: case study of urban tendencies and problems of revitalization of an industrial district, "Wiadomości Konserwatorskie – Journal of Heritage Conservation" 2021, no. 65, pp. 26–36.

[4] Ivashko O., The issues of conservation and revitalization of the monuments of industrial architecture, "Wiadomości Konserwatorskie – Journal of Heritage Conservation" 2019, no. 58, pp. 113–117.

[5] Ivashko Y. et al., Preparing for the post-war reconstruction of historical monuments in Ukraine: Considerations in regard of the ongoing Polish post-WWII experience and international law on the protection and conservation of historical monuments, "Muzeológia a Kultúrne Dedičstvo" 2023, vol. 10, no. 1, pp. 53–71.

[6] Iwaszko O., Społeczna Przyroda Nowych Artystycznych kierunków w Miejskim Środowisku, "Przestrzeń/Urbanistyka/Architektura" 2018, no. 2, pp. 167–176.

[7] Kobylarczyk J. et al., Methods of revitalizing historical industrial facilities – international experience, "Wiadomości Konserwatorskie – Journal of Heritage Conservation" 2020, no. 62, pp. 97–103.

[8] Kozłowski T. et al., Theoretical and Legal Rules for the Reconstruction of Architectural Monuments in Ukraine that Suffered during the Russian Aggression = Teoretyczne i prawne zasady odbudowy zabytków architektonicznych w Ukrainie, które ucierpiały w trakcie agresji rosyjskiej, "Teka Komisji Urbanistyki i Architektury Oddziału Polskiej Akademii Nauk w Krakowie" 2022 vol. 50, pp. 391–408, http://teka.pk.edu.pl/index.php/numery-czasopisma/tom-l-2022/ (access: 23.07.2023).
[9] Nadolny A. et al., In-fill Development Architecture, as Element of Post Second War Reconstruction of City of Poznan. Case Study of Joseph Stübben's Extension Plan of the City from Years 1902–1918, "International Journal of Conservation Science" 2023, vol. 14, no. 1, pp. 57–74.
[10] Orlenko M., Ivashko O., Art-Clusters as a New Type of Buildings: The Specificity of the Spatial Solution and the Features of Restoration during the Redevelopment Process (The Experience of Poland), "Środowisko Mieszkaniowe" 2017, no. 21, pp. 109–115.
[11] Selada C., Vilhena da Cunha I., Tomás E., Creative Clusters in Low Density Urban Areas: A Case Study Approach [in:] URBACT, Chttps://urbact.eu/sites/default/files/import/Projects/Creative_Clusters/documents_media/Paper_ERSA_VF_01.pdf (access: 20.03.2023).
[12] Stefański K. et al., Revitalization specifics of industrial enterprises made of brick and concrete. Examples of Lodz, Kyiv and Poltava, "International Journal of Conservation Science" 2020, vol. 11, no. 3, pp. 715–730.

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