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The depopulation of cities in Poland and Japan as one of the reasons for adapting abandoned buildings to new functions

Abstract

The article presents the problem of the development and revitalization of abandoned buildings and ways of adapting them to new functions. Especially in shrinking cities. The shrinking of cities and towns in the 21st century can be observed in many regions of Poland, Japan, and the world. The city of Łódź in Poland, which has the largest population decline of all large agglomerations in our country, was selected for analysis. Attention was drawn to a similar situation in Tokyo and on the island of Naoshima in Japan. The aim of the research was to show the differences in solutions for the adaptation of historic buildings and the preservation of authentic substance that exist in these countries. The Japanese perceive the world not as a collection of unchanging substances, but as a process of constant change, while maintaining the authenticity of ideas. In Poland, on the other hand, the Western philosophy of the world is cultivated, which consists in striving to preserve the authenticity of matter.

Streszczenie

Artykuł przedstawia problem zagospodarowania i rewitalizacji opuszczonych obiektów oraz sposoby ich adaptacji do nowych funkcji, szczególnie w miastach kurczących się. Kurczenie się miast i miejscowości w XXI wieku obserwujemy w wielu rejonach Polski, Japonii i świata. Do analizy wybrano miasto Łódź w Polsce, w którym spadek ludności jest największy ze wszystkich dużych aglomeracji w naszym kraju. Zwrócono uwagę na podobną sytuację w Tokio i na wyspie Naoshima w Japonii. Celem badań było ukazanie różnic w rozwiązaniach adaptacji historycznych budynków i zachowania autentycznej substancji, jakie występują w tych krajach. Japończycy postrzegają świat nie jako zbiór niezmiennych substancji, ale jako proces ciągłych zmian, przy zachowaniu autentyzmu idei. Natomiast w Polsce kultywowana jest filozofia świata zachodniego, która polega na dążeniu do zachowania autentyzmu materii.

Keywords: adaptation of complexes and buildings, Poland, Japan, shrinking cities

Słowa kluczowe: adaptacja zespołów i obiektów, Polska, Japonia, *shrinking cities*

1. Introduction

Currently, more than half of the world's population lives in cities. The 21st century has already been called the age of cities. At the same time, contradictory urbanization phenomena can be observed today – the growth of some urban centers and the shrinking of others (Jopek, Musiał-Malago, 2021). These phenomena are only partly attributable to exurbanization and metropolization, which occur to varying degrees in many countries. One of the global megatrends is the aging of societies, which is particularly evident in the developed countries of the „global north,” especially in Europe and Japan. An aging society is a feature of highly developed countries: average life expectancy is increasing, while the birth rate is steadily declining. Among women, there is also a noticeable shift in the age at which they start a family, which may be linked to lifestyle diseases and, perhaps

most importantly, to education and career development in this social group.

On a local or even regional scale, these processes have led to socio-economic and spatial crises and the decline of cities. The main reasons for urban depopulation are: lack of jobs and prospects, low spatial attractiveness, lack of development opportunities, and problems with access to education and culture. This causes young people to migrate to large metropolitan areas or abroad. In some regions, the lack or shortage of modern production facilities in small and medium-sized cities and the concentration of all services and jobs in metropolitan areas—regional, national, or those aspiring to the role of a „global city” (Sassen, 2001)—are also significant factors.

The effects of urban depopulation include, above all, a decline in city revenues, deterioration of infrastructure, collapse of local

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entrepreneurship, and an increase in the sense of exclusion and isolation of residents. In order to partially limit these processes and prevent their economic, social, and spatial effects, municipal authorities, supported by national and international institutions, should take a number of measures. These include, among others: introducing investment in infrastructure, supporting local entrepreneurship, creating new jobs, including launching new industries or basing the city's development on other areas, supporting families, building local identity, searching for new tourist attractions – protecting monuments and cultural heritage, including post-industrial heritage (Kaczmarek, 2001; Lorens, Martyniuk-Pęczek, 2009; Lipski, 2025).

2. Research objective and method

Demographic changes observed for several decades in Polish and Japanese cities have resulted in the creation of vacant buildings in centers of various sizes. The aim of this article is to present the differences that exist in both countries in the adaptation of abandoned historical buildings to new functions. Due to the Christian roots of Western culture in Europe, where the original material of saints' relics was considered the highest value, an important condition for adaptation and renovation activities derived from this philosophy is the desire to preserve the authentic material of the buildings undergoing these processes. In contrast, Eastern culture and philosophy promote the authenticity of ideas rather than materials. The Japanese perceive the world not as a collection of unchanging materials, but as a „flow” or „process” of constant change (Kakuichi, 2016).

Łódź was selected from among Polish cities for the study, as it has experienced the greatest demographic changes among metropolitan centers in our country. There is a problem of abandoned post-industrial buildings there. Therefore, the focus was on architectural interventions that build a new multifunctional downtown fabric while preserving the post-industrial heritage undergoing adaptation. The opinions of conservators were taken into account. In Japan, examples from Tokyo and the island of Naoshima, which has been transformed into an „art island,” were selected for analysis.

The basic research method was based on case studies, through *in situ* visits, observation of selected objects for analysis in both Poland and Japan, *online* research using Google Earth Pro, and desk research of the subject literature.

3. The demographic situation in Poland

Following the political and economic changes in Poland in 1989, the transition from a centrally planned communist economy to a free market economy began. It soon became apparent that state-supported industry, often technologically outdated, could not compete in the global free market. Since then, we have been observing the problem of depopulation of small, medium-sized, and even large cities in the country. This is particularly true of those whose development and prosperity depended on industrial production.

Poland's demographic situation has been deteriorating for over 20 years (Szymczyk, 2024). There are many reasons for this phenomenon, and economic emigration at the turn of the 20th and 21st centuries has had an impact, but the most significant factor is likely to be the aging of the population, which is one of the current megatrends. In 2000, the population of Poland was 38 million, and according to the Central Statistical Office, in 2023 it was only 37.8 million. However, World Bank data show that this number was even lower, amounting to only 36.7 million in 2023. According to GUS data, it is projected that by 2030, the population

of Poland will decrease by 1.24 million (Krzysztofik, 2019). Only four of the largest cities in Poland: the capital Warsaw, as well as Kraków, Wrocław, and Gdańsk, have seen an increase in the number of residents in recent years.

Table. 1. Number of inhabitants in selected cities in Poland.
Author: E. Węclawowicz-Gyurkovich

CITY NAME	POPULATION IN 2002	POPULATION IN 2023
Łódź	785,134	655,279
Katowice	325,045	279,119
Bytom	192,597	148,687
Częstochowa	250,862	207,117
Bydgoszcz	372,104	328,370
Sosnowiec	231,541	188,151
Zabrze	194,638	154,642
Poznań	577,117	540,146
Radom	229,081	196,918
Gliwice	202,604	170,457

In Poland, cities with a population of over 100,000 are considered large (GUS, 2023, Śleszyński, 2016). The table above (<https://obserwatorgospodarczy>) shows that the most depopulated large cities in Poland are: Łódź, located in the center of the country, as well as five cities (Katowice, Bytom, Sosnowiec, Zabrze, Gliwice) located in the Upper Silesian-Zagłębie Metropolis (GZM - <https://metropoliagzm.pl>). The main driver of development in nine of the ten cities listed in the table above over the past two centuries has been industry. Łódź was famous for its textile industry, while Zagłębie and Upper Silesia were primarily centers of mining, with a special role played by hard coal mines (Wyrzykowska, 2022) and steelworks.

4. The demographic situation in Japan

A similar process, albeit on a different scale, can be observed in Japan. In 2000, the population was 126.93 million (<https://www.e-stat.go.jp/en/>), reaching its peak in 2005 at 127.77 million. Since then, the population has been steadily declining, falling to 126.15 million in 2020, and according to official forecasts (<https://www.stat.90.jp/english/>). Although statistics for Japan's largest cities – Tokyo, Sapporo, Yokohama, Nagoya, and Osaka – still show slight growth, when compared with data from the prefectures to which they belong, we see that this growth is associated with the depopulation of smaller towns and even the suburbs of large cities. Most often, only central districts continue to attract new residents (Pineda et al., 2025). The reason for the decline in the number of residents in Japan, as in many European countries, is, on the one hand, a lower birth rate and, on the other hand, an aging population. Official data from the government statistics office given in millions of inhabitants. (<https://www.e-stat.go.jp/stat-search/files?>) The current situation has historical roots. After World War II, Japan experienced rapid demographic and economic growth, which contributed to intensive industrialization, particularly in the suburbs of large cities, and the development of new urban areas (Pineda, 2025). In response to these processes, the state's housing policy led to the creation of over 4.2 million housing units (Ronald, 2021). In the 1970s, despite advances in construction technology, the „scrap and build” technique, in which residential buildings are rebuilt every 30 to 40 years, still achieved a ratio close to 50% (Oizumi, 2007). The collapse of the economic bubble in the 1990s and the demographic decline since the

Table 2. Number of inhabitants in cities in Japan. Author: M.Bielecka

	2000	2005	2020
Japan	126,925,843	127,767,994	126,146,099
City name			
Sapporo (capital of Sapporo)	1,822,368	1,880,863	1,973,395
Tokyo (23 special wards of Tokyo)	8,134,688	8,489,653	9,733,276
Yokohama (capital of Kanagawa)	3,426,651	3,579,628	3,777,491
Nagoya (capital of Aichi)	2,171,557	2,215,062	2,332,176
Osaka	2,598,774	2,628,811	2,752,412
Prefecture name			
Hokkaido	5,683,062	5,627,737	5,224,614
Tokyo	12,064,143	12,576,601	14,047,594
Kanagawa	8,489,932	8,791,597	9,237,337
Aichi	7,043,300	7,254,704	7,542,415
Osaka	8,805,081	8,817,166	8,837,685

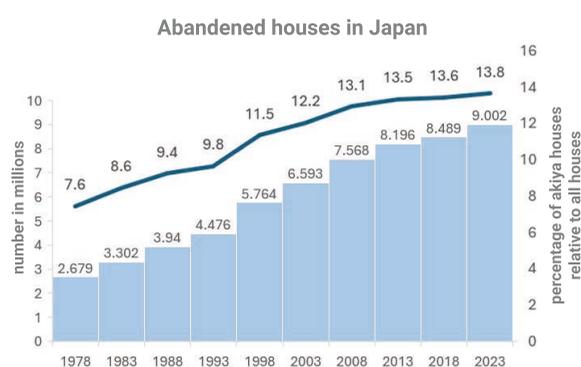
mid-2000s have led to a significant decrease in property values (Uto et al., 2023) and, in the longer term, to the creation of numerous abandoned houses, known in Japan as *akiya*. Currently, their number is already around 9,000,000, or 13.8% of all residential properties, and continues to grow. This phenomenon not only has a negative impact on the urban fabric, but also increases the risk of damage caused by earthquakes or fires.

In subsequent stages, Japan, like Western countries, began to follow the trends of grassroots adaptation initiatives in the post-economic growth era. The beginnings of these activities date back to the period after the economic bubble burst. At the end of the 1990s, *SD Design* magazine, which presented projects for the transformation of abandoned spaces, such as industrial halls adapted into offices or houses converted into commercial facilities, became particularly popular. Although the first projects of this type appeared at that time, it was particularly in the years 2010-2020 that many of these activities involved residents and local communities, gaining popularity on a larger scale. The spread of social media made it easier to raise funds through crowdfunding (Holden, 2017), while the government created a „vacant house bank”—a platform that acts as an intermediary in the process of searching for and acquiring abandoned properties.

5. Adapted post-industrial facilities in Poland. Łódź as a Polish case study

Demographic changes in the country, individual regions, and cities are predicted and studied by various scientific communities. Against this background, as already noted, Łódź and the entire region fare particularly poorly. According to P. Szukalski, the population of Łódź will decrease to 621,400 by 2030, and will reach 458,400 by 2060 (Szukalski, 2023). Also on a regional scale, in these calculations, the Łódź Province, one of the sixteen provinces in Poland, accounts for as much as 28% of the national population decline, and in 2024, the population in the Łódź region decreased by 9,276 people (Cymer, 2017).

Łódź was granted city rights in 1423 by King Władysław Jagiełło, but industrial development did not occur until the 19th century thanks to the city's then border location (on the border between Russia and Prussia). Representatives of various nations participated in this development, which is why Łódź now promotes itself as a „city of four cultures”: Polish, German, Russian, and Jewish. Both the industrialists, who not only located their factories in the city, but also settled there with their families, building their residences,



III. 1. Abandoned houses in Japan. Source: Statistics Bureau of Japan, 2023 Housing and Land Statistics Survey (<https://www.stat.go.jp/data/jyutaku/2023/>) Graphic created by M.Bielecka

and the workers needed for the work, created a multinational melting pot. The city developed very rapidly in the 19th century thanks to the industrialization of the country undertaken in 1820 by the government of the Kingdom of Poland, which was then controlled by Russia. Łódź was classified as a factory town (Kaliński, 2023) and saw large-scale development of the textile industry and other industries necessary to support it. Within 100 years, it grew from a town of 800 people to a city of 600,000 (Stefański, 2008). After World War II, during the communist era, it was planned that Łódź would have a population of one million (<https://uml.lodz.pl/>). In 1988, the city had a population of 854,000, while in 2017 it was only 725,000. At that time, the Central Statistical Office predicted that in 2035, Łódź would have a population of 578,000. The reason for this was the collapse of the textile and clothing industry in the city, which was related to political changes and global megatrends. (Walczak, Wesolowski, 2019).

The predicted demographic crisis foresaw the closure of primary and secondary schools, while universities are also seeing a decline in student enrollment. According to the Central Statistical Office (GUS), the population structure of the Łódź Province will also undergo a systematic decline, falling by 28.5% by 2050. (Hryniewicz, Potrykowska, (eds.), 2017). The situation of depopulation in Łódź is also related, as in many Polish cities, to suburbanization, i.e., the movement of population from large cities to neighboring municipalities.



III.2. Łódź Vienna House Andel's Hotel in the former High Spinning Mill of Izrael Poznański photo: E. Węclawowicz-Gyurkovich 2015



III.3. Łódź, Ludwig Geyer's „White Factory,” now the Central Museum of Textiles, inner courtyard, photo by M. Gyurkovich, 2025

Many post-industrial buildings, built during the economic boom of the 19th and 20th centuries (mainly before World War I), have survived to this day. Often hastily constructed from red brick, but also based on interesting designs, they display a wealth of detail and innovative structural and functional solutions for those years. Art Nouveau, eclectic, and historicist buildings have also survived. These include not only industrial buildings, but also villas and palaces of former factory owners and elegant townhouses. Together, they constitute the material, but also emotional and spiritual, legacy of an industrial city (Mironowicz, 2010). After World War II, all factories in Łódź became state property. During the communist era, some of them were expanded and new plants were built. The majority of them were related to the textile industry, but there were also plants related to the machine industry and other industries necessary to serve the city, the region, and the country. There were over 200 textile manufacturing companies (over 330 buildings), scattered throughout the city, occupying 1/5 of the downtown area. Some occupied many hectares, while others, smaller ones, were located in courtyards in dense buildings (Walczak, 2023). Since the early 1990s, many factories that had been operating in Łódź since the 19th century have been closed down. (uml.lodz.pl/dla-mieszkancow/). The huge industrial halls in Łódź remained empty. Once upon a time, they were bustling with life and provided employment for thousands of workers¹, many of whom were women. Adapting post-industrial buildings to new functions is a way of saving buildings

III.4. Łódź „White Factory” - interior with historical textile machines, photo: M Gyurkovich 2025



and complexes, rescuing them from demolition (Węclawowicz-Gyurkovich, 2020). As numerous positive examples from Western Europe show, it is also a way to preserve the heritage and identity of a city (Gyurkovich, Dudzic-Gyurkovich, Matusik, 2022). After World War II, the first factory to change its function was Ludwik Geyer's White Factory, which was transformed into the Central Museum of Textiles (<https://cmwl.pl>) in the 1950s. In the early stages of the transformation of Łódź factories and their adaptation to new functions in the early 1990s, buildings that were inconvenient for investors, sometimes even those under conservation protection, were demolished legally or illegally in various parts of the city (Wycichowska, 2012). For thirty years, awareness of the protection of post-industrial buildings as significant elements of cultural heritage has been growing. Since the 1970s, the city's conservation authorities have gradually placed post-industrial buildings under protection. In 1971, 13 buildings were entered in the register of monuments, and in 2000, it already included 400 individual buildings, which constituted 24 post-industrial complexes (Kępczyńska-Walczak, Walczak, 2024). After Poland joined the European Union in 2004, many cities, including Łódź, began adapting post-industrial buildings to new functions, most often based on EU funds available for revitalization. (Lorens, 2007). Since 2015, these processes have been largely regulated by the Revitalization Act (UoR, 2015). Not all post-industrial facilities can be adapted for cultural or educational functions. City authorities, landowners, and investors must

III.5. Łódź, Manufaktura – Shopping and Entertainment Center, main square, photo: E. Węclawowicz-Gyurkovich, 2015



adopt various strategies and development plans in order to bring significant parts of the deserted urban fabric back to life, in line with the idea of revitalization (Zuziak, 2012). This is no easy task in a depopulating city such as Łódź.

Old spinning mills, power plants, and factory halls stood abandoned in many places, falling into ruin. Łódź has become one of the main places for the transformation of post-industrial buildings and complexes, not only in Poland but also in Europe. According to research by Prof. Bartosz Walczak, by 2020, 150 post-industrial facilities in Łódź had been adapted for new functions. The former Municipal Conservator of Monuments in Łódź (in 2011-2013) was not always satisfied with these activities. He wrote, „As a result, the loss of heritage does not necessarily require the demolition of buildings...” (Walczak 2023, p. 84).

6. The Manufaktura Hybrid Center

In 1997, the POLTEX Cotton Industry Plant located on Ogrodowa Street, in the northern part of the city center, was closed down. It was the former factory of one of the richest manufacturers in Łódź, Izrael Poznański. Poznański purchased the land for the construction of the factory in 1871. It housed weaving mills, a spinning mill, a bleaching and finishing plant, a dyeing plant, a fabric printing and finishing plant, a machine construction and repair department, a locksmith's workshop, a foundry and steam locomotive depot, a gasworks, a fire station, warehouses, a railway siding, and a factory exchange office. The area also featured an impressive factory owner's palace (currently used for museum and administrative purposes) and residential buildings for workers. The original design from 1872 was created by Hilary Majewski. Over the course of more than a century of operation, other buildings and infrastructure were also constructed.

The French company Apsys took an interest in the abandoned industrial complex covering an area of 27 hectares, creating the multifunctional cultural, commercial, and entertainment center „Manufaktura.” Nine hectares of the site were modernized, and 9.5 hectares were rebuilt (Walczak, 2010). The initiator of Manufaktura was Cyprian Kosiński, a businessman of Łódź origin living in Switzerland, who brought capital of around EUR 270 million from the Rothschild group² (<https://pdm.irmir.pl/>) to Łódź.

One of the largest complexes of its kind in Europe, this cultural, commercial, and entertainment center with a new public square³ in the middle of the complex was immediately accepted by the residents and began to attract tourists. „Manufaktura” was opened in May 2006 after four years of reconstruction. A dozen or so red brick halls and production buildings contrast with the spacious glass walls of the new facilities. Some structures and buildings, considered insignificant by the designers (primarily secondary to the original historical layout), were demolished. The complex houses 260 shops, 60 restaurants and cafes, and 12,000 m² of office and bank space. There is also a large cultural complex, which includes the Art Museum, the City History Museum, the Factory Museum, and the Experimentarium Science Center. The entertainment center consists of a multiplex with 15 movie theaters, a bowling alley, and a climbing wall, as well as seasonal outdoor sports fields, playgrounds, and carousels. The conversion of Izrael Poznański's former high spinning mill at 17 Ogrodowa Street into the Vienna House Andel's Hotel, carried out in 2007-2009 by the Austrian company Warlimpex, is considered exemplary.

7. Revitalization of the post-industrial FUZJA quarter in Łódź

In 2017, Echo Investment entrusted the revitalization of the former industrial district to where Karol Scheibler's factories were located in Księży Młyn, Łódź, designed by the Silesian architectural studio Medusa Group.⁴ In 1921, Karol Scheibler's factory complex was merged with Grohman's plants to form a joint family consortium (Stefański, 2014). During the communist era, elements of Scheibler's empire were gradually entered into the register of monuments (Register of Monuments of the Łódź City District). The area, which for many years was fenced off and inaccessible, is now open to residents and visitors. Fourteen brick buildings from the 19th and early 20th centuries were left and revitalized, but six new structures were also introduced, creating a modern urban space called FUZJA for the users of the quarter. The designers' idea was to preserve all the historic brick post-industrial buildings. However, if their technical condition did not allow it, sometimes only fragments of the red brick exterior walls were left in place, with a modern building created just behind them. Since 2019, open spaces have been gradually arranged and innovative technological solutions have been implemented, in line with the ideas of the circular economy.

III.6. Łódź, new buildings of „Manufaktura,” photo by E. Węclawowicz-Gyurkovich, 2015



III.7. Łódź, renovated Art Nouveau facade of the former Scheibler power plant, photo: M. Gyurkovich, 2025



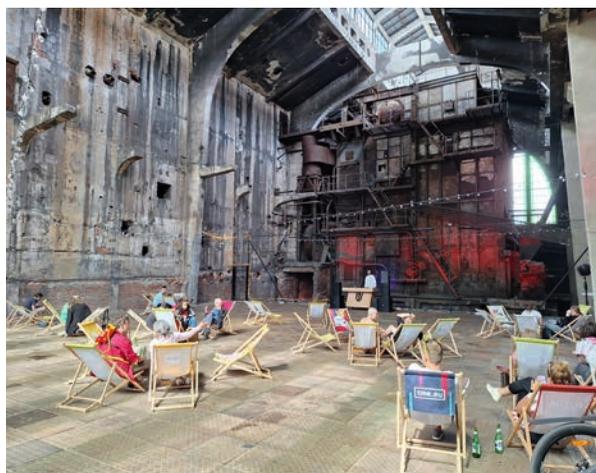


III.8. Łódź, view of the Art Nouveau façade of the former power plant from Anna's Gardens, photo: M. Gyurkovich, 2025

The designers' intention was to create a multifunctional https://www.medusagroup.pl/projekty/uzytecnoscihttps:// within the complex. Therefore, it will include residential, office, service, commercial, cultural, and entertainment functions. The entire quarter will cover approximately 7.7 hectares of the former factory site and a planned 90,000 m² of usable space in adapted and newly constructed buildings. The first two residential buildings were completed in 2020. The idea is to preserve the mainly brick post-industrial architecture, which will be complemented and contrasted with new geometric forms. The introduction of open public spaces is also planned. It was important to preserve the *genius loci* atmosphere throughout the area, which is clearly felt here. The new residential buildings were also finished with ceramics in colors contrasting with the existing historic fabric. The space located in the city center is adapted to various cultural and sporting events, festivals, and competitions, attracting city residents and tourists (Wdowiarz-Bilska, 2021).

One of the unique and very valuable buildings in this area is a former power plant in Art Nouveau style, which once supplied electricity to Scheibler's entire empire. It is, in a sense, the focal point of the complex, marked in the space of the district and the city by a preserved 80-meter brick chimney. It is a symbolic structure, referring to the former history and identity of the place. Karol Wilhelm Scheibler built it in 1910, commissioning

III.10. Łódź, multifunctional hall inside the former Scheibler power plant, photo: M. Gyurkovich, 2025



III.9. Łódź, new Corten steel facade of the former power plant, photo: M. Gyurkovich, 2025

the design to Latvian civil engineer Alfred Frisch.⁵ After World War II, the power plant, like all private factories in Łódź, was nationalized and from then on supplied electricity to the Łódź Cotton Industry Plant named after the Defenders of Peace „Uniotext”. The facility was decommissioned in 2003. (https://www.medusagroup.pl/projekty/uzytecnosci-publicznej/rewitalizacja-dawnej-fabryki-scheiblera-w-lodzi/)

Since then, it has remained almost unused and fallen into disrepair. To this day, the building remains a unique example of Art Nouveau architecture, not only in Poland but also in Europe. The power plant was entered in the register of monuments and placed under conservation protection in 2005. In 2015, Scheibler's palace and Źródlińska park, the „Centrala” post-industrial complex, workers' houses on Przędzalniana Street, and the „Księży Młyn” post-industrial complex were also entered in the register of monuments. (Regulation of the President of the Republic of Poland of February 16, 2015). That complex underwent earlier revitalization, considered one of the model projects in Poland (Gyurkovich, Sotoca, 2019).

The structure of the former power plant was divided into four functional parts – the engine room, boiler room, staircase tower, and factory chimney. The building was constructed using a reinforced concrete frame structure. The façade features arcaded friezes made of red clinker brick, and the arched recesses were plastered in a light color. The facades are divided by reinforced concrete beams, which are connected by arcades in the attic. The soft curves of the arcades, characteristic of Art Nouveau, are visible. Triangular gables crown the facades. This brick finish, characteristic of the German cultural circle, features rounded details on the gable walls, cornices that outline the edge of the building, and divisions of large, tall windows. The original details of the huge factory chimney, which clearly indicates the original function of the entire complex, have also been restored.⁶ After revitalization, the power plant was transformed into a local cultural center. The idea of the architects from Medusa Group was to proceed on the principles of *„conservative conservation,”* revealing the historical changes that had accumulated over many years. All design and implementation work was consulted with

the conservator of monuments throughout the process. The authors from Medusa Group claim that the Fuzja site is full of „architectural scars” that will be preserved. „We are not afraid of bold measures, as long as they serve to preserve the authenticity of the place and its substance... We want to disturb the fabric as little as possible, and what is there, we want to secure and expose, glue together, but not supplement. The ravages of time have taken their toll on this substance, let’s show it,” said Przemysław Łukasik (<https://architektura.info/layout/set/>).

In front of the eastern facade of the former Art Nouveau power plant, a spacious square with an area of approximately 4 hectares was created. It is a contemporary urban courtyard, surrounded by historic buildings to the north and west, and mostly newly designed structures to the south and east. It was named Anna’s Gardens, after the wife of Łódź industrialist Karol Scheibler. It was opened on July 10, 2021, on the 100th anniversary of Anna Werner’s death.⁷ The garden features 45 trees, shrubs, a lawn, and a creative playground for children. The car park was designed underground. Instead of a classic square floor, the architects created a gravel and green surface through which water seeps, flowing into retention reservoirs. (<https://sztuka-krajobrazu.pl>).

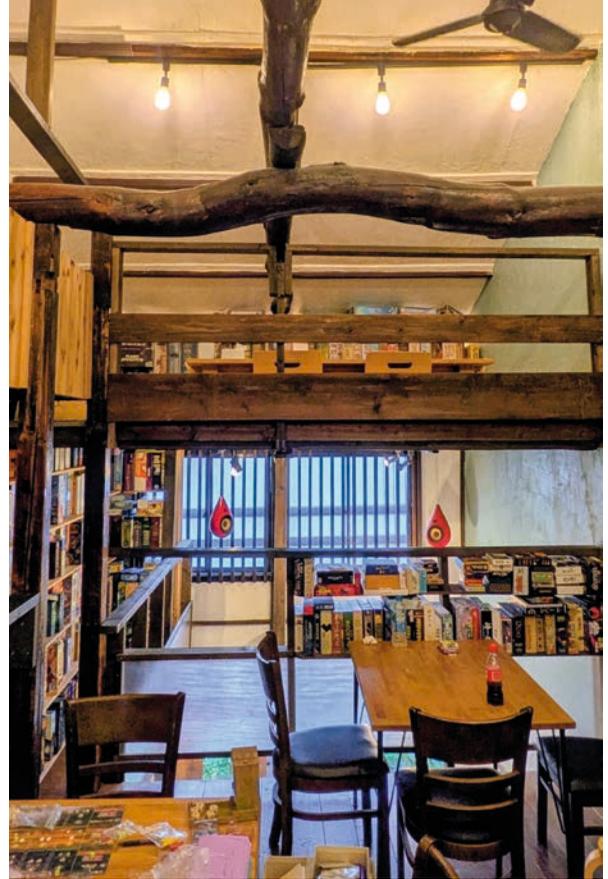
The introduction of even small enclaves of greenery in dense urban structures provides an opportunity to improve the quality of life and reduce the effects of the global environmental crisis. Iron slabs from the floors of former industrial buildings were used in the land development (Wdowiarz-Bilska, 2011). (Buława, Gachowski, et al., 2024)

8. Examples of the use of abandoned buildings in Japan

Kyojima in Tokyo

Tokyo, understood as the Tokyo Metropolitan Area (TMA), is a megapolis comprising not only 23 special wards, but also the neighboring prefectures of Chiba, Saitama, and Kanagawa. This area currently has a population of 37.4 million and is experiencing the fastest population growth in the entire country, although this is mainly concentrated in its central parts.

On the map of Japan, as well as Tokyo itself, there are numerous examples of abandoned houses converted to new functions. There are many studies in the literature on this phenomenon, which point to adaptations as a response to the growing number of *of akiya*. They often emphasize environmental issues, safety, the preservation of cultural heritage, and the strengthening of local community ties (Margono et al., 2025). The most frequently cited causes of urban depopulation are demographic decline and



Ill. 11. Tokyo, Kyojima, interior of an abandoned house adapted into a board game café, photo by M. Bielecka 2025

overly dense urban structures, with many buildings lacking direct access to roads. Currently, not only the government is aware of the problem, but also the residents themselves.

One example of a neighborhood characterized by a concentration of traditional, densely built wooden architecture is Kyojima in the Sumida district in eastern Tokyo. Here, too, there is no shortage of abandoned houses. Surprisingly, this location not only escaped destruction during the 1923 Kanto Earthquake, but also during the bombings of World War II. Moreover, it is one of the rare cases of settlements that survived the intensive expansion and reconstruction of the metropolis (Nakamura, 2008). Walking through the narrow streets of the neighborhoods, we can see numerous pre-war terraced houses – *nagaya*, in which several apartments are located next to each other in one long building, with shared walls and a common cornice line.

Ill. 12. Tokyo, Kyojima, prewar *nagaya* – site adapted into a board game café, a niche shop, and an architectural studio, photo by M. Bielecka 2025





Ill. 13. Tokyo, Kyojima, *sentō* (public bathhouse) converted into an event space, community hub, photo by M. Bielecka 2024



Ill. 14. Tokyo, Kyojima, *sentō* (public bathhouse) converted into an event space, community hub, photo by M. Bielecka 2024

The system of protecting historic architecture in Japan differs significantly from the solutions used in Poland. There is no solid legal framework to protect ordinary, culturally significant residential buildings from demolition, as well as places characteristic of neighborhood life, such as bathhouses and shopping streets. One of the main factors remains the traditional building material—wood—which has historically been considered unstable and high-risk. Kyojima, which is listed as a priority district for disaster prevention, is also perceived by the authorities as an area of increased risk in the event of natural disasters.

For this reason, revitalization efforts in Kyojima are primarily initiated from the bottom up by residents who are trying to preserve the „spirit of the place.” They believe that this is an important element in maintaining close neighborly relations, and at the same time, many of them see economic potential in abandoned buildings, especially given the popularity of retro buildings among tourists in recent years. This trend is also in line with the principles *of the circular economy*, thanks to the reuse of existing building materials. As a result, the district offers examples of houses converted into cafes, restaurants, niche shops, private Airbnb-type accommodation, start-up offices, spontaneous art galleries, and

Ill. 15. Tokyo, Kyojima, Sumida Academic House – project by students of Chiba University; abandoned house adapted into student housing, photo by M. Bielecka 2025



exhibition spaces (<https://michill.jp/>). Due to the uniqueness of the place, design cooperation between residents and the academic community is also developing here. One of the successful projects is *the* converted *nagaya* into Sumida Academic House - budget student apartments created in cooperation with Chiba University. In order to preserve the traditional character with a modern touch, the facade was renovated and repainted in a contrasting black color, while the interior retained its original wooden ceiling beams, supplemented with new structural solutions to increase seismic safety. Another interesting project is the conversion of a house into a café with board games, or the traditional Denki Yu bathhouse, which, in addition to *the* standard *sen*to, now also serves as a multifunctional space – a venue for concerts, exhibitions, educational and cultural events, and lectures.

9. Naoshima – „the island of art”

Due to the drastic demographic decline, the Japanese province found itself in a particularly difficult situation. Not only villages and small towns are at risk of depopulation, but also entire islands – a well-known case is Hashima, an abandoned land in the East China Sea. A popular policy of local authorities to counteract this phenomenon is to revitalize the area through artistic projects that attract both tourists and new residents, while at the same time reviving local communities.

A prime example of the revitalization of a dying post-industrial area is Naoshima in Kagawa Prefecture—the first and one of the most famous examples of an „art island” in the Inland Sea. After the opening of a copper refinery by Mitsubishi Mining Refinery (now Mitsubishi Materials) in 1917, the town experienced rapid economic growth and an influx of workers. For many years, the economic situation in the area remained stable, with the plant providing employment for more than half of the population. Over time, however, industrial activity began to change in nature, focusing on recycling technologies. In 1958, at its peak, the island’s population was 7,842, but in the following years, with the transformation of the company and the decline in employment, the population began to decline rapidly. In the 1960s, faced with the deteriorating employment situation at the main workplace, the long-time mayor decided to focus the island’s development on



Ill. 16. Naoshima, “Pumpkin” sculpture by Yayoi Kusama, photo by N. Adamiec 2024

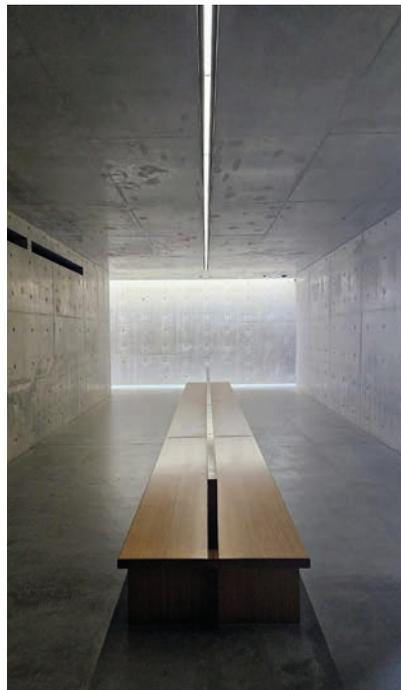
tourism. Naoshima was to become a center combining art and architecture with beautiful landscapes.

The most important pillars of success, and at the same time the most frequently visited locations, were Benesse House, Art House Project, and Chichu Art Museum (Funck, Nan, 2018). The process began with the purchase of the eastern part of the island by Benesse Holdings, which created both a museum and a hotel there. The exhibitions focused on the culture, nature, and history of the city, seeking to ensure a balance between tourism, the local community, and art (Miyamoto, 2019). In 1997, in the traditional district of Honmura, Benesse acquired a historic, over 200-year-old house called Kadoya, and then, preserving its Edo-period character, converted it into an exhibition space (Nagahata, Edahiro, 2010). It was one of seven later Art House Project sites, where vacant buildings were turned into works of art. Visitors were encouraged to immerse themselves in the history of the place by moving between the buildings, observing the daily life of the district, and interacting with the residents, who, inspired by the activities on the island, themselves came up with initiatives to adapt empty buildings for new functions. Many of the renovated buildings contain important elements that emphasize the historical spirit of the place, such as entrance plaques with nicknames from the samurai era, or artistic interpretations of these

Ill. 17. Naoshima, Chichu Art Museum designed by Tadao Ando – skylight in the interior, photo by N. Adamiec 2024



Ill. 18. Naoshima, Chichu Art Museum designed by Tadao Ando – minimalist interiors, photo by N. Adamiec 2024



Ill. 19. Naoshima, Ando Museum – a more than 100-year-old traditional wooden house in the Honmura district converted into a museum; in the photo, the entrance gate with a *noren* curtain and a characteristic nameplate, photo by N. Adamiec 2024



motifs on *noren* - traditional entrance curtains. Another key element of the project was the Chichu Art Museum by Tadao Ando, opened in 2004. The building is largely embedded in a hill, with only the tops of minimalist figures remaining on the surface to illuminate the interior. The austere concrete architecture, in which the only decoration is the play of light, shadow, and shapes, was designed to bring out the solemnity and significance of the work that inspired the building—Claude Monet's „Water Lilies” and the few other exponents in the museum's collection.

The involvement of such prominent figures as architects Kazuhiro Ishii, Tadao Ando, and sculptor Yayoi Kusama meant that the project attracted not only niche audiences but also mass tourism. Although the revitalization of the island undoubtedly prevented depopulation, attention is drawn to the limited participation of the local community through exclusion from the planning process, the privatization of part of the national park on the island, and the perception of residents more as a source of popular revitalized *akiya* than as co-authors of a larger undertaking in which they themselves could feel part of the project or find a place to meet and build neighborly relationships (McCormick, 2022).

10. Summary. Selected aspects of the adaptation of historic complexes and buildings in Poland and Japan

The adaptation of abandoned buildings and complexes to new functions, both in Poland and Japan, is a way to save them from devastation or demolition. Abandoned historical structures remain a testimony to the identity of a place or even a region. In shrinking cities, it is particularly important to preserve elements of architectural, urban, and infrastructural heritage for future generations. Both unique and everyday elements. They can become a magnet, attracting new users, both permanent and temporary. The revitalization of the historic Art Nouveau power plant differs significantly from the conservation work that has been carried out in other post-industrial buildings in Łódź in previous years. For over 20 years, since 2004, successive revitalization programs have been developed in response to the changing legal situation and announced EU and state programs (Lorens, 2007), but the protection of post-industrial buildings in Poland requires constant improvement. Many contemporary projects are criticized by conservationists (Wojnarowska, 2011; Gasidło, 2018; Sowińska-Heim, 2019). In the Art Nouveau power plant in the Fuzja quarter, not only was the authenticity of all the layers in the interiors preserved, but some of the technical equipment was also retained. Even cracks in the walls were left in place, secured only against further destruction. Now, specially illuminated, rust-covered machines stand inside like sculptures – a powerful AEG furnace-turbine from 1935, as well as generators and control elements. „Production machines, pipelines, loading systems, or other elements of the production system, which are integral parts of the cultural landscape of industrial cities, are now in danger of being lost. Once production ceases, they lose their purpose and the meaning of their existence becomes blurred.” (Walczak, 2023, p. 92). According to Walczak, it is important to preserve the spaces between buildings, consciously designed urban compositions that form the whole of the factory complex, together with the equipment of the facilities and the technical infrastructure that supports them, which are characteristic of the technology and functioning of industrial complexes (Walczak 2023, 97; Cysek-Pawlak, 2022).

A few or several years earlier, during revitalization, only the outer walls of buildings were left standing, with the existing factory equipment being removed. New functions were located in these mostly red-brick „shells” (Szpakowska-Loranc, Matusik, 2020). Sometimes, huge abandoned industrial halls required and still

require smaller divisions due to the type of new function they are to serve. Apartments located in post-industrial buildings in many cities in our country retain, mainly on the outside, and sometimes only on the inside, the characteristics of industrial facilities (Gyurkovich M., Gyurkovich J., 2021). They are then called *lofts and* become attractive to wealthy residents, as their prices are significantly higher than those of apartments in new buildings on the primary market (Piegza, Rabiej, 2022). One of the first adaptations for residential use in Łódź was the spinning mill building in Księży Młyn (Gyurkovich, Sotoca, 2019). There, large post-industrial spaces converted for residential use not only had to be divided into small rooms with walls, but mezzanines were also introduced into the interiors, which were too high. It also became necessary to place many installation risers in the walls, which interfered with the authentic structure of the building (Cysek-Pawlak, Czajkowski, Misiak, 2024).

It is hardly surprising that in a country where there is a constant shortage of housing, especially for young people, housing needs are becoming a priority, even in a shrinking city such as Łódź. Or perhaps especially in such urban centers, which should provide spaces for living, working, and entertainment that are rooted in local tradition, yet modern and comfortable. To retain residents and attract new ones. By recreating an attractive urban space, equivalent in terms of attractiveness and appeal to that which once provided the impetus for the development of an industrial city.

According to Prof. B. Walczak, the removal of historical machinery and factory equipment, as well as the replacement of floors, during which old production and communication routes were lost, was a great loss. A characteristic feature of textile factories was the use of metal floors, on which large rolls of fabric and manufactured clothing were transported by carts. Separate transport routes and pedestrian routes were visible at that time. Now, all of this has disappeared. Only in the White Factory at the Museum of the City of Łódź can you see historical weaving machines and the work of seamstresses and textile workers who filled the city's factories since the 19th century (Grabowski, Walczak, 2024).

The entire concept of „Manufaktura” and individual buildings have been honored with many awards. The space created in the revitalization process, combining historical forms with contemporary functions, has become an interesting place for many city residents. Its attractive function and rich program of events meant that it was quickly accepted. However, some architects and conservators criticized this project. Here is a statement by Professor J. J. Tajchman, a well-known conservator from Toruń: „The action that was carried out here is being called ‚revitalization,’ but it should be described as devastation. Some of the buildings were demolished, while the interiors of the remaining ones were gutted, leaving only the outer walls. The brick buildings compete with red surfaces, whose contrasting divisions aggressively break up the surfaces of the squares.” (<https://www.architekturaibiznes.pl/>). In Poland, as in other European countries, most of the buildings that have survived were constructed of stone, brick, concrete, or steel. The restoration of these buildings is in accordance with the provisions of the International Charter for the Conservation and Restoration of Monuments and Sites, which was adopted in 1964 at the Second International Congress of Architects and Technicians of Historic Monuments in Venice. Additional recommendations are made in accordance with the provisions of international institutions such as UNESCO, ICCROM, ICOMOS. A building designated for restoration and revitalization is accepted with all the elements and additions that have accumulated over the years of its existence.

In Japan, on the other hand, where the first law on the protection of cultural property was passed by the government in 1897, the

conservation of architectural buildings focuses on the original condition of the structures, the tradition of the region, and the preservation of authentic techniques and craft tools used during their construction. In Japan, for many years, buildings considered to be historical monuments were made of wood. An example of architectural conservation was the 8th-century Ise Shrine, where every 20 years the temple is rebuilt next to the existing one in identical form and using techniques used centuries ago. After the new building is completed, the existing one is dismantled. This process is repeated every 20 years. However, the renowned architectural conservator K. E. Larsen (Larsen, 1994) believes that this activity should not be considered architectural conservation, but rather a traditional religious event. After World War II, Japan placed emphasis on economic development, while the protection of cultural heritage became less important. The economic development of the 1960s and 1970s led to serious social problems, causing excessive centralization and the depopulation of rural areas. Historic cities were destroyed. In many cases, the environment surrounding historic buildings also deteriorated. At the beginning of the modern era, the Japanese government gave citizens the right to dispose of their property. In Japan, for a building to be recognized as a cultural asset, the consent of the land and building owner is required. Therefore, if the owner of a building does not agree to its recognition as a cultural asset, it is possible and legal to demolish the historic building. The former capital of Japan, Kyoto, had many historic European-style stone and brick buildings dating from the 19th and early 20th centuries, which were located in the city center. They were owned by private companies and, unfortunately, were demolished. Many two-story wooden buildings, known in Japanese as *machiya*, no longer exist either, as they were not recognized as Important Cultural Properties in Kyoto (Yamasaki, 2005). In 1975, a new category of cultural assets was introduced in Japan – Groups of Traditional Buildings. An important event for Japan

was the organization of an international conference of UNESCO, ICCROM, and ICOMOS in Nara on November 1-6, 1994, which resulted in the publication of „The Nara Document on Authenticity.” Respect for cultural diversity and cultural heritage became important. Currently, local governments in Japan designate areas and even districts for protection. This protection is mainly limited to building facades, and the municipality must give its consent to change the facades of buildings. In 1996, the registration of traditional buildings was introduced, which was extended in 2004 with the recognition of buildings as a category of Monuments and Cultural Properties. At that time, the Act on the Landscape of Cities and Villages was also passed (Kakiuchi, 2016). Sometimes it happens that a building has to be demolished for urban planning reasons or because of a high degree of destruction. We must remember that the primary task in restoration and revitalization work is to preserve as many authentic elements and materials as possible. In such cases, all elements recovered from demolished buildings can and should be used and reused in newly constructed buildings or urban public spaces⁸. There are known examples of the reuse of not only building materials: bricks, stone, roof tiles, decorative metal elements, but also doors, windows, gates, including fittings and decorations, tile stoves, fireplaces, etc. We find such examples not only in European countries (England, Germany, Italy, Denmark, Belgium, Switzerland, the Netherlands, Finland), but also in Mexico, the USA, China, Japan, Africa, and the United Arab Emirates. The principles of sustainable development are consistent with the implementation of architecture inscribed in the Circular Economy, which declares to imitate natural biological cycles in the circulation of matter in many areas of life and industry. This also applies, of course, to architecture and urban planning (Przepiórkowska, 2023).

ENDNOTES

- ¹ Even after 1945, some factories employed 10,000 workers, e.g., Uniontex and Poltex.
- ² The investors were the French companies Paris Orléans and Foncière Euris, and the architecture was designed by the English company Virgile & Stone from London in collaboration with the French firm Suol Architects from Lyon.
- ³ The designers were OP Architekten from Vienna and Jestico & Whiles from London (Walczak, 2023).
- ⁴ The Medusa Group, founded in 1997 by Przemysław Łukasik and Łukasz Zagala, employs about 100 people and has offices in Bytom, Warsaw, and Dubai. The studio's

- projects have won numerous awards in Poland and abroad.
- ⁵ The project, carried out by the construction company Nestler and Ferrenbach, was completed in 1914.
- ⁶ Restaura and the Mondanta and Maforma consortium were responsible for the restoration of the building.
- ⁷ She was one of the most influential women of the turn of the 19th and 20th centuries and ran her husband's empire for many years after his death.
- ⁸ This was the case in the aforementioned Anna's Gardens in the Fuzja quarter.

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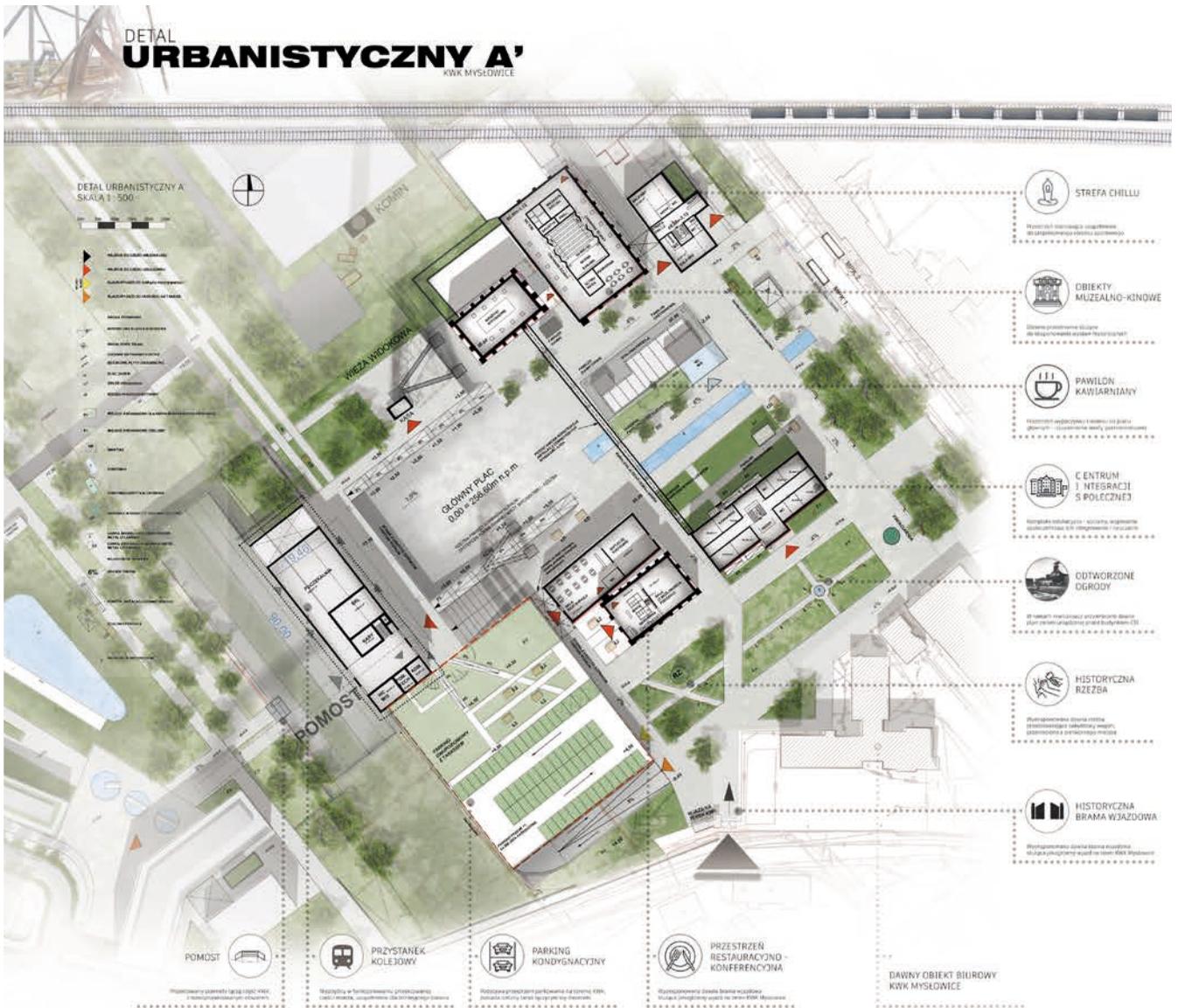
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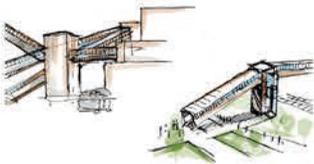
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DETAL URBANISTYCZNY A'

KWK MYSŁOWICE

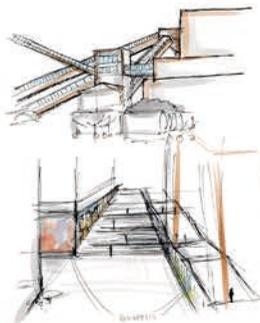


SZKICE PROJEKTOWE



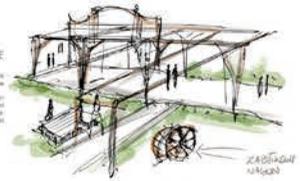
INSPIRACJA I ZASTOSOWANE ROZWIĄZANIE POMOSTÓW

Wzrosty i zróżnicowanie wysokości obiektów oraz tryby ich doświetlenia. Dla zbudowania historycznej charakterystyki i wrażeń, wdrażanie rozwiązań inspiracji architektonicznych pomostów.



PERGOLE

Wspieranie i osłanianie ludzi na terenie zielonym. Wykorzystanie naturalnych i sztucznych materiałów.

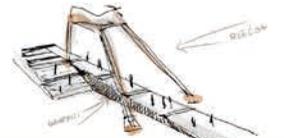


SZKIC PAWILONU

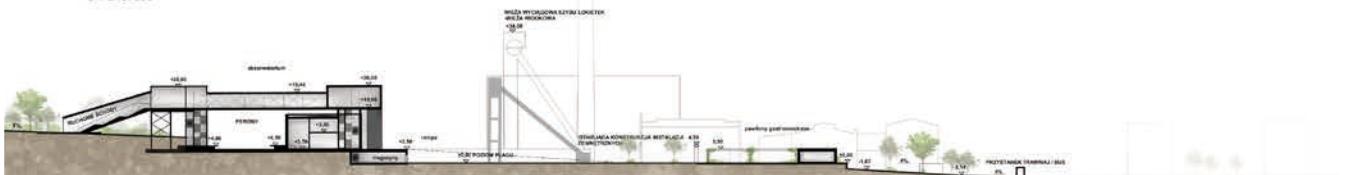
Wspieranie i osłanianie ludzi na terenie zielonym. Wykorzystanie naturalnych i sztucznych materiałów.

RZEZBA, HISTORIA I KOMUNIKACJA

Wspieranie i osłanianie ludzi na terenie zielonym. Wykorzystanie naturalnych i sztucznych materiałów.



PRZEKROJ PRZEZ TEREN A' KWK MYSŁOWICE SKALA 1:500



WATERA URBANISTYKI I ARCHITEKTURY STERJEO I ME-SKOPICZ POLITECHNIKI KRAKOWSKA W. TADEUSZA KOSCIUSZKI WYDZIAŁ ARCHITEKTURY
- DWUMIENIOWY 302/33
PROJEKT REWITALIZACJI TERENÓW POPRZEMYSŁOWYCH OBSZARU KWK MYSŁOWICE JAKO NOWY KIERUNEK ZRÓWNOWAŻONEGO ROZWOJU MIASTA

AUTORZY
JOANNA GODEK
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PROMOCYJCY
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RECENZENT
DR HAB. INŻ. ARCH. PROF. PK.
KINGA RACON-LEJA

DETAL URBANISTYCZNY B'

KWK MYŚLOWICE



SZKICE PROJEKTOWE

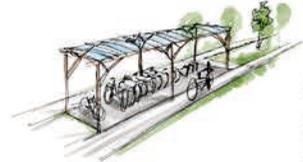


PERGOLE

Wskazanie funkcjonalności i sposobu realizacji w Myślowicach i przystankach MZK na terenie KWK. Wykazanie oraz wyliczenie kosztów wykonania oraz wyliczenie kosztów eksploatacji.

INSPIRACJA DLA PERGOLE I PRYSTANKÓW

Wskazanie inspiracji dla projektu i sposobu realizacji w Myślowicach i przystankach MZK na terenie KWK. Wykazanie oraz wyliczenie kosztów wykonania oraz wyliczenie kosztów eksploatacji.



PERGOLE JAKO WIATKI POWEROWE

Wskazanie inspiracji dla projektu i sposobu realizacji w Myślowicach i przystankach MZK na terenie KWK. Wykazanie oraz wyliczenie kosztów wykonania oraz wyliczenie kosztów eksploatacji.



SZKIC PROJEKTOWANEJ ZABUDOWY I PRZESTRZENI POMIĘDZY

Wskazanie inspiracji dla projektu i sposobu realizacji w Myślowicach i przystankach MZK na terenie KWK. Wykazanie oraz wyliczenie kosztów wykonania oraz wyliczenie kosztów eksploatacji.

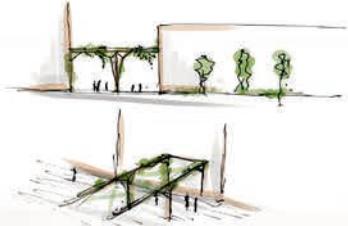


OTWARTE PRZESTRZENIE WZBOGACONE PERGOLAMI

Wskazanie inspiracji dla projektu i sposobu realizacji w Myślowicach i przystankach MZK na terenie KWK. Wykazanie oraz wyliczenie kosztów wykonania oraz wyliczenie kosztów eksploatacji.

PRZEMKÓR PRZEZ TEREN B' KWK MYŚLOWICE

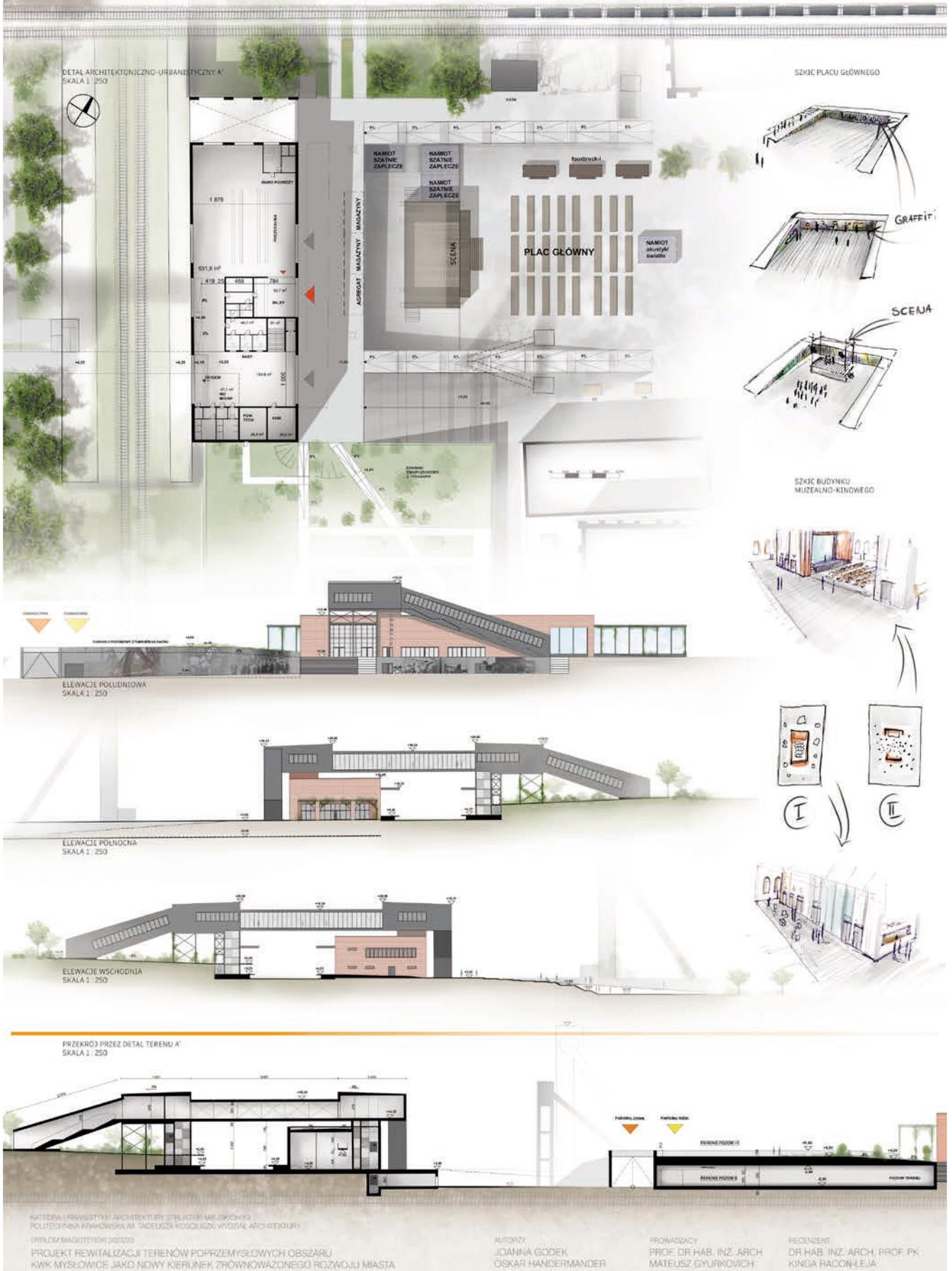
SKALA 1:500



KATEDRA URBANISTYKI I ARCHITEKTURY STRUKTURALNEJ ME-SZKICHAO POLITECHNIKI KRAKOWSKA IM. TADEUSZA KOŚCIUŁKI WYDZIAŁ ARCHITEKTURY
 DYPLOM MAGISTERSKI 2022/23
 PROJEKT REWITALIZACJI TERENÓW POPRZEMYSŁOWYCH OBSZARU KWK MYŚLOWICE JAKO NOWY KIERUNEK ZRÓWNOWAŻONEGO ROZWOJU MIASTA
 AUTORKI: JOANNA GODEK, OSKAR HANDERMANDER
 PROMOWACZY: PROF. DR HAB. INŻ. ARCH. MATEUSZ GYURKOVICH
 RECENTENT: DR INŻ. ARCH. DAMIAN POKLEWSKI-KOZIĘŁŁ

DETAL ARCHITEKTONICZNO-URBANISTYCZNY A'

KWK MYSŁOWICE



KATEDRA URBANISTYKI I ARCHITEKTURY STEREAJUBIUMIENSKICH
POLITECHNIKA KRAKOWSKA IM. TADEUSZA KOSCIUSZKI WYDZIAŁ ARCHITEKTURY
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PROJEKT REWITALIZACJI TERENÓW POPRZEMYSŁOWYCH OBSZARU
KWK MYSŁOWICE JAKO NOWY KIERUNEK ZRÓWNOWAŻONEGO ROZWOJU MIASTA

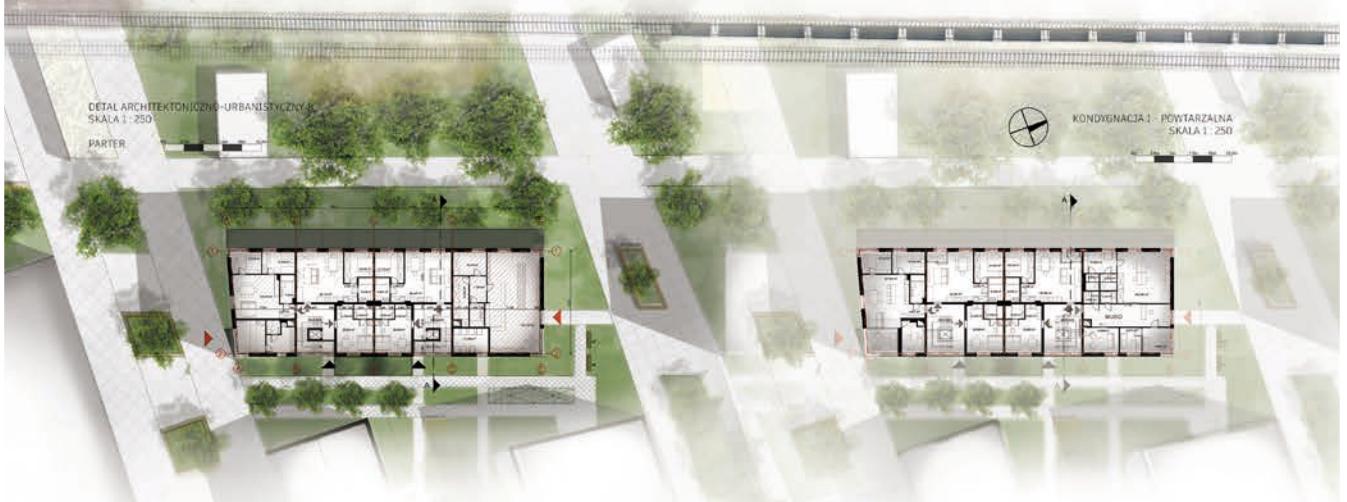
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OSKAR HANDERMANDER

PROMOWACZY
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MATEUSZ GYURKOVICH

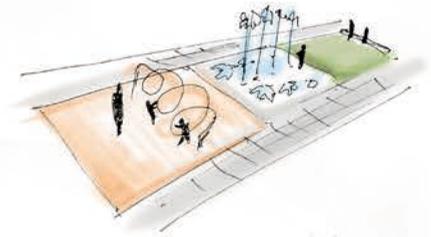
RECENZENT
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KINGA RACON-LEJA

DETAL ARCHITEKTONICZNO-URBANISTYCZNY B'

KWK MYSŁOWICE



ELEWACJA ZACHODNIA
SKALA 1:200



PLAC ZABAW, FONTANNA, „RODOCE”



ELEWACJA WSCHODNIA
SKALA 1:200

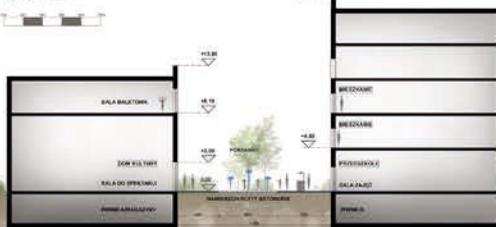


ELEWACJA POŁUDNIOWA
SKALA 1:200

ELEWACJA POŁUDNIOWA
SKALA 1:200



PRZEKRÓJ PRZEZ DETAL TERENU B'
SKALA 1:200



PRZEKRÓJ A - A PRZEZ DETAL TERENU B'
SKALA 1:200

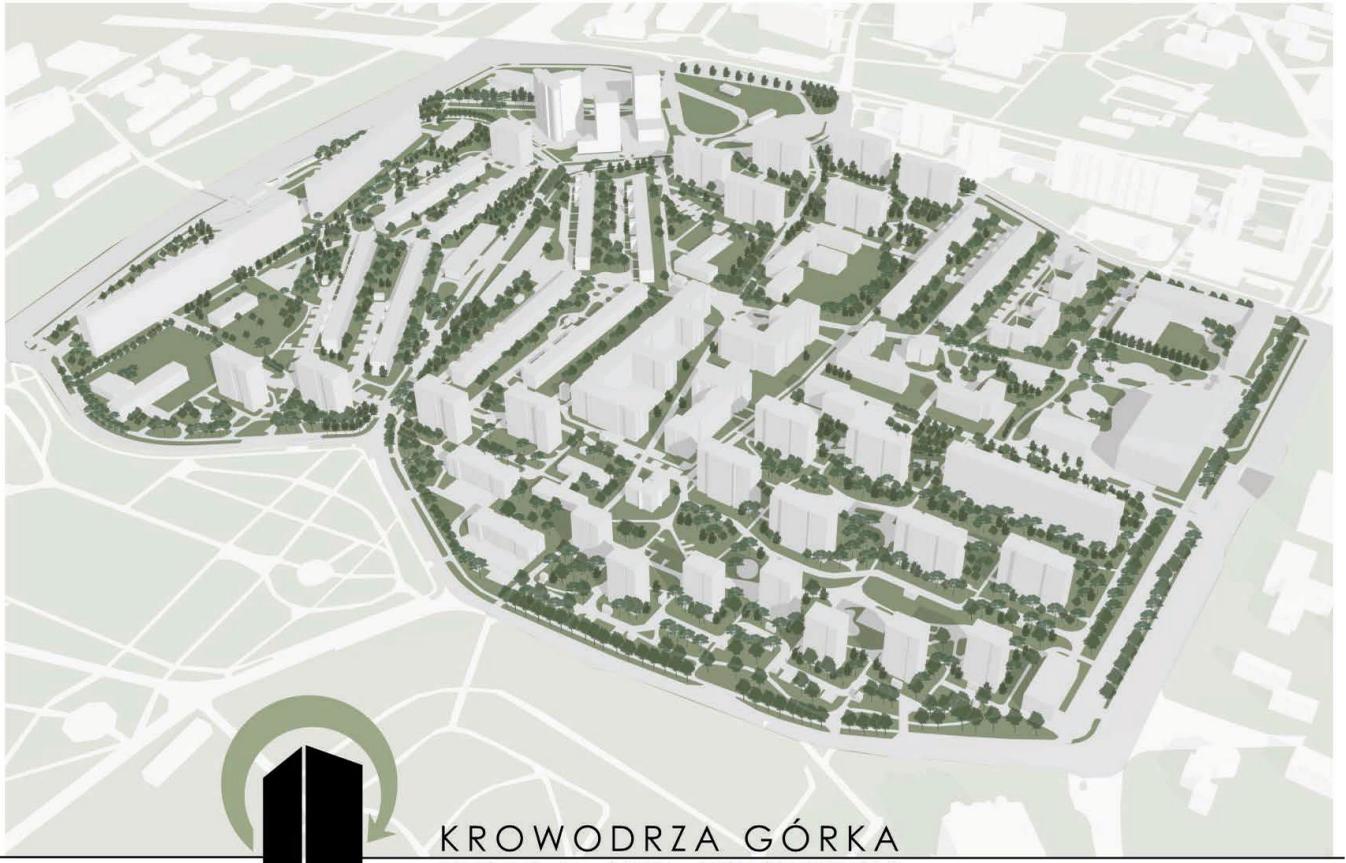


KATEDRA URBANISTYKI I ARCHITEKTURY STRUKTURALNEJ
POLITECHNIKA KRAKOWSKA IM. TADEUSZA KOŚCIUŃSKO WYDZIAŁ ARCHITEKTURY
DYPLOM MAGISTERSKI 3032/23
PROJEKT REWITALIZACJI TERENÓW POPRZEMYSŁOWYCH OBSZARU
KWK MYSŁOWICE JAKO NOWY KIERUNEK ZRÓWNOWAŻONEGO ROZWOJU MIASTA

AUTORZY
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KINGA RACON-LEJA



KROWODRZA GÓRKA

REWITALIZACJA OSIEDLA WIELKOPŁYTOWEGO

DYPLOM MAGISTERSKI. AUTOR: INŻ. ARCH. DOMINIKA PIETRUCZYK. PROMOTOR PROF. DR HAB. INŻ. ARCH. MATEUSZ GYURKOVICH, KATEDRA URBANISTYKI I ARCHITECTURY STRUKTUR MIEJSKICH A-9, ROK AKADEMICKI 2023/24



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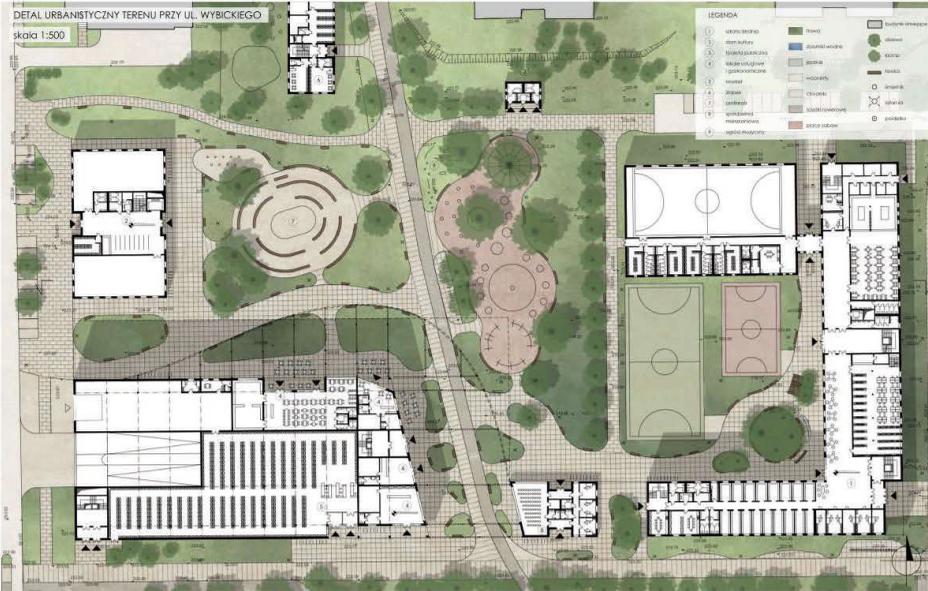
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KROWDRZA GÓRKA

REWITALIZACJA OSIEDLA WIELKOPŁYTOWEGO

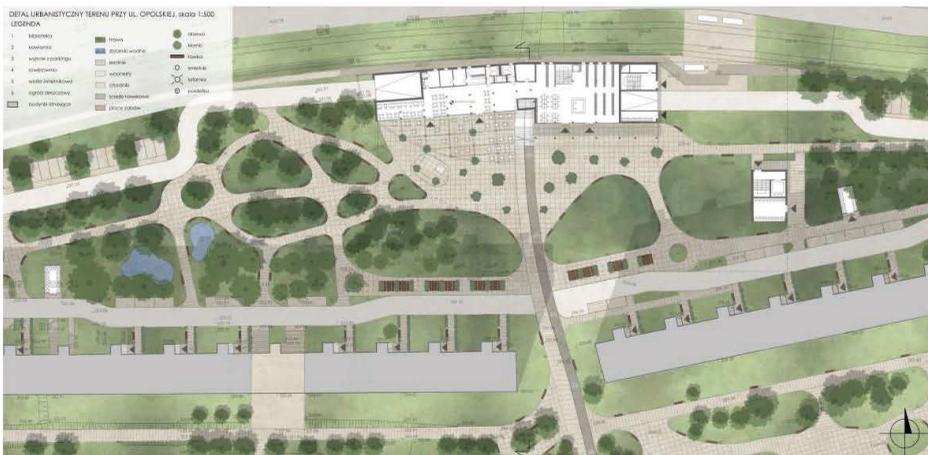


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KROWDRZA GÓRKA

REWITALIZACJA OSIEDLA WIELKOPŁYTOWEGO



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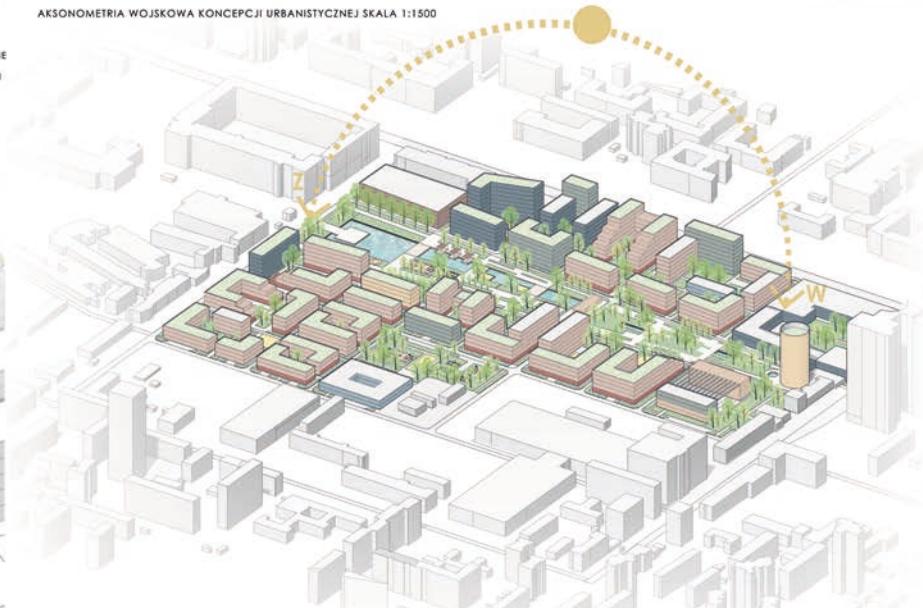
BUDYNEK WIELORODZINNY W OSIEDLU W KIJWIE



LEGENDA

- ZABUDOWA MIESZKANIOWA WIELORODZINNA
- USŁUGI KULTURY I REKREACJI
- USŁUGI BIUROWE I ADMINISTRATYWNE
- USŁUGI ZDROWIA I POMOCY SPOŁECZNEJ
- USŁUGI GASTRONOMICZNE
- USŁUGI NAUKI I EDUKACJI
- PARTER USŁUGOWY
- DACH ZIELONY

AKSONOMETRIA WOJSKOWA KONCEPCJI URBANISTYCZNEJ SKALA 1:1500



AKSONOMETRIA WOJSKOWA PROJEKTOWANEGO BYDYNKU WIELORODZINNEGO SKALA 1:500



ZBLIŻENIE NA WYBRANE OBSZARY KONCEPCJI

REKREACJA WODNA



TERENY SPORTU



WYBIEGOWISKO DLA PSÓW



PARK



POLITECHNIKA KRAKOWSKA IM. TADEUSZA KOŚCIŹKI W KRAKOWIE, WYDZIAŁ ARCHITECTURY, KIERUNEK ARCHITECTURA, KATEDRA URBANISTYKI I ARCHITECTURY, STRUKTUR MIEJSKICH A9, ROK AKADEMICKI 2023/2024, PRACA DYPLOMOWA MAGISTERSKA, PROMOTOR: PROF. DR HAB. INŻ. ARCH. MATEUSZ GYURKOVICH, RECENTENT: DR INŻ. ARCH. PIOTR LANGER AUTOR: INŻ. ARCH. SOFIA SKARZHENKO

BUDYNEK WIELORODZINNY W OSIEDLU W KIJWIE



WIZUALIZACJA BUDYNKU PROJEKTOWANEGO OD STRONY POŁUDNIOWEJ



WIZUALIZACJA BUDYNKU PROJEKTOWANEGO OD STRONY WEWNĘTRZNEGO DZIEDZINCA

POLITECHNIKA KRAKOWSKA IM. TADEUSZA KOŚCIŹKI W KRAKOWIE, WYDZIAŁ ARCHITECTURY, KIERUNEK ARCHITECTURA, KATEDRA URBANISTYKI I ARCHITECTURY, STRUKTUR MIEJSKICH A9, ROK AKADEMICKI 2023/2024, PRACA DYPLOMOWA MAGISTERSKA, PROMOTOR: PROF. DR HAB. INŻ. ARCH. MATEUSZ GYURKOVICH, RECENTENT: DR INŻ. ARCH. PIOTR LANGER AUTOR: INŻ. ARCH. SOFIA SKARZHENKO