doi.org/10.62683/SINARG2025.014

Research paper

ADAPTIVE REUSE OF INDUSTRIAL MILLS – BALANCING HERITAGE PROTECTION AND NEW USES

Ljiljana Jevremović[1], Ana Stanojević[2], Uroš Antić[3], Isidora Đorđević[4], Aleksandar Milojković[5]

Abstract

Industrial heritage is widely recognized as an essential part of the built environment, reflecting human achievements in technical culture. In sustainable development, the adaptive reuse of industrial heritage structures has emerged as a pivotal strategy for safeguarding historical edifices while seamlessly integrating them into the fabric of modern urban life. This paper examines the adaptive reuse of a specific industrial building typology—industrial mills—structures dating back to the early phases of industrialization. Characterized by their distinctive architectural forms, strategic urban placements, and the prevalent use of durable construction materials, particularly red brick façades, industrial mills have been frequently identified as prime candidates for adaptive transformation.

This study thoroughly examines multiple case studies involving successfully repurposed industrial mills, emphasizing multi-story structures constructed during the 19th and early 20th centuries, which exhibit pre-modern architectural characteristics. By analyzing these mills' urban forms, spatial configurations, and functional layouts, the research seeks to elucidate recurring models of adaptive reuse that correspond to various contemporary functions. The investigation highlights these structures' architectural and historical significance and addresses the challenges and opportunities inherent in their transformation.

The findings of this study contribute to a broader understanding of how industrial mills can be effectively repurposed, providing insights that may be particularly valuable for regions with limited experience in such transformations, such as Serbia. By bridging the gap between heritage protection and contemporary utility, this study advocates for a balanced approach that honors the historical significance of industrial mills while fostering innovative uses that enhance urban vitality and sustainability.

Keywords: *Adaptive reuse, Industrial heritage, Industrial mills, Heritage protection, Sustainable development, Urban transformation*

[1] PhD, Assistant Professor, University of Niš – Faculty of Civil Engineering and Architecture, Serbia, ljiljana.jevremovic@gaf.ni.ac.rs, ORCID 0000-0001-6877-9004
[2] PhD candidate, Teaching Assistant, University of Niš – Faculty of Civil Engineering and Architecture, Serbia, ana.stanojevic@gaf.ni.ac.rs, ORCID 0000-0003-3199-9913
[3] PhD student, Ministry of Education scholarship holder, University of Niš – Faculty of Civil Engineering and Architecture, Serbia, anticuros6@gmail.com, ORCID 0009-0004-2074-7627
[4] PhD candidate, Research Associate, University of Niš – Faculty of Civil Engineering and Architecture, Serbia, isidora.djordjevic@gaf.ni.ac.rs, ORCID 0009-0000-0012-5063
[5] PhD, Associate Professor, University of Niš – Faculty of Civil Engineering and Architecture, Serbia, aleksandar.milojkovic@gaf.ni.ac.rs, ORCID 0000-0002-0330-3627

1. INTRODUCTION

Industrial heritage represents an asset, embodying the remnants of industrialization that shaped urban landscapes and spurred societal progress [1]. It encapsulates historical narratives and collective identities that reveal socio-economic transformations and foster cultural continuity [2]. Industrial mills, for example, with their characteristic multi-story red brick façades and innovative construction techniques, serve as tangible connections to the industrial processes that once redefined urban settings [3,4]

Adaptive reuse - the process of repurposing existing structures for functions beyond their original intent - has emerged as a key strategy in promoting urban sustainability [5]. By extending the lifecycle of buildings, adaptive reuse minimizes resource consumption, reduces waste, and advances principles of economic efficiency, social inclusivity, and environmental stewardship [6]. However, despite their potential, many industrial mills remain underutilized or deteriorate, especially in regions where adaptive reuse practices are not well established [7]. Financial constraints, regulatory barriers, and the difficulty in balancing modern needs with architectural authenticity complicate these transformations [8,9,10,11]. Moreover, the absence of clear guidelines and successful case studies further exacerbates these challenges [7,12,13].

The adaptive reuse of industrial mills requires a careful balance between preserving historical value and addressing modern urban requirements. Innovative strategies that integrate social, economic, and environmental considerations are essential, particularly in regions such as Southeast Europe, where a lack of practical experience has often resulted in the neglect of these structures [14,15,16]. The current study investigates adaptive reuse strategies employed in transforming industrial mills, with the aim of identifying methodologies that harmonize heritage conservation with contemporary imperatives. By analyzing a range of case studies, this research seeks to develop replicable models for regions facing heritage management challenges, thereby contributing to urban revitalization and sustainable development efforts [2,5]. The distinctive historical and architectural significance of industrial mills, often situated in central urban locations, underscores their potential to stimulate urban regeneration, boost local economies, and enhance community engagement [3,17].

This investigation is guided by two principal research questions: How can industrial mills be effectively repurposed while preserving their heritage values? What recurring models of adaptive reuse have emerged for these structures? Employing a case study methodology, the study examines transformed industrial mills across diverse regions, emphasizing architectural interventions, spatial reconfigurations, and the subsequent impact on urban contexts.

The paper is organized as follows. Following the Introduction, the Theoretical Framework and Literature Review section outlines the research context and evaluates previous studies. The Methodology section details the study design and criteria for case selection. Subsequently, the Comparative Case Study Analysis chapter presents key insights and models of adaptive reuse. Finally, the Discussion and Conclusion synthesize the findings and offer recommendations for future research directions.

2. THEORETICAL FRAMEWORK

2.1 Adaptive Reuse and Industrial Heritage

Adaptive reuse involves repurposing obsolete buildings for contemporary uses while conserving significant architectural elements and cultural meaning. This approach extends the life of existing structures and fosters sustainable urban development by curbing the environmental impacts linked to new construction [18]. Its core principles include retaining key historical and architectural features, integrating modern functions, and ensuring economic viability. Over recent decades, adaptive reuse has evolved into a comprehensive strategy addressing architectural, environmental, social, and economic challenges. In post-industrial contexts, it has become a key method for reactivating obsolete structures - particularly those of historical or architectural merit—thus lowering waste and resource consumption, reducing carbon footprints, and revitalizing local economies. Such reuse is integral to combating urban sprawl and resource depletion.

Industrial heritage - a subset of cultural heritage that includes buildings, machinery, workshops, and complexes linked to manufacturing - offers prominent examples in ordinary structures like industrial mills. Once central to 19th- and early 20th-century urban fabrics, these mills are noted for their large scale, repetitive architectural systems, and robust construction designed for efficiency. Their inherent flexibility, high ceilings, and central locations make them ideal for adaptive reuse. In repurposing these sites, the process not only conserves embodied energy and historic fabric but also transforms them into catalysts for new urban development, thereby fostering sustainable and culturally enriched environments.

2.2 Heritage Protection Challenges

The process of adaptively reusing industrial heritage sites presents inherent tensions between conservation and functional modernization. Maintaining a site's original character while meeting today's requirements challenges architects, planners, and heritage advocates. Some critics argue that strict conservation can hinder necessary adaptations, while an excessive focus on modernization risks diluting the historical and cultural identity of the site [19]. Established frameworks, such as the Nizhny Tagil Charter [20] and the Burra Charter [21], advocate for sustainable preservation coupled with minimal intervention and compatible new uses. These guidelines emphasize stakeholder collaboration throughout the adaptive reuse process. Nonetheless, practical obstacles remain, as structural limitations, environmental upgrades, and regulatory demands can force changes that compromise historical authenticity. Thus, successful adaptive reuse requires nuanced, case-specific strategies that balance preservation with innovation.

2.3 Typology of Industrial Mills

Industrial mills illustrate a distinctive typology developed in the 19th and early 20th centuries in response to production needs. Characterized by robust, multi-story construction, these mills feature large open spaces, repetitive red brick façades, extensive windows, and structural frameworks - often supported by cast iron or heavy timber beams - that facilitate flexible interior layouts [22]. The design of these mills, including repetitive window bays and ancillary elements like towers and chimneys, underscores their functional efficiency and

durability. Initially located on city peripheries or along transportation routes, many mills have since become integral to urban cores, enhancing their potential for adaptive reuse. Redeveloped mill sites can transform into vibrant cultural centers, mixed-use developments, or community spaces, thereby stimulating economic activity and promoting social interaction within the urban fabric.

3. METHODOLOGY

This research adopts a qualitative case study approach to examine adaptive reuse strategies for industrial mills. The method facilitates a detailed exploration of the architectural, cultural, and urban transformation processes integral to repurposing heritage structures, capturing the complex interplay between preservation and modern functionality [23, 24]. Selected cases span Western, Central, and Southeast Europe, and North America, thereby offering a broad comparative analysis of regional approaches to adaptive reuse. The cases, mostly late-19th to early-20th-century mills constructed with masonry or brick, were chosen for their typological consistency and documented success in reuse projects. In selecting these examples, special attention was given to notable architectural contributions and their integration into urban fabrics.

A combination of methods was used to develop a comprehensive understanding of each case. Archival research provided historical context, original design intentions, and details about the mills' previous functions [23]. Meanwhile, on-site analysis yielded insights into current conditions, spatial organization, and the status of material preservation. Detailed examination of architectural drawings and project documentation facilitated an assessment of interventions and spatial modifications. Where available, interviews with architects, urban planners, and other stakeholders enriched the study with qualitative perspectives and practical insights [25].

The analysis employed a comparative framework focusing on four dimensions:

- Spatial configuration, examining changes in interior layout, circulation, and zoning;
- Architectural interventions, assessing façade treatments, structural adaptations, and the introduction of new materials or technologies;
- Functional outcomes, evaluating the sustainability and effectiveness of the new uses introduced;
- Heritage conservation, exploring how historical authenticity was maintained, negotiated, or reinterpreted [26].

This structured framework enables the identification of best practices, context-specific solutions, and common challenges across varied adaptive reuse projects, thereby contributing to a nuanced understanding of sustainable urban regeneration.

4. COMPARATIVE CASE STUDY ANALYSIS

4.1 Overview of Selected Case Studies

Table 1 presents 16 case studies of adaptive reuse featuring industrial mills and warehouses from the 19th and early 20th centuries. It showcases a variety of approaches to heritage conservation and highlights innovative transformations.

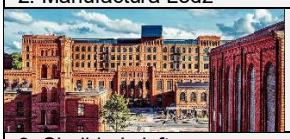
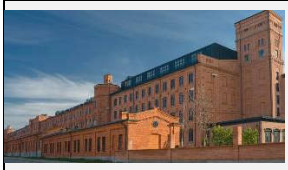
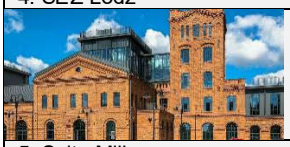
Table 1. Comparative Overview of Adaptive Reuse Projects: Industrial Mills and Warehouses (19th–20th Century)

Case Study	Year Built	Original Use	Typology
Location / Country	**Year Reuse**	**New Use**	**Heritage Status**
Richard Adam Gallery [27]	1865–1920	Foundry & Engineering Works	One-story workshop building
Brno, Czech Republic	2005	Gallery	Protected Cultural Monument
Manufaktura Łódź [28]	1872–1892	Cotton Textile Factory	Multi-Story Industrial Mills
Łódź, Poland	2006	Mixed-Use (Retail, Cultural, Hotel)	Listed Historic Monument
At Sheibler's loft [29]	1855	Textile Factory	Multi-Story Industrial Mills
Łódź, Poland	2007-2010	Residential	Protected Cultural Monument
Special Economic Zone – SEZ [30]	1890	Textile Factory	Multi-story factory building
Łódź, Poland	2010-2012	Office Spaces, Museum	Protected Cultural Monument
Salts Mill [31]	1853	Wool Textile Mill	Multi-Story Industrial Mill
Saltaire, UK	1987 onwards	Cultural Centre + Offices + Shops	UNESCO World Heritage Site
Zeche Zollern Workshops [32]	1898	Coal Mine Workshops	Industrial Courtyard Complex with Multifunctional Workshop Buildings
Dortmund, Germany	1999	Industrial Heritage Museum + Offices	Protected Monument (National)
Tobacco Factory [33]	1901	Tobacco Mill	Multi-Story Industrial Processing and Storage Block
Bristol, UK	1998	Mixed-use (Offices, Theatre, Café)	Locally Listed
The Loom [34]	1889	Wool Mill	Urban Multi-Story Warehouse and Workshop
London, UK	2015	Creative Office Hub	Locally Listed
De Lakfabriek [35]	1925	Leather factory	Multi-Story Industrial Mill
The Netherlands	2018	Residential	Protected
La Minoterie [35]	19 c.	Flour factory	Multi-Story Industrial Mill
Roubaix, France	2008	Residential	Protected
60 Atlantic Avenue [35]	1898	Factory	Multi-story warehouse
Toronto, Canada	2014	Business centre	Protected
St. Ann's Warehouse [35]	1860	Tobacco Warehouse	Multi-story warehouse
Brooklyn, USA	2015	Theatre	Protected
Business Incubator [35]	Late 19th C.	Paper factory	Multi-Story Industrial Mill
Pont-Audemer, France	2013	Business incubator	Protected
Adaptation of Former Granary [35]	1892 - 1914	Grain Storage	Multi-story warehouse
Gliwice, Poland	2008	Residential + Retail	Listed Monument
Gouda Cheese Warehouse [35]	19th Century	Cheese Storage	Multi-story warehouse
Gouda, Netherlands	2017	Residential	Not Protected
Old Mill Rigot [35]	1928	Cotton Spinning Mill	Multi-Story Industrial Mill
Dunkirk, France	2014	Business + Day care unit	Protected

4.2 Comparative Analysis

Table 2 analyses key architectural interventions and layouts in 16 case studies, offering insights into the strategies and challenges of adapting industrial mills.

Table 2. Comparative Matrix of Architectural Interventions and Outcomes in Adaptive Reuse of Industrial Mills

Case Study	Preserved Features Key Architectural Interventions	Façade Modification Layout Reconfiguration	Outcomes Challenges & Issues
1. Richard Adam Gallery 	red brick façade, large factory windows	brickwork restoration, preservation of historic character	cultural promotion, contribution to the local economy
	no external interventions	adapted for open-plan double-height exhibition space	lack of greenery and open spaces, unsafe neighborhood
2. Manufactura Łódź 	red brick façade, large factory windows	brickwork restoration, preservation of historic character	Heritage tourism boost; urban regeneration, social cohesion
	rooftop single-volume addition	adapted for shopping stores, cinemas, hotels, museums, restaurants	activation of open spaces, ongoing maintenance
3. Sheibler's loft 	red brick façade, factory windows	preservation of historical character highlighted edges of closed openings' holes	urban regeneration, increase in residential space in the urban matrix
	internal interventions, vertical rooftop extension	subdivision into apartment units, open-plan loft apartments	adapting deep-plan industrial spaces for residential use
4. SEZ Łódź 	red brick façade, factory windows	preservation of original articulation and character	urban regeneration boosted the local economy
	internal interventions, vertical extensions	adapted for offices, conference spaces, meeting rooms	balance between historical and contemporary
5. Salts Mill 	stone façade, window rhythm, internal column structure	light façade cleaning, preservation of historic character	Heritage tourism boost, key part of UNESCO World Heritage Site
	no major external additions or demolitions	adapted for open-plan exhibitions and retail spaces	conservation restrictions, balancing tourism with local needs
6. Zeche Zollern 	brick façades, Art Nouveau entrance hall, steel structure	restoration of the entrance hall and original decorative features	heritage attractions, education, and heritage highlights in Dortmund
	no significant structural additions	adapted for open-plan exhibition space, interconnected halls	maintaining large structures, ongoing conservation costs
7. Tobacco Factory 	red brick façade, large industrial windows	increased openings for natural light	key in Bristol's Cultural Quarter regeneration
	external courtyards created from service yards	corridor layout adapted for flexible working spaces	environmental remediation, retained industrial character
8. The Loom 	brick façade, industrial window design, timber beams	sensitive façade restoration	contributed to East London's creative economy
	opened courtyards for circulation, new public entrances added	adaptation for hybrid workspace with breakout zones and event spaces	upgrading services in historic structures without compromising the fabric

9. De Lakfabriek 	brick façade, large factory windows	window modifications for improved daylight and entrances	added residential units in a historical context
	rooftop pavilion addition, retained industrial footprint	subdivision into residential units, loft-style apartments with open-plan design	energy performance, preserving external historic features
10. La Minoterie 	brick façades, large factory windows	minor alterations for residential access	urban regeneration, residential revitalization
	addition of new rooftop volume and balconies	subdivision into residential units, open-plan loft apartments	ensuring daylight access, maintaining façade authenticity
11. 60 Atlantic Avenue 	heavy timber frame, brick walls, industrial windows	façade cleaning and repointing	office hub in Liberty Village, adaptive reuse precedent
	entrance glass volume addition	open-plan co-working and event space with a common entrance hall	upgrading structural capacity and respecting heritage fabric
12. St. Ann's Warehouse 	brick walls and openings	restoration of brickwork	cultural destination in Dumbo, NY, revitalized historic structure
	creation of an inner courtyard; rooftop pavilion added	adaptation for open-plan theatre with flexible seating	acoustic challenges, integrating modern theatre functions
13. Business Incubator 	brick façades, factory windows	window modifications for improved daylight and entrances	boosted local entrepreneurship, model of rural adaptive reuse
	minor volume subtractions to enhance articulation	corridor layout adapted for flexible modular workspaces	balancing high-tech needs with heritage restrictions
14. Former Granary 	brick façades, gable roofs, and window frames. timber beams	restoration of brickwork	urban revitalization in Gliwice's city center
	vertical comm. towers and entrance volume introduced	subdivision into residential and retail adaptable units	adapting deep-plan storage spaces for residential use
15. Gouda Cheese Wareh. 	brick façade, hoist doors, industrial windows	window alterations for residential needs	residential regeneration within historical urban fabric
	no significant site changes	restructuring into loft apartments with mezzanines	thermal efficiency, integrating new functions, kept exterior character
16. Old Mill Rigot 	red brick, chimney, gabled roof, wooden roof structure	façade restoration, window alterations for new needs	local services enhancement, industrial memory preservation
	interconnecting ground volume addition	adaptation into business & day-care units around the inner courtyard	meeting modern safety and accessibility standards

5. DISCUSSION

The comparative analysis of adaptive reuse projects reveals diverse architectural interventions and urban impacts, shaped by each site's historical context, original use, and

adaptive strategies. The case studies—ranging from industrial mills and warehouses to factories and workshops—demonstrate a careful balance between conserving historical identity and reconfiguring spaces to meet modern functions. Three principal types of interventions emerge: modifications to urban morphology, alterations to façades, and reconfigurations of spatial layouts. These measures are chosen to retain the industrial character of the buildings while integrating new uses that stimulate urban revitalization.

Despite notable successes, projects frequently face challenges related to conservation standards, structural integrity, and the integration of modern functionalities without compromising historical authenticity. For instance, residential adaptations may require improved insulation, additional interior layers, and enhanced daylight access, while public or cultural uses often need larger, more open spaces that can conflict with the building's original design. Successful projects employ innovative strategies—such as incorporating new architectural elements within existing massing (exemplified by SEZ Łódź and St. Ann's Warehouse), minimal façade interventions that preserve aesthetic authenticity, and open-plan spatial reconfigurations that support flexible, multifunctional use. The adaptive reuse of facilities like Salts Mill and Zeche Zollern Workshops illustrates the potential to transform industrial spaces into accessible public areas while retaining their core architectural essence.

Different approaches result in varied urban impacts. Models emphasizing minimal intervention preserve a site's historic ambiance but may limit contemporary functionality. In contrast, balanced approaches, as seen in the Tobacco Factory and Manufaktura Łódź, create synergies between heritage and modern needs that enhance urban vitality. Extensive adaptations—while sometimes compromising historical authenticity—can also drive urban regeneration when they introduce dynamic new functions, as demonstrated by. Old Mill Rigot and St. Ann's Warehouse. Table 3 summarizes this comparative spectrum of adaptive reuse approaches along dimensions such as urban morphology, façade treatment, spatial reconfiguration, new uses, urban impact, and associated challenges.

Table 3. Comparative Spectrum of Adaptive Reuse Approaches

Key Aspect	**Minimal Interventions (Preservation-Oriented)**	**Moderate Transformations (Balanced Approach)**	**Extensive Adaptations (Contemporary Reinterpretation)**
Urban Morphology	Retaining original building mass and footprint	Introducing new volumes while preserving context	Significant new additions or demolitions altering the original mass
Façade Modifications	Preserving original brick and windows	Cleaning and minor modifications to enhance usability	Replacing or extensively altering façade elements
Spatial Reconfiguration	Maintaining the original spatial structure	Open-plan integration with preserved elements	Complete reconfiguration to suit new uses
New Uses	Cultural exhibitions, museums	Mixed-use developments combining residential and commercial	High-density residential or commercial uses
Impact on Urban Context/Outcome	Preserving historical ambiance	Enhancing urban interaction with adaptive functions	Urban renewal with new identity and function
Challenges	Conservation regulations, funding	Balancing modern needs with heritage value	Public acceptance, loss of historical integrity

5.1 Balancing Heritage Protection with Contemporary Needs

The adaptive reuse of industrial mills represents an opportunity to integrate historic preservation with modern functionality. This process requires careful negotiation between maintaining architectural integrity and accommodating contemporary demands like accessibility and energy efficiency. Evidence from various case studies indicates that preserving the original structural grid and materials is an effective means of upholding a site's identity. However, excessive modifications—whether to spatial arrangements or façade treatments—may undermine the historical value and authenticity of these structures. By balancing these factors, urban spaces can be revitalized in a manner that honors their industrial heritage.

5.2 Architectural and Urban Implications

Adaptive reuse is essential for the enhancement of urban vitality and spatial integration, particularly in areas undergoing socio-economic transitions. The conversion of industrial mills frequently acts as a catalyst for the renewal of nearby neighborhoods, attracting residents, businesses, and cultural initiatives. Interventions in urban morphology, such as the introduction of new structures or the selective demolition of outdated elements, improve connectivity and accessibility. Similarly, context-sensitive façade modifications and open-plan spatial reconfigurations enable the preservation of the original character while accommodating contemporary functions.

5.3 Lessons for Emerging Contexts

The analyzed cases provide significant insights for regions like Serbia, where the adaptive reuse of industrial heritage is still developing. Transferable strategies include minimal façade interventions that maintain authenticity alongside flexible spatial configurations to support new functions. Establishing public-private partnerships is critical for securing funding and ensuring long-term maintenance. In contexts with limited adaptive reuse experience, clear guidelines that balance conservation with innovation—as well as educational initiatives to promote the value of industrial heritage—are essential for sustainable outcomes.

5.4 Sustainability Considerations

Environmental, economic, and social sustainability are core to effective adaptive reuse. Many successful projects emphasize energy efficiency, via improved insulation and the adoption of sustainable energy sources, while blending residential, commercial, and cultural functions to achieve economic resilience. Social sustainability is enhanced by creating accessible, multifunctional public spaces, which foster community engagement and maintain a narrative of industrial heritage. In this way, adaptive reuse not only preserves historical legacies but also contributes significantly to a sustainable urban future.

6. CONCLUSION

The analysis of adaptive reuse cases shows that historic industrial buildings can be transformed into vibrant urban spaces. Preserving key architectural elements—such as structural frameworks, masonry façades, and original layouts—combined with targeted

spatial modifications (like open-plan designs and selective façade treatments) enables the integration of these buildings into modern urban fabrics. Such interventions safeguard architectural identity, rejuvenate neighbourhoods, and stimulate cultural, social, and economic growth.

Case studies of adaptive reuse of industrial mills illustrate that repurposing historic structures while maintaining their heritage is both feasible and beneficial. Successful transformations preserve essential features while introducing thoughtful modifications that support new functions. These changes contribute to cultural continuity, enhance social engagement, and drive economic revitalization. The observed models are particularly instructive for regions with limited experience in adaptive reuse, such as Southeast Europe, where industrial heritage is often underutilized and lacks robust regulatory frameworks.

To address these challenges, it is crucial to build institutional capacity, foster interdisciplinary collaboration, and implement policies that promote reuse while protecting historical value. Policymakers should establish adaptive reuse frameworks that include heritage-sensitive zoning regulations, financial incentives like tax relief and grants, and streamlined administrative processes. Designers, meanwhile, should view adaptive reuse not only as a technical challenge but as a cultural initiative that emphasizes respectful transformation, narrative continuity, and integration into the urban context. Engaging stakeholders and local communities in planning and execution is essential to ensure the long-term relevance and vitality of such projects.

Industrial mills, representing significant elements of industrial heritage, serve as more than relics of past economic systems—they form an integral part of the architectural and urban identity of cities. Whether repurposed as cultural institutions, residential complexes, or mixed-use developments, these buildings offer spatial and structural opportunities for innovation that address contemporary urban challenges. Their adaptive reuse emerges as a strategic approach to harmonize heritage conservation with future urban growth, aligning with the global agenda for sustainable, inclusive, and resilient development.

In summary, the cases analyzed underscore that preserving historic elements together with strategic, context-sensitive interventions provides a replicable blueprint for adaptive reuse. This approach not only maintains historical significance but also fosters urban revitalization, cultural enrichment, and socio-economic development over time.

ACKNOWLEDGMENTS

This research was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia, under the Agreement on Financing the Scientific Research Work of Teaching Staff at the Faculty of Civil Engineering and Architecture, University of Niš - Registration number: 451-03-137/2025-03/200095 dated 04/02/2025.

REFERENCES

[1] Kolehmainen, L. and Sivula, A. **The linguistic heritage of industry**. *Tekniikan Waiheita*, 37(4), 33-54, 2020, https://doi.org/10.33355/tw.88909

[2] Yin, J. **Designing pathways for the revitalization of industrial heritage**. *AD*, 5(2), 40. 2022, https://doi.org/10.31058/j.ad.2022.52006

[3] Illéš, J., Joklová, V., & Jaszczak, A. **Traces of former mill races in Krnov: possibilities of revitalization and interpretation**. *Architecture Papers of the*

Faculty of Architecture and Design STU, 28(1), 36-46, 2023, https://doi.org/10.2478/alfa-2023-0004

[4] Gregorio, S., Vita, M., Berardinis, P., Palmero, L., & Risdonne, A. **Designing the sustainable adaptive reuse of industrial heritage to enhance the local context.** *Sustainability*, 12(21), 9059. 2020, https://doi.org/10.3390/su12219059

[5] Chen, J., Judd, B., & Hawken, S. **Adaptive reuse of industrial heritage for cultural purposes in Beijing, Shanghai and Chongqing**. *Structural Survey*, 34(4/5), 331-350, 2016, https://doi.org/10.1108/ss-11-2015-0052

[6] Piacentíni, M. **Rationale and policies for the green growth of cities and regional economies.** *International Economics and Economic Policy*, 9(2), 129-146, 2012, https://doi.org/10.1007/s10368-012-0209-4

[7] Antić,U., Jevremović, Lj., Stanojević, A., Milojković**, A., Potencijali i ograničenja kompleksa industrijskog nasleđa u centralnim gradskim zonama – slučaj Beogradskog pamučnog kombinata** (In Serbian), *International Conference 19th Summer School of Urbanism and Sustainable Development*, Vrnjačka Banja, Serbia, 183- 191, 2023

[8] Stanojević A., Milošević M., Milošević D., Turnšek B., Jevremović Lj., **Developing multi-criteria model for the protection of built heritage from the aspect of energy retrofitting**, *Energy and Buildings*, 250, 2021, 111285, 2021, https://doi.org/10.1016/j.enbuild.2021.111285.

[9] Yung, E. and Chan, E. **Implementation challenges to the adaptive reuse of heritage buildings: towards the goals of sustainable, low carbon cities**. *Habitat International*, 36(3), 352-361, 2012, https://doi.org/10.1016/j.habitatint.2011.11.001

[10] Šimić, I., Stupar, A., Grujičić, A., Mihajlov, V., & Cvetković, M. **The transformation of dorćol power plant: triggering a sustainable urban regeneration or selling the heritage?.** *Sustainability*, 14(1), 523, 2022, https://doi.org/10.3390/su14010523

[11] Hassanain, M. and Hamida, M. **AEC/FM performance in adaptive reuse projects: investigation of challenges and development of practical guidelines**. *Facilities*, 41(7/8), 477-497, 2023, https://doi.org/10.1108/f-04-2022-0053

[12] Winata, D., Tobing, R., & Herwindo, R. **Adaptive reuse guidelines on warenhuis medan and urban heritage environment**. *Idealog Ide Dan Dialog Desain Indonesia*, 8(1), 80-102, 2023, https://doi.org/10.25124/idealog.v8i1.5508

[13] Meng, F., Zhi, Y., & Pang, Y. **Assessment of the adaptive reuse potentiality of industrial heritage based on improved entropy TOPSIS method from the perspective of urban regeneration**. *Sustainability*, 15(9), 7735, 2023, https://doi.org/10.3390/su15097735

[14] Bian, X. and Brown, A. **Establishing the potential for the application of digital storytelling to support Chinese industrial heritage**. *Acta Horticulturae Et Regiotecturae*, 26(2), 147-156, 2023, https://doi.org/10.2478/ahr-2023-0019

[15] Conejos, S., Langston, C., & Smith, J. **Enhancing sustainability through designing for adaptive reuse from the outset**. *Facilities*, 33(9/10), 531-552, 2015, https://doi.org/10.1108/f-02-2013-0011

[16] Zhang, J., Cenci, J., Becue, V., Koutra, S., & Liao, C. **Stewardship of industrial heritage protection in typical western European and Chinese regions: values and dilemmas**. *Land*, 11(6), 772, 2022 https://doi.org/10.3390/land11060772

[17] Niu, X., Liao, F., Liu, Z., & Wu, G. **Spatial–temporal characteristics and driving mechanisms of land–use transition from the perspective of urban–rural transformation development: a case study of the Yangtze river delta**. *Land*, 11(5), 631, 2022, https://doi.org/10.3390/land11050631

[18] Tisserant, A., Pauliuk, S., Merciai, S., Schmidt, J., Fry, J., Wood, R., … & Tukker, A. **Solid waste and the circular economy: a global analysis of waste treatment and waste footprints**. *Journal of Industrial Ecology*, 21(3), 628-640, 2017, https://doi.org/10.1111/jiec.12562

[19] Patiwael, P., Groote, P., & Vanclay, F. **Improving heritage impact assessment: an analytical critique of the icomos guidelines**. *International Journal of Heritage Studies*, 25(4), 333-347, 2018, https://doi.org/10.1080/13527258.2018.1477057

[20] **The Nizhny Tagil Charter for the Industrial Heritage**, *The International Committee for the Conservation of the Industrial Heritage (TICCIH)*, Nizhny Tagil, 2003

[21] **The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance***, International Council on Monuments and Sites,* Australia, 2013

[22] Tenzer, M. and Schofield, J. **Using topic modelling to reassess heritage values from a people-centred perspective: applications from the North of England**. *Cambridge Archaeological Journal*, 34(1), 147-168, 2023, https://doi.org/10.1017/s0959774323000203

[23] Medici, S., Toro, P., & Nocca, F. **Cultural heritage and sustainable development: impact assessment of two adaptive reuse projects in Siracusa, Sicily**. *Sustainability*, 12(1), 311, 2019, https://doi.org/10.3390/su12010311

[24] Arbab, P. and Alborzi, G. **Toward developing a sustainable regeneration framework for urban industrial heritage**. *Journal of Cultural Heritage Management and Sustainable Development*, 12(3), 263-274, 2021, https://doi.org/10.1108/jchmsd-04-2020-0059

[25] Li, Y., Zhao, L., Huang, J., & Law, A. (2021). **Research frameworks, methodologies, and assessment methods concerning the adaptive reuse of architectural heritage: a review**. *Built Heritage*, 5(1), 2021, https://doi.org/10.1186/s43238-021-00025-x

[26] Dorado, M. and Oliveira, E. **Advances in the design of a methodology for the identification, characterization, and assessment of and intervention in the industrial landscape**. *City Territory and Architecture*, 9(1), 2022, https://doi.org/10.1186/s40410-022-00180-3

[27] https://www.em.muni.cz/student/4976-studentsky-festival-propoji-svet-techniky-a-umeni (4.3.2025.)

[28] https://architectuul.com/architecture/manufaktura#:~:text=The%20original%20industrial%20buildings%20were%20designed%20by%20the,services.%20The%20service%20sector%20extends%20over%2012%2C000%20m2. (5.3.2025.)

[29] https://lodz.travel/en/tourism/what-to-see/industrial-heritage/k-scheiblers-industrial-empire/ (6.3.2025.)

[30] https://lodz.travel/en/convention/venues-and-conference-facilities/postindustrial/lodz-special-economic-zone/ (6.3.2025.)

[31] https://mills-transformed.com/salts-mill (25.2.2025.)

[32] https://zeche-zollern.lwl.org/ (15.1.2025.)

[33] https://www.expedia.com/Tobacco-Factory-Theatre-Southville.d6084225.Vacation-Attraction (3.3.2025.)

[34] https://theloom-e1.com/ (27.2.2025.)

[35] Jevremović, Lj. **Nova namena kao determinanta u tretmanu industrijskih braunfilda – modeli obnove i klasifikacija** (In Serbian). Doctoral dissertation, *Faculty of Civil Engineering and Architecture*, Niš, Serbia, 2022. https://nardus.mpn.gov.rs/handle/123456789/21002