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Research paper

ADAPTIVE REUSE OF ABANDONED BUILDINGS FOR RURAL REVITALIZATION: PRIJEDOR CASE STUDY

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Abstract

Rural depopulation is one of the most significant socio-spatial challenges in Southeast Europe, leading to building abandonment, the deterioration of cultural landscapes, and declining economic opportunities. This paper presents the results of research conducted within the RurALL project, which aimed to explore the potential of adaptively reusing deteriorating buildings as a tool for the sustainable revitalization of rural areas. The study was carried out in the rural territory of the City of Prijedor, Bosnia and Herzegovina, through a participatory and collaborative planning process inspired by the principles of the New European Bauhaus initiative. The research combined field surveys, the mapping of deteriorating buildings, stakeholder engagement workshops, spatial analysis, and architectural design development. Twenty buildings in villages surrounding Prijedor were analysed and assigned potential new functions in accordance with local needs and development priorities. Based on the analysis, three adaptive reuse pilot projects were developed, representing different categories: public, commercial, and community-oriented functions. The research findings indicate that adaptive reuse can make a substantial contribution to environmental sustainability by preserving embodied resources and reducing construction waste, while simultaneously supporting social inclusion, local entrepreneurship, and the preservation of rural identity. The study proposes a methodological framework for rural revitalization that integrates community participation and architectural design guided by the principles of sustainable development.

Key words: *adaptive reuse, rural revitalization, community participation, sustainable architecture, New European Bauhaus*

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1. INTRODUCTION

Villages in our country, some of which are almost on the verge of disappearing, possess rich cultural and architectural heritage. Their authentic architecture makes them a suitable basis for cultural, economic, and research projects that highlight the value and importance of heritage and its preservation, while also offering local communities a sustainable model for village survival. [1] [2] The objective is clear: to prevent further deterioration and devastation through care and attention to the significance of heritage. Introducing carefully selected new functions and activities would bring renewed vitality to the community. The reconstruction of existing architecturally valuable buildings and the construction of new facilities would protect villages from further decline and preserve the architectural and cultural heritage of the region. [3]

Rural depopulation is an urgent territorial challenge across Europe, characterised by population decline, ageing, economic stagnation, and the abandonment of buildings and infrastructure. These trends are particularly visible in Bosnia and Herzegovina, where many villages face continuous out-migration and declining economic activity.

The City of Prijedor faces similar challenges. Population decline in rural areas, insufficient employment opportunities, underdeveloped infrastructure, and limited access to public services have contributed to the abandonment of numerous residential and public buildings. At the same time, these structures represent a significant spatial resource with the potential to support future development if used appropriately.

Contemporary European policies increasingly promote adaptive reuse as an alternative to demolition and new construction. In this context, the New European Bauhaus initiative advocates solutions that combine sustainability, aesthetics, and social inclusion. The European RurALL project [4] was implemented within this framework, based on the idea of approaching the development and revitalization of deteriorating rural settlements by strengthening the capacities of local communities and local government. The aim of this paper is to analyse the methodological framework developed within the project and assess its potential to support sustainable rural revitalization through the adaptive reuse of abandoned buildings.

2. THEORETICAL FRAMEWORK

Buildings have always been reused for both pragmatic and symbolic reasons. However, out of the turbulent twentieth century, stimulated by reactions against modern “clean” planning, a new field of policy and practice emerged in the 1970s in response to the growing conservation movement and increasing environmental awareness. This field came to be known as “adaptive reuse.” [8]

The last decade in particular has seen a surge of interest in adaptive reuse, both in practice and in academic writing. Today, the practice can be observed across the architectural spectrum, from large-scale, professionally led projects to the most modest community-generated initiatives. Adaptive reuse is ideologically supported through

heritage preservation and carbon-reduction campaigns and is increasingly evident in policy and education.

2.1. Adaptive Reuse of Buildings

Adaptive reuse is the process of converting existing buildings to new functions while preserving their architectural, structural, cultural, and historical values. Unlike demolition and new construction, this approach is based on the principles of sustainable development, as it extends the service life of buildings, reduces the consumption of natural resources, and minimises construction waste [5]. At the same time, adaptive reuse contributes to the preservation of embodied energy, namely the energy already invested in material production, transport, and building construction, thereby significantly reducing the overall carbon footprint compared with new construction [6].

In contemporary architectural theory, adaptive reuse is increasingly recognised as one of the key strategies of the circular economy in construction because it enables the reuse of the existing building stock instead of consuming new material and energy resources. In addition to its environmental benefits, this approach has an important social and cultural dimension, as it helps preserve place identity, the continuity of urban and rural landscapes, and the collective memory of local communities [7]. Particularly in rural and mountainous environments, where traditional architecture is an important carrier of local identity, adaptive reuse makes it possible to reconcile contemporary spatial requirements with the preservation of heritage and natural values.

Adaptive reuse is therefore understood today not only as a conservation practice but also as an integral strategy of sustainable architectural design that connects the environmental, economic, social, and cultural dimensions of development.

2.2. Principles of the New European Bauhaus

The New European Bauhaus (NEB), launched by the European Commission in 2021 as part of the European Green Deal, is an interdisciplinary initiative that connects architecture, urban planning, design, culture, art, science, and technology with the aim of shaping a sustainable, inclusive, and aesthetically high-quality built environment. Unlike traditional approaches that view sustainability primarily through technical and energy-related aspects, the NEB promotes a holistic approach in which environmental responsibility, spatial quality, and social inclusion are inseparable [1].

The New European Bauhaus concept is based on three core values: sustainability, which includes carbon-emission reduction, the circular economy, energy efficiency, the use of renewable and local materials, and biodiversity conservation; beauty, which goes beyond visual appearance to encompass spatial quality, the experience of place, cultural identity, and users' emotional connection with their environment; and togetherness, which includes inclusiveness, accessibility, equality, participatory planning, and the active involvement of local communities in shaping space. These three values provide the foundation for transforming the built environment towards climate neutrality and a higher quality of life.

3. METHODOLOGY

The research was conducted within the RurALL project in the rural settlements of the City of Prijedor. The methodology translated the theoretical principles outlined above into a framework for preserving the existing building stock and local identity while improving the energy, functional, and social qualities of space. It emphasised local and natural materials, circular resource use, community involvement, and preservation of the cultural landscape.

The methodological framework can be presented through five clearly defined research phases:

Phase 1 - Identification and mapping of neglected buildings. Existing rural buildings were identified through field surveys, GIS analysis, and databases from previous projects. Their physical condition, ownership status, accessibility, and development potential were assessed.

Phase 2 - Community involvement. Participatory workshops were organised with local residents, community representatives, entrepreneurs, and public institutions. The workshops explored local needs, development priorities, and possible future uses of abandoned buildings.

Phase 3 - Functional classification. Based on community input and expert assessment, potential new functions were categorised into three groups: public and community-support functions, commercial functions, and residential functions.

Phase 4 - Development of adaptive reuse concepts. Twenty conceptual proposals were prepared for the adaptive reuse of abandoned or underused buildings. These concepts represented different approaches to revitalizing rural settlements and served as the basis for selecting pilot interventions.

Phase 5 - Detailed architectural design. The final step involved selecting three pilot projects. They were developed in detail and evaluated in terms of spatial feasibility, sustainability, and implementation potential.

The diagram summarises the participatory process and its sustainability outcomes.

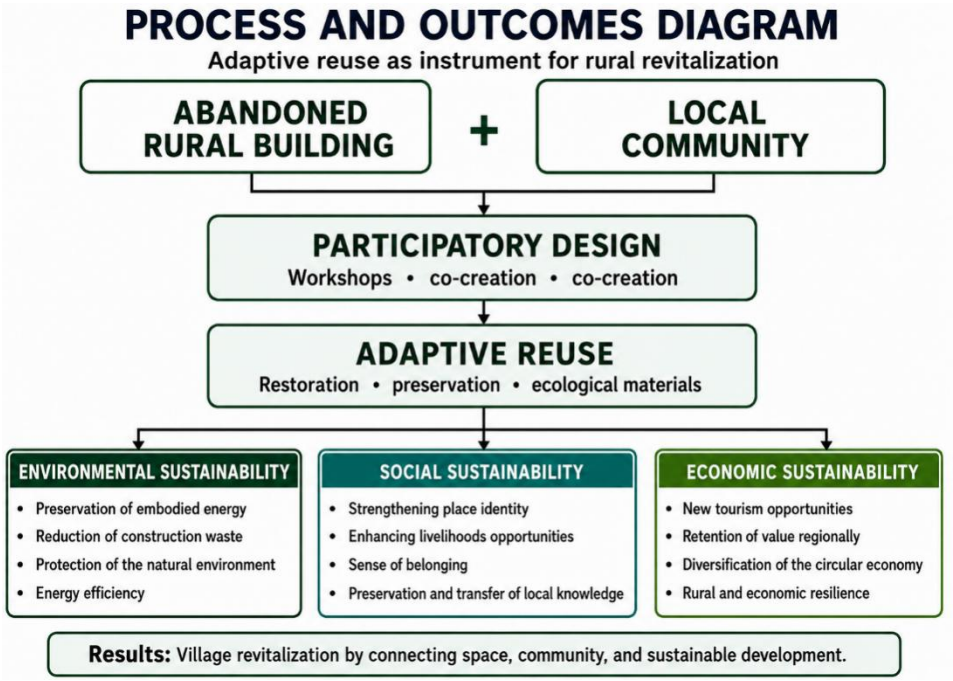


Figure 1. Process and outcomes of the participatory adaptive reuse methodology. Source: Authors' documentation.

4. RESULTS

4.1. Functional Transformation of Rural Buildings

The research showed that abandoned and underused rural buildings in the Prijedor area have considerable potential for new, multifunctional programmes. Through field surveys, community workshops, and expert analysis, twenty buildings were selected and broad adaptive reuse guidelines proposed. The functions were conceived as a network of activities supporting everyday life, local resources, and the distinctiveness of the rural landscape. Most proposals focused on rural tourism, community services, local entrepreneurship, cultural and educational programmes, with additional residential, business, and service functions, including hybrid work-residence models. This demonstrates that rural adaptive reuse must address residents' needs, economic feasibility, and long-term management, not only physical rehabilitation.

The process resulted in three detailed pilot designs: a wine-tasting house in Knežica, a community centre in the former school in Jelovac, and a co-working/start-up hub in Jelićka. These examples represent three different intervention models: commercial-tourism, public-community, and entrepreneurial-educational. This diversity demonstrates the flexibility of the methodological framework and its applicability to different building types, ownership situations, and local-community development priorities.

4.2. Twenty Conceptual Ideas for Adaptive Reuse

In addition to the three detailed pilot projects, twenty conceptual ideas were prepared for mapped buildings in rural Prijedor. Each included broad recommendations for programme transformation, future use, and improvement of physical condition. Rather than complete technical documentation, they form a catalogue of possibilities that local government and communities can use for further planning, funding applications, and phased implementation.

The proposals combined ideas gathered through community workshops and fieldwork with expert architectural analysis. Priority was given to buildings with strong local potential, preservation of cultural, historical, and ambient values, and functions suited to local needs. Proposed uses range from residential, business, tourism, educational, and social programmes to hybrid work-residence models.

Together, the twenty ideas extend the research from individual pilots to a broader rural network. They frame abandoned buildings as dispersed spatial resources that can be systematically activated into new local functions, giving adaptive reuse a strategic role in long-term rural revitalization while preserving identity, supporting the local economy, and strengthening social cohesion.



Figure 2. Example of an existing rural building and an adaptive reuse concept. Source: Authors' documentation.

4.3. Pilot Project 1 - Wine-Tasting House, Knežica

The first pilot project concerns the conversion of an existing barn structure in Knežica into a wine-tasting and storage house. The project is linked to the idea of an experimental vineyard in Knežica, where agricultural innovation is regarded as a driver of local-community development. The new programme includes spaces for tasting, wine storage, educational activities, and the presentation of local products, transforming a neglected rural building into a meeting point for agriculture, tourism, and culture.

The intervention preserves the recognisable volume, structural logic, material expression, and rural character of the building while introducing a new internal layout and contemporary access, service, and terrace areas. It thus combines traditional architectural elements with the principles of the "smart village," energy efficiency, and the local economy.

This pilot project has strong potential for the development of rural and wine tourism because it introduces a programme capable of attracting visitors, supporting local producers, and creating new forms of education in agriculture, processing, and product presentation. The preliminary financial estimate for the project is BAM 115,020.50, positioning it as a moderate-scale intervention with clear economic and promotional benefits for the local community.





Figure 3 (left). Existing condition of the Wine-Tasting House, Knežica. Source: Authors' documentation.
Figure 4 (right). Architectural visualization of the proposed wine-tasting house in Knežica. Source: Authors' documentation.

4.4. Pilot Project 2 - Community Centre, Jelovac

The second pilot project was developed for the former school building in the village of Jelovac. The building, which already holds a strong symbolic role in the collective memory of the local community, was proposed for transformation into a community centre. This conversion preserves the building's public character and continues its role as a gathering place while adapting it to the contemporary needs of residents.

The new programme includes a community gathering space, facilities for children, educational and recreational activities, and the possibility of occasional accommodation for hikers or children from urban areas participating in outdoor-school programmes and similar activities. This combination of functions allows the building to operate not only occasionally, but as a flexible space for different user groups and seasonal scenarios.

The design adapts the existing school typology into a more open and flexible public space, improving accessibility, comfort, and capacity for uses ranging from workshops and meetings to children's stays and organised visits. The project shows how reusing rural public buildings can strengthen belonging, intergenerational exchange, and rural-urban connections. The preliminary value of the intervention is BAM 121,353.00.





Figure 5 (left). Existing condition of the former school in Jelovac. Source: Authors' documentation.
Figure 6 (right). Architectural visualization of the proposed community centre in Jelovac. Source: Authors' documentation.

4.5. Pilot Project 3 - Co-working Hub, Jelićka

The third pilot project concerns an unused part of the local community building in Jelićka, proposed for conversion into a co-working space and start-up hub for young people. Unlike the first two examples, this intervention is directly oriented towards contemporary working models, local entrepreneurship, and retaining young people in the village. Adaptive reuse thus becomes an instrument of demographic and economic renewal, rather than merely a method of rehabilitating physical structures.

The programme includes shared workspaces, meeting rooms, education, presentations, training, and support for small local initiatives. With the increasing digitalisation of work, it can help young people develop business ideas locally while providing a networking platform for producers, organisations, entrepreneurs, and public institutions.

The architectural significance of this project lies in the capacity of an existing public building to accommodate a new hybrid function without losing its primary community role. Converting unused space reduces the need for new construction, activates an existing resource, and creates an environment that connects work, learning, and social interaction. The preliminary financial estimate is BAM 107,694.41, making this pilot project the most affordable of the three detailed designs, while offering strong potential for long-term social and economic effects.



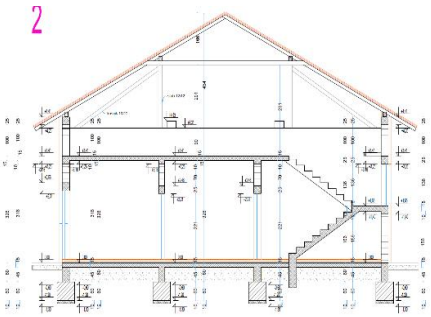


Figure 7 (left). Existing condition of the local community building in Jelićka
Figure 8 (right). Section of the local community building in Jelićka. Source: Authors' documentation.

5. DISCUSSION

The findings show that adaptive reuse of abandoned rural buildings extends beyond individual architectural intervention, functioning as a spatial-development mechanism that connects heritage protection, environmental responsibility, the local economy, and social cohesion. Buildings that became symbols of depopulation can thus become resources for a new cycle of village life. [11]

Environmentally, reusing existing structures reduces new construction, material consumption, and waste while preserving embodied energy. In rural environments, this is particularly relevant because interventions are closely connected to natural landscapes, agricultural land, and local material resources.

Socially, the involvement of residents, institutions, entrepreneurs, and experts was essential to the relevance of the proposals. Workshops, field visits, and stakeholder communication incorporated community needs and expectations into the designs, increasing local ownership and the prospects for long-term use, maintenance, and management. [12]

Economically, the three pilots demonstrate different models for activating local resources: rural tourism and local products in Knežica, community services and education in Jelovac, and entrepreneurship and youth retention in Jelićka. Their differences show that village revitalization requires context-specific combinations of functions rather than a universal model.

Overall, the Prijedor case study confirms that abandoned rural buildings are not merely a problem of spatial deterioration, but potential infrastructure for new forms of social, economic, and cultural life. When based on local needs, expert knowledge, and the principles of sustainable development, adaptive reuse can become one of the key instruments of rural revitalization.

6. CONCLUSION

The RurALL research demonstrates that adaptive reuse of abandoned and underused buildings can be a significant instrument for rural revitalization. In villages within the City of Prijedor, neglected building stock represents not only a spatial problem but also a development resource that, through careful analysis, preservation, and conversion, can accommodate new public, commercial, educational, and social programmes responding to local needs.

The significance of the research lies in a methodology connecting field mapping, existing-condition analysis, stakeholder involvement, twenty conceptual ideas, and three detailed pilot projects. The process shows that rural architectural design must address not only physical renewal but also social sustainability, the local economy, cultural identity, and long-term management. Adaptive reuse is therefore understood as a process connecting space, community, and village development potential.

The results should be understood as a starting point for further development rather than as completed implementation. Realisation depends on resolved property and legal relations, the technical condition of the buildings, detailed technical documentation,

more precise bills of quantities and cost estimates, defined management models, and secured financial resources through local, national, and European programmes. Continued participation, institutional support, and long-term maintenance are equally important, since sustainability ultimately depends on whether renewed spaces are accepted, used, and maintained by the community itself. Adaptive reuse must therefore be understood as a continuous process rather than a one-off design or construction activity.

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