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Adaptive reuse of industrial heritage in Łódź as a tool for reintegrating urban spatial structure

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Abstract. The research paper investigates the state of preservation of industrial heritage in Łódź, with a focus on its adaptive reuse and its significance in urban renewal processes. The study primarily explores projects carried out in pre-war factory areas during the post-transformation period, marked by the city's rapid deindustrialisation. This economic shift, accompanied by social turbulence, contributed to serious spatial problems within the urban structure. Abandoned factory buildings have shaped degraded urban areas, often becoming sources of spatial exclusion and, in some cases, forming physical barriers that disconnected entire inner-city blocks from the active urban fabric. The research was conducted between April 2024 and April 2025 using qualitative methods, including fieldwork and on-site analysis of 287 post-industrial sites. The analysis of adaptive reuse directions of post-industrial heritage enables drawing more general conclusions regarding the revitalisation of such sites. Selected examples illustrate a range of new functions introduced into former factory spaces and evaluate which solutions are most effective in restoring spatial coherence and reintegrating fragmented areas within the city.

Keywords: post-industrial heritage, adaptive reuse, urban regeneration, revitalisation, spatial integration, Łódź.

Introduction

Post-industrial areas within the spatial structure of cities – understood as those where industrial activities have ceased or no longer exert significant influence – constitute spaces that have experienced economic decline, environmental degradation, social challenges, and spatial exclusion. As industries withdrew, they left behind vacant structures and contaminated sites, which today represent a distinct category of heritage: material remnants of industrial culture possessing historical, technological, architectural, and symbolic value (Gasidło, 2008; Großewinkelmann, 2012).

Transforming old factories, warehouses, and other post-industrial buildings into new, functional spaces remains both a significant challenge and an opportunity for many post-industrial cities in Poland. Since the early 1990s, the country has undergone rapid deindustrialisation, triggered by the liquidation of state-owned enterprises unable to compete in a market economy. As a result, numerous industrial sites were abandoned, accelerating the degradation of urban space. Though the need for revitalisation was widely acknowledged, immediate responses were hindered by competing socioeconomic priorities. It was not until Poland's accession to the European Union in 2004 that significant revitalisation efforts gained momentum, supported by new funding and planning instruments.

These challenges and opportunities are particularly evident in post-socialist cities of Central and Eastern Europe, where deindustrialisation overlapped with systemic transformation. Łódź – a paradigmatic example of such a city – offers a compelling case for examining how adaptive reuse of industrial heritage can influence urban reintegration. Although the city traces its origins to the medieval period, its rapid expansion in the 19th century was driven by the textile industry, which positioned Łódź as one of the major industrial centres in Europe. According to Liszewski (1999, p. 45), just before World War I, over 580 factories operated in the city, most engaged in textile production. This industrial dominance persisted until the late 1980s, when the systemic transition left behind vast industrial relics.

In the post-transition years, many former factories were repurposed into warehouses or neglected entirely, with no strategic vision for their reuse. Some were demolished to free up centrally located land for speculative redevelopment, leading to spatial fragmentation and the loss of historic urban fabric. However, over the past two decades, a growing number of investments have focused on the adaptive reuse of these spaces, increasingly with attention to preserving their architectural and cultural value. Alongside this trend, academic interest in Łódź's industrial legacy has deepened, particularly among researchers affiliated with local institutions (e.g. Walczak, 2000; Piech, 2004; Kotlicka, 2008; Kazimierczak, 2014; Mastalerz, 2017).

Today, Łódź retains a considerable stock of industrial heritage within its urban core – estimated to occupy nearly 20% of the downtown area. These inner-city sites, because of their scale and location, offer significant potential for adaptive reuse and sustainable urban renewal. Notable revitalisation projects such as Manufaktura, EC1, and Monopolis have become widely recognised both nationally and internationally. Numerous smaller-scale initiatives – ranging from office conversions to residential lofts and cultural venues – further illustrate the diversity of reuse strategies being implemented across the city.

Despite these positive developments, Łódź's industrial heritage still suffers from institutional neglect. The City Hall has yet to develop a comprehensive support system for owners of degraded sites, and no accessible database exists to catalogue the preservation status, layout, or reuse potential of historical factories. These gaps continue to hinder coordinated revitalisation efforts and reduce the ability of stakeholders to assess and act upon the reuse value of post-industrial properties.

This article seeks to examine the extent to which adaptive reuse of industrial heritage in Łódź contributes to the reintegration of the urban spatial structure. It investigates not only the functional transformation of former factory sites, but also their role in restoring spatial continuity, reinforcing symbolic identity, and supporting sustainable urban regeneration. Drawing on a comprehensive inventory and typological analysis of 287 pre-war industrial sites, the study explores how adaptive reuse intersects with infrastructure, mixed-use development, public space integration, and community dynamics to reshape the inner city.

Theoretical background

The value of industrial heritage – long marginalized in comparison to monumental or elite architecture – has gained increasing recognition in recent decades. This shift reflects

broader transformations in cultural heritage discourse, which has gradually expanded to embrace the material remnants of industrial society as key elements of urban history and identity (Großewinkelmann, 2012). These relics are no longer seen solely as traces of economic history but as strategic resources in the making of more sustainable, inclusive, and memory-sensitive cities (Walczak, 2000).

Industrial heritage encompasses a complex intersection of architectural, technological, social, and symbolic values. Its reuse poses a distinctive challenge, as it requires negotiating between preserving authenticity and enabling transformation. In this context, adaptive reuse has emerged as a key strategy – defined as the process of converting obsolete or underutilized buildings to new purposes while retaining elements of their historical character (Bullen & Love, 2011). Adaptive reuse provides a bridge between conservation and regeneration, offering benefits that are cultural, environmental, and economic in nature (Kaczmarek, 2001).

From a theoretical standpoint, adaptive reuse is grounded in the notion of heritage valorisation – the reappraisal of previously neglected industrial structures as meaningful assets within contemporary urban culture. In post-socialist cities, this process has been particularly visible: industrial decline coincided with abrupt economic and political transition, creating a unique layer of contested memory and urban discontinuity. Therefore, post-industrial spaces can function as material carriers of collective memory and urban continuity. Their reuse may serve not only functional and economic objectives but also cultural ones, fostering place attachment, identity renewal, and spatial cohesion (Smith, 2006).

Adaptive reuse also aligns with key principles of sustainable urban development and the compact city model. By promoting redevelopment within already urbanized areas, cities can avoid the ecological costs of greenfield expansion. Reusing existing structures allows for urban densification, better infrastructure utilization, and reduced spatial sprawl – factors central to the idea of short-distance urbanism and resource efficiency. Furthermore, the combination of old and new architectural forms often yields strong aesthetic outcomes and reinforces the uniqueness of place (Dempsey et al., 2010; Kaczmarek, 2001).

One of the defining characteristics of adaptive reuse in post-industrial settings is its multifunctionality. Many contemporary projects integrate residential, office, commercial, cultural, and public uses, often within the same complex (Kazimierczak, 2014). This multifunctional approach enhances land use efficiency and contributes to the creation of vibrant, socially diverse urban environments. However, it also raises tensions between conflicting values: heritage conservation vs. profitability, public access vs. private control, and inclusion vs. gentrification (Pendlebury et al., 2004; Wycichowska, 2012).

In Poland, the post-1989 transition posed significant threats to industrial heritage. Widespread privatisation and a lack of protective frameworks led to the demolition or degradation of many factory sites (Jarczewski, 2009). More structured efforts became visible after EU accesion in 2004, when new resources and institutional instruments supported regeneration policies. However, research emphesises that the quality and consistency of these initiatives have been uneven and often dependent on local governance capacities (Mastalerz, 2017). However in cities such as Łódź, where industrial heritage occupies a large part of the urban core, the absence of coordinated urban policy remains a pressing issue.

At the same time, critical literature increasingly warns against the over-commercialisation of heritage. Under the influence of neoliberal urban development, adaptive reuse projects may become commodified, serving investor interests while marginalising local memory and community engagement (Smith, 2006; Logan & Reeves, 2009). Scholars argue for more participatory and context-sensitive approaches that recognise the symbolic and social value of industrial sites, engage local stakeholders, and ensure equitable access to revitalised spaces (Bullen & Love, 2010).

Furthermore, in the Polish context, adaptive reuse and revitalisation processes are shaped by specific legal and planning frameworks. A key milestone was the adoption of the Revitalisation Act in 2015, which for the first time provided local governments with formal procedures and instruments to coordinate urban regeneration, including adaptive reuse of industrial heritage. The Act introduced integrated revitalisation programmes and participatory mechanisms, yet its practical outcomes have varied across cities, largely depending on the availability of complementary planning tools and institutional support (Ustawa z dnia 9 października 2015 r. o rewitalizacji [Revitalization Act], 2015). Despite this, the effectiveness of implementation varies across municipalities, and challenges remain in ensuring consistent integration of adaptive reuse into broader urban policy (Huculak, 2009). In the case of Łódź, although the legislative framework exists, the lack of coherent planning tools and institutional support structures continues to hinder the development of strategic and inclusive reuse initiatives.

In summary, adaptive reuse of industrial heritage sits at the intersection of several theoretical frameworks: cultural heritage studies, sustainable urbanism, critical urban theory, and post-socialist urban transformation. It is not a neutral or technical process, but one that requires balancing multiple, often competing, interests. The case of Łódź provides a valuable opportunity to examine how these dynamics play out in practice, offering insight into both the potentials and the tensions of adaptive reuse as a tool for urban reintegration.

Methodology and research procedure

The research conducted within the framework of this study was qualitative in nature and aimed to assess the condition, typology, and spatial-functional directions of adaptive reuse of post-industrial heritage in Łódź. The applied methodology combined several techniques: desk research, field query, participant observation. This comprehensive research was carried out between April 2024 and April 2025, and its findings provide insight into the current conditions and transformation dynamics of industrial heritage in the city.

The analysis was preceded by a fundamental research stage involving the systematic inventory of all available pre-war industrial buildings and complexes in Łódź, along with an evaluation of their state of preservation. In total, 287 historical industrial sites – identified on the basis of archival records, scientific publications, and historical city plans – were examined and geolocated. This database served as the starting point for subsequent classification and spatial analysis.

The study focused on factories and industrial structures dating mainly from the 19th and early 20th centuries, ranging from small-scale enterprises to extensive multi-building complexes. These included sites directly and indirectly related to the textile indu-

stry, such as spinning mills, weaving mills, machinery factories, spool manufacturers, and iron foundries, as well as facilities from other sectors including breweries, distilleries, and construction materials. Since the 1990s, many of these sites have undergone spatial and functional transformation as a result of systemic political and economic shifts in Poland.

Each site was subjected to in-depth analysis and classified according to three main criteria: degree of physical preservation, current function, and the extent and character of architectural change. This classification enabled the distinction between degraded and preserved sites, the identification of reuse scenarios, and the tracing of the evolution of industrial forms within the urban structure.

Within this broader framework, the present article focuses on a selected segment of the study: buildings that have undergone adaptive reuse – defined as cases where the historical fabric has been preserved to a substantial extent and assigned new contemporary functions. The starting point for the analysis of each site was its current ownership structure (public or private), as ownership often determines investment capacity and adaptation strategy. Functional classification was based on the Polish Classification of Building Objects (GUS, 2002), which was slightly expanded and interpreted to reflect the complexity of mixed-use developments and unconventional reuse forms.

To enhance analytical precision, the classification was further supported by qualitative interpretative criteria such as the preservation of architectural identity, integration with the surrounding urban tissue, and continuity of historical spatial layout. This approach allowed for the identification of prevailing trends in adaptive reuse and for an assessment of the capacity of post-industrial heritage to support urban regeneration and reintegration processes.

Results

State of preservation of the city's post-industrial resource

The 287 inventoried historical industrial sites, located throughout the entire city of Łódź, have been analyzed on multiple levels focused on both the form and the function. This allowed for the creation of a general classification presenting the overall condition of the resource, including three categories: (1) factories preserved and in use, (2) vacant properties (existing/unused resource), (3) demolished facilities, which were further subdivided to reflect their detailed state or preservation (Fig. 1). The classification was complemented by a map showing the location of the post-industrial sites within densely built-up inner-city areas, to emphasize the unique scale of the phenomenon and the historical intermingling of industrial and residential functions (Fig. 2).

This approach provided a comprehensive assessment of the current state of Łódź's industrial heritage and enabled further detailed analysis. It also led to an optimistic conclusion that 'factories preserved and in use' still dominate in the city's spatial structure, comprising 69% of all inventoried sites. These include both individual industrial buildings and extensive complexes.

In contrast, 11.5% of the inventoried properties were categorized as 'vacant', defined as existing buildings left unused and in poor technical condition, often due to atmospheric degradation, vandalism, or theft. The remaining 19.5% (56 sites) had been demolished entirely during the post-transition period, particularly after the 1990s. Among

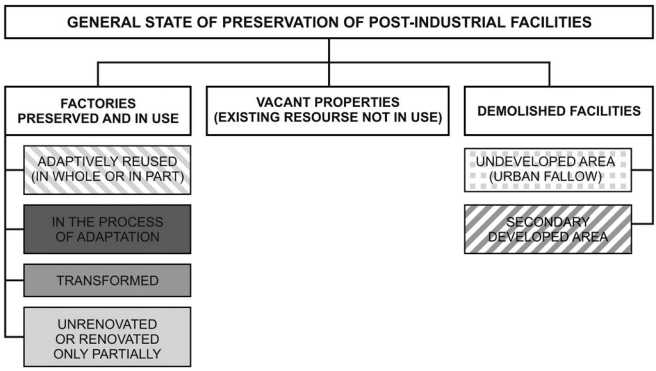

Fig. 1. The detailed division of general state of preservation of post-industrial areas

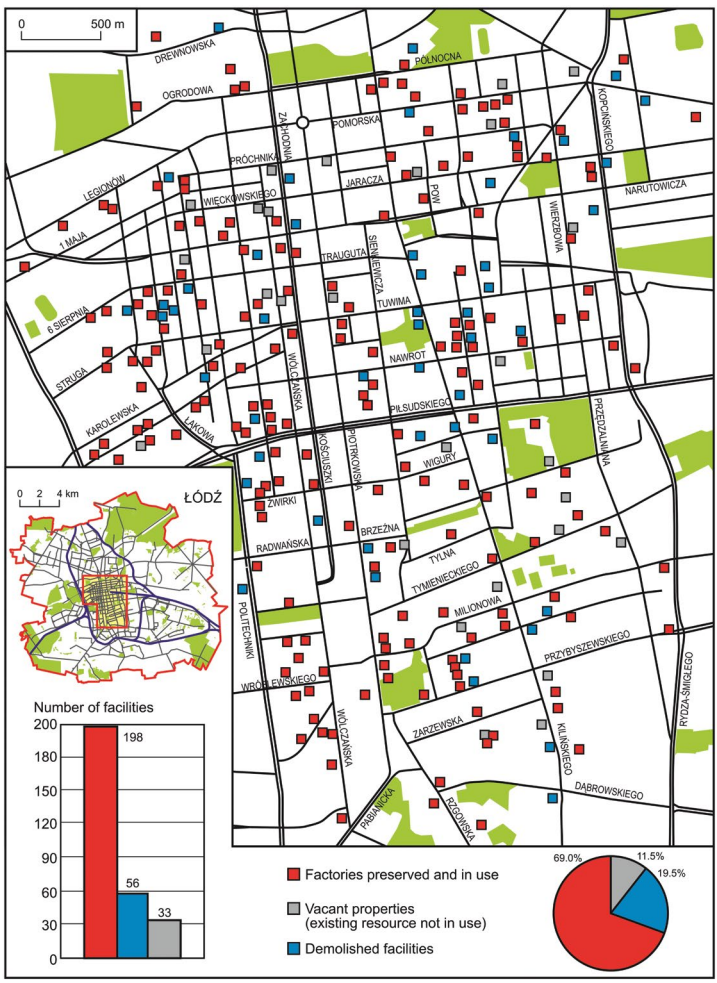

Fig. 2. The general state of preservation of Łódź inner-city post-industrial sites

these, 39 have since been redeveloped, mainly for residential purposes, while the remaining 17 sites remain as undeveloped 'urban fallow'. In this context 'urban fallow' refers to a phenomenon, when land lacks demand, ideas, or resources for redevelopment, but also can serve as a method to increase land value, especially when held as reserves by owning companies (Domański, 2009).

Among the 198 sites classified as 'factories preserved and in use', a more detailed typology was developed, consisting of four categories: (1) adaptively reused (in whole or in part), (2) in the process of adaptation, (3) transformed, and (4) unrenovated or renovated only partially (Fig. 3).

The first two categories, comprising approximately 68% of preserved post-industrial sites, are of particular interest in this study. They represent investments carried out with respect for the site's historical significance, preserving the original architecture and acknowledging their historical functions within the city's economy and landscape.

The 'transformed' category represents 15,7% of preserved post-industrial assets in Łódź. These include factories that have undergone extensive construction alterations, resulting in a significant break with the industrial identity, such as insulating façades with polystyrene foam, plastering, or cladding with ceramic tiles imitating bricks, as well as modifying window dimensions or installing white plastic window frames. Additionally, features such as water and dust towers or gabled roofs, characteristic of spinning and weaving mills, have often been removed.

The 'unrenovated or renovated partially' sites (around 17% of preserved and utilized resources) typically consist of buildings acquired by their current owners during the mass privatization of the 1990s, when bankruptcy trustees of industrial enterprises sold them, often at low prices. In the post-transition era, many were used as warehouses or low-cost rental spaces without adequate reinvestment, leading to technical degradation and, in some cases, abandonment. Some are still in use for industrial purposes by small private firms, usually adapted only in a basic way.

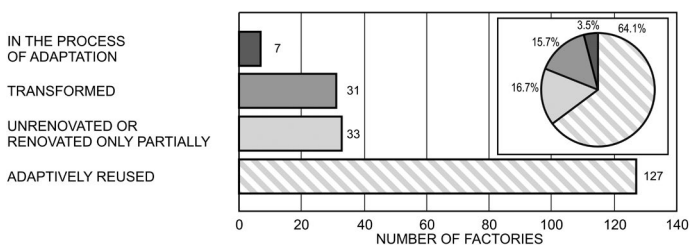

Fig. 3. The detailed division of the state of preservation of factories 'preserved and in use'

New functions of adaptively reused post-industrial building

To enhance the complexity of the research the 'adaptively reused' factories, along with those 'in the process of adaptation', were analyzed in terms of their current functions distribution and usage patterns. This revealed the prevailing trends in repurposing projects in the Łódź market, reflecting its conditions and needs. Additionally, it facilitated the identification of various possibilities offered by post-industrial spaces for secondary use (Fig. 4).

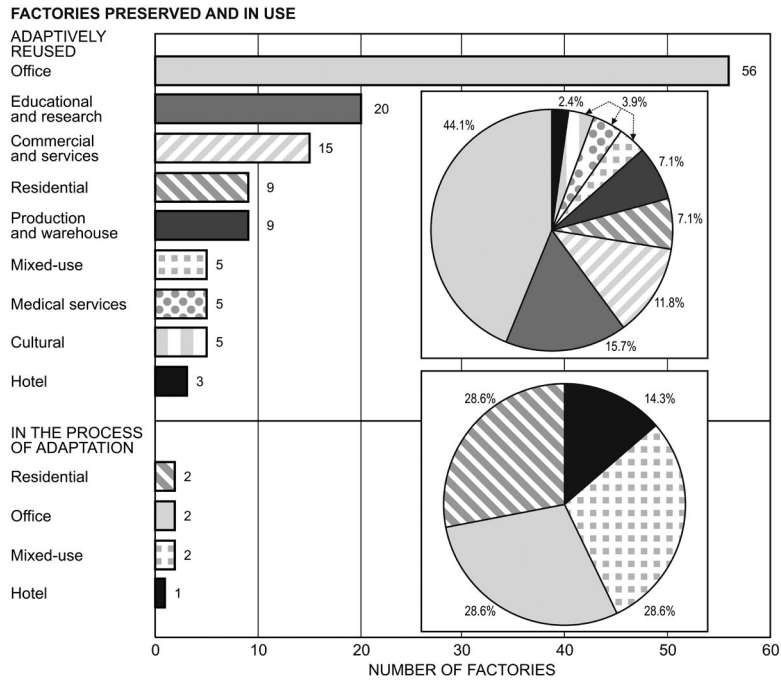

Fig. 4. Distribution of new functions in adaptively reused post-industrial buildings and complexes in Łódź

In historical factories of Łódź, adaptively reused for modern functions, various spaces emerge, such as lofts, hotels, offices, headquarters of universities, public institutions and private companies (Fig. 5). This aligns with the global trend of post-industrial adaptive reuse projects. Among the dominant and distinctive functions implemented into Łódź's former industrial spaces, office functions take the lead, whereas A and B class office buildings stand out. They comprise 20 out of 58 properties adaptively reused for office purposes, and are exemplified e.g. by Łódź.Work (18 Dowborczyków St.), Textorial Park (17 Fabryczna St.), Stara Drukarnia (130 Gdańska St.), Comarch (74/76 Jaracza St.), Synergia (128/134 Wólczańska St.), Zenit Blossom Center 82/84 (Sienkiewicza St.), Faktoria (25 Dowborczyków St.), Hammer Med (73/75 Kopcińskiego St.). These projects exemplify the successful integration of post-industrial identity with business functionality and stand out especially in terms of the scale of preserved historic fabric and advanced adaptive solutions that skillfully combine historical and modern elements.

Łódź can also boast successful initiatives in the adaptive reuse of former factory spaces for educational and research purposes (20 cases). The leader in this field is Lodz University of Technology (TUL), which has adopted seven factory buildings from three post-industrial complexes of Łódź prominent industrialists: F. W. Schweikert, P. Desurmont, A. and E. Motte and S. Rosenblatt. Ultimately, an unique inner-city 37-hectare campus of TUL was created, combining modern buildings, post-industrial structures, and factory owner villas. Apart from TUL, also University of Lodz has utilized the potential of post-industrial spaces for educational endeavors. A prime example is the University High School located in the former Mechanical Garter Factory of M. and J. Seidenwurm. In addition to state

Fig. 5. Examples of historical factories in Łódź adaptively reused for different function: a) HammerMed office building in the former H. Dziembor and J. Niedźwiedziński's factory, Łódź, Kopcińskiego Street; b) Łucznik – Lockpol Sp. z o.o. headquarters (building hardware manufacturer and distributor) in the former A. Horak Textile Works, Łódź, Starorudzka Street; c) Indigo Nails headquarters in the former Edward Ramisch Cotton Spinning Mill, Łódź, Senatorska Street; d) University of Łódź – University High School in the former Seidenwurm Mechanical Hosiery Factory, Łódź, Pomorska Street; e) Wigencja – Centre for Contemporary Art for Children and Youth in the former Schmieder Brothers Cotton Mill, Łódź, Sienkiewicza Street; f) Monopolis – cultural, service and office complex in the former Monopol Vodka Factory, Łódź, Kopcińskiego Street

universities in Łódź, cities' non-public educational institutions have also achieved measurable successes in the adaptive reuse of former factories. The Academy of Humanities and Economics stands out in this group, with its seat in the historic factory complex of F. Göldner Cotton and Rubber Products and its campus located on the premises of the former J. Kestenberg's Wool Products Factory.

In urban areas, attention was also drawn to post-industrial buildings adaptively reused for commerce and services. This category is largely represented by factories transformed into headquarters for commercial and service-oriented companies, as well as buildings with rental spaces for services and commerce. Noteworthy projects include the headquarters of Indigo Nails Ltd. (14/16 Senatorska St.) in beautifully revitalized E. Ramisch spinning mill, Łucznik-Lockpol Ltd. (16A Starorudzka St.) located in the former A. Horak Textile Works buildings, and Melisa Ltd. (77 Pomorska St.), which adaptively reused a historic

Woolen Spinning Mill of M. Rzepkowicz and L. Monczka. These companies have proven to recognize the importance of preserving local heritage from destruction.

In the functional classification, medical services were considered separately to fully illustrate the diverse range of possibilities for adapting post-factory buildings. Across Łódź, the beauty of historic factories has been restored to accommodate various establishments, including e.g. the Medical Magnus Clinic (38 Kopernika St.), the Creator Prevention and Rehabilitation Center (55 Kopernika St.), and BK21 Tower (45 28 Pułku Strzelców Kaniowskich St.).

Also the presence of hotel functions in post-industrial spaces in Łódź cannot be ignored. This is exemplified by the spectacular adaptation of the former I. Poznański's monumental spinning mill for the needs of Andels Hotel (17 Ogrodowa St.), where the original fabric of the factory has been almost entirely preserved and exposed. Another successful adaptation is the Focus Hotel, located in J. Kindermann's spinning mill (23/25 Łąkowa St.), one of Łódź's most stunning factories covered with light plaster, in contrast to the prevailing raw brick façades of industrial buildings.

Łódź has also gained renown for the projects of post-industrial buildings adaptations for residential purposes, primarily through the widely recognized revitalization of the former K. Scheibler's spinning mill. In this monumental four-story and almost 207 meters long spinning mill, approximately 34,000 square meters of usable space was repurposed to create over 400 lofts, known as "Scheibler's Lofts". The old spinning mill together with its accompanying buildings now form a residential complex, featuring not only lofts but also recreational area with a pond, restaurants, shops, and services. The immediate vicinity of the lofts is a workers' housing estate at Księży Młyn, where modernization works have been ongoing since 2012 as a part of the Integrated Revitalization Program for Księży Młyn. The other examples of old factories adaptively reused for residential functions are e.g.: Cotton Lofts (23 Żeromskiego St.), Barciński Park (4 Tylna St.), Nova Fabryka (15/17 Kopernika St.), D77 (77 Drewnowska St.).

Despite the rapid deindustrialization in the 1990s, there are still pre-war industrial properties in Łódź fulfilling production. Among them, 9 have undergone adaptive renovations while preserving their historical elements and unique character. One standout example is the former J. Kunitzer Thread Factory complex (2/6 Niciarniana St.) where textile traditions have been continued by a private investor. Similarly, the legacy of textile manufacturing continues at the former Woolen and Cotton Goods Factory of the Bukiet Brothers (58/60 6 Sierpnia St.), now a home to Magam Ltd., a company specializing in the production of jacquard inserts and curtain tapes. Through careful revitalization efforts, the historical significance of these post-factory buildings is not only preserved but also utilized for contemporary manufacturing endeavours.

A special place in Łódź hold adaptations of former industrial sites into mixed-use developments. These multifunctional investments carried out on the vast post-industrial complexes are highly diversified. They often emphasize the synergy between residential and commercial functions, though not exclusively. Undoubtedly, the most significant and well-known mixed-use revitalization endeavour in Łódź is Manufaktura – a commercial, cultural, and entertainment complex established on the 27-hectare industrial complex of I. Poznański. Highly acclaimed for its architectural and urbanistic merits by both local and international experts, Manufaktura has become an integral part of the city's urban fabric, serving as a prominent symbol of post-industrial Łódź. Other examples of mixed-

-use investments in post-industrial large-scale complexes (completed or in progress) include: Monopolis, Fuzja, Ogrody Geyera and Widzewska Manufaktura. Multifunctional investments bring a variety of social and economic benefits and are currently one of the most interesting topics in the Polish real estate market. Next to the typical mixed-use category, post-industrial extensive complexes also serve as spaces for alternative functions, represented by entrepreneurship incubators and areas combining business, culture, and art such as OFF Piotrkowska Center (a culinary and creative idea hub) and Art-Inkubator (an entrepreneurship, cultural, artistic, and office incubator).

The repurposing of industrial heritage in Łódź is mainly carried out by private entities, who own the majority of the existing resource. Public entities however can also showcase several successful adaptations of historical factories, especially for cultural purposes. One of the city's flagship projects is EC1 (1/3 Targowa St.), a cultural, artistic and educational center created in the revitalized complex of the former Łódź power plant. This project is a part of the broader plan for construction of the New Center of Łódź. Another interesting public undertaking is Wigencja (75/77 Sienkiewicza St.), a Contemporary Art Center for Childrean and Youth situated in the former complex of M. Wohlman and A. Goldman's Cotton Spinning Mills, which houses today a theatre, creative and educational workshops, and a library. Moreover, public agencies have also adapted a few post-factory buildings for office functions. Examples include the Wojewódzkie Centrum Przedsiębiorczości (34 Narutowicza St.) created on the basis of the Kajzer and Zylberberg villa-factory complex, and the Fabryka Aktywności Miejskiej (10 Tuwima St.), located in the formerly H. Wagner's Textile Accessories and Machinery Factory, which now serves as a venue for debates and social consultations.

Łódź is a city with diverse needs, yet it holds immense potential rooted in its industrial heritage. This rich resource of post-factory architecture, adapted to new functions to meet contemporary societal needs, offers an opportunity to create a distinctive atmosphere that bridges the past with the present. While the limited space of this article prevents the presentation of all examples of adaptive reuse projects, the selected cases clearly illustrate the scale of this phenomenon and the range of opportunities it presents.

Łódź's industrial heritage, although largely shaped by private initiative, continues to offer remarkable opportunities for urban revitalization across multiple sectors. The diverse and multifunctional character of these redevelopments underscores the role of adaptive reuse not only as a development strategy, but also as a tool for shaping the city's identity and structure.

The following section explores how these adaptive reuse projects, beyond their architectural or economic dimensions, contribute to the reintegration of urban spatial structure – restoring coherence to the inner-city fabric through multifunctionality, cultural programming, and the reconnection of fragmented spaces.

Discussion

As demonstrated by the research findings, the adaptive reuse of inner-city industrial heritage in Łódź has a multifaceted impact on the city's spatial structure and urban transformation dynamics. The analysis of 287 historical sites revealed both the scale and diversity of these processes, with 68% of preserved post-industrial buildings already adapted or currently

undergoing transformation. This reflects both the gradual depletion of the resource base and its growing reinterpretation as a strategic asset within the urban core.

Understanding the challenges and benefits of redeveloping former factory sites is crucial for shaping effective revitalisation policies. Adaptive reuse projects influence not only the physical fabric of the city, but also accessibility, land use patterns, social inclusion, and the overall perception of Łódź. This is particularly relevant in a city where industrial heritage historically shaped urban development and continues to inform its contemporary identity.

Recognising the cultural and historical significance of industrial sites is essential for developing revitalisation strategies that are locally responsive and community-oriented. Equally important is the integration of adaptive reuse into broader urban development frameworks that promote sustainable, resilient, and inclusive growth. In Łódź, however, this kind of integrated approach remains underdeveloped. Despite a solid research base and growing local expertise, both public authorities and private investors continue to underestimate the role of industrial heritage as a driver of cohesive urban regeneration.

This gap is evident in the outcomes of many reuse projects, which are often guided more by commercial logic than by cultural preservation or social benefit. As Wycichowska (2012) has noted, such investor-led revitalisations frequently result in unsustainable development culturally superficial, socially exclusive, and ecologically imbalanced. A particularly visible manifestation in Łódź is the conversion of post-industrial areas into gated residential enclaves, often involving significant alterations to the original architecture and the erosion of the site's historical identity.

Comparative experiences from other post-industrial cities, such as Manchester and Birmingham in the UK, demonstrate how strong local leadership, integrated policy frameworks, and effective coordination between public and private stakeholders can transform degraded industrial areas into dynamic, multifunctional urban quarters. These examples show that the success of adaptive reuse often depends not only on market forces but also on sustained public sector involvement, long-term strategic planning, and inclusive governance models (Tallon, 2013). Incorporating such lessons into the Łódź context may help address current institutional gaps and support more equitable and culturally sensitive revitalisation processes.

Another critical issue is the absence of essential planning tools and institutional mechanisms. The lack of a centralised, open-access database on the condition, ownership, and redevelopment potential of industrial buildings limits the capacity for evidence-based decision-making. Moreover, the city currently lacks a coordinated programme to support private and public stakeholders interested in adaptive reuse, further discouraging strategic and inclusive interventions. These structural deficiencies underscore the urgent need for formalised public-private cooperation in post-industrial revitalisation processes.

Equally important is the potential risk of gentrification resulting from adaptive reuse projects, particularly in cases where residential conversions target high-income groups and lead to the creation of gated communities. Such transformations can exacerbate social exclusion and undermine efforts to build inclusive, community-oriented neighbourhoods. While the architectural and economic aspects of reuse are often prioritised, greater attention should be paid to the social impacts of revitalisation, ensuring that local residents and historically rooted communities are not displaced or marginalised in the process (Smith, 2006).

Despite these challenges, the study confirms that adaptive reuse plays a significant role in reactivating neglected and fragmented areas. High-profile projects such as Manufaktura, EC1, and Textorial Park demonstrate the capacity of adaptive reuse to reconnect formerly isolated sites with the city's active spatial fabric. These interventions not only foster spatial continuity, but also enable functional reintegration and symbolic reconnection with the city's historical narrative. By introducing education, culture, commerce, and housing into revitalised industrial complexes, they contribute to the densification of the inner city and help rebuild a cohesive urban structure.

Furthermore, adaptive reuse supports the principles of sustainable urbanism. It capitalises on existing infrastructure and avoids land consumption associated with peripheral development. It also reinforces the compact city model by encouraging short-distance mobility, diverse land uses, and resource efficiency. Architecturally, the interplay of historic and contemporary forms produces high aesthetic value and enhances the sense of place identity. These characteristics offer an alternative to generic urban development and preserve the multilayered character of the city.

Beyond physical and economic benefits, adaptive reuse also has an important social dimension. Revitalised industrial buildings can serve as inclusive public spaces, cultural landmarks, or community hubs. Yet in Łódź, this potential remains largely underexploited – particularly due to the dominance of private ownership models and limited participatory planning. Without frameworks that ensure community involvement, there is a risk of further marginalising groups historically connected to these places and of diminishing the collective memory embedded in the industrial landscape.

In summary, adaptive reuse of industrial heritage in Łódź holds substantial potential as a strategy for urban reintegration and as a response to the spatial fragmentation resulting from deindustrialisation. To fulfil this potential, however, reuse initiatives must be embedded within a coherent urban policy that balances economic pragmatism with cultural continuity and social inclusion. Such an integrated approach is essential for transforming adaptive reuse from isolated redevelopment efforts into a sustainable and community-rooted strategy for urban renewal.

Conclusions

The analysis of adaptive reuse projects conducted in Łódź reveals their significant, though differentiated, role in the reintegration of post-industrial areas with the broader urban structure. As shown in the results, the majority of preserved industrial buildings (over two-thirds) have already undergone or are undergoing functional transformation, with many examples demonstrating successful spatial, aesthetic, and social integration. These processes not only involve the architectural transformation of buildings but also reprogramming entire areas to restore continuity with the surrounding urban fabric.

In this context, reintegration is not limited to built form but extends to the transformation of adjacent spaces through the creation of new public realms – green areas, squares, and pedestrian routes – that connect revitalised sites with neighbouring quarters and stimulate physical and social activity. Notable examples such as Manufaktura, Monopolis, and Ogrody Geyera illustrate how the combination of historic preservation with landscape and infrastructural improvements can produce coherent, accessible, and attractive urban environments.

A key strategy supporting reintegration is mixed-use development, which combines residential, commercial, office, and entertainment functions. This multifunctionality, clearly visible in several large-scale Łódź projects, fosters a vibrant urban life, ensures economic viability, and maximises land use efficiency. At the same time, the establishment of cultural anchors, such as museums, studios, and creative spaces, strengthens place identity and supports the emergence of community-oriented hubs. The success of adaptive reuse initiatives is further enhanced by the presence of cultural programming and events, which attract diverse users and build public engagement.

At the same time, persistent gaps in planning tools and institutional mechanisms continue to pose significant challenges. Despite the existence of a legislative framework for revitalisation, Łódź still lacks a coherent and operational system for supporting stakeholders, coordinating public-private partnerships, and providing reliable data on post-industrial properties. Addressing these deficiencies is essential to ensure that adaptive reuse contributes not only to the city's economic transformation but also to its cultural continuity and social inclusivity.

Equally important, although still underdeveloped in practice, is the involvement of local communities in planning and decision-making processes. Participatory revitalisation contributes to socially inclusive outcomes and helps align investment decisions with the needs and expectations of residents, thus improving the legitimacy and long-term sustainability of interventions.

The case of Łódź shows that adaptive reuse is an inherently complex and context-dependent process. The diversity of building types, ownership structures, and spatial conditions precludes one-size-fits-all solutions. Yet the evidence gathered in this study strongly supports the claim that adaptive reuse, when approached strategically and inclusively, can serve as a powerful tool for repairing the spatial fabric of post-industrial cities.

In conclusion, the transformation of abandoned industrial sites in Łódź has the potential to go far beyond economic redevelopment. By fostering continuity between the historical and the contemporary, the functional and the symbolic, adaptive reuse offers a framework for sustainable urban regeneration rooted in local identity. Unlocking this potential, however, requires not only coordinated policies and institutional support, but also a stronger commitment to inclusive, culturally sensitive planning.

Unless otherwise stated, the sources of tables and figures are the author's, on the basis of their own research.

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