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ZEB4ZEN

# ZEB4ZEN

## D.3.2.1 The New European Bauhaus and pilot neighbourhoods

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D.3.2.1 The New European Bauhaus and pilot neighbourhoods ..... 0

The New European Bauhaus and pilot neighbourhoods ..... 3

A. INTRODUCTION ..... 3

1. Theoretical Anchors: The NEB Compass, Ambitions, and Transdisciplinarity ..... 4

2. The Conceptual Overlap: NEB and the Historic Urban Landscape (HUL) ..... 5

3. Central Tensions I: The Conflict Between Authenticity and the Regenerative Imperative ..... 8

4. Central Tensions II: Aesthetics, Inclusion, and Socio-Economic Justice ..... 9

5. Conclusion: The NEB as the New Conservation Imperative ..... 11

B. NEW EUROPEAN BAUHAUS IN ZAMOŚĆ ..... 13

1. Integrating Heritage, Sustainability and Inclusion ..... 13

2. Green Infrastructure & Mobility (To Transform) ..... 16

3. Social Inclusion & Community Engagement (To Connect/To Share) ..... 18

4. Heritage, Sustainability and Community: An Integrated Vision ..... 20

C. NEW EUROPEAN BAUHAUS IN ZVIJEZDA ..... 21

1. INVENTORY OF RESIDENTIAL AND NON-RESIDENTIAL BUILDINGS AND OPEN SPACES IN ZVIJEZDA ..... 22

2. TRANSFORMING UNUSED SPACES IN ZVIJEZDA: ADDRESSING COMMUNITY NEEDS THROUGH THE NEW BAUHAUS INITIATIVE ..... 27

3. GOOD PRACTICE OF PROJECTS ..... 28

3.1. Old Armory Building ..... 28

3.2. The former Barracks of Ban Josip Jelačić ..... 29

3.3. The Bosnian storage redevelopment ..... 30

3.4. Hotel Central ..... 31

D. NEW EUROPEAN BAUHAUS IN PALMANOVA ..... 33

1. NEB VALUES ..... 33

1.1. Beautiful ..... 34

1.2. Sustainable ..... 34

1.3. Together ..... 34

2. NEB WORKING PRINCIPLES ..... 35
2.1. Participatory process ..... 35
2.2. Multilevel engagement ..... 35
2.3. Transdisciplinary approach ..... 35
3. PREVIOUS EXAMPLES OF NEB IN PALMANOVA ..... 36
3.1. Bastioni and city walls: form abandoned ramparts to a cradle of biodiversity and a place for all 36
3.2. VR for an enhanced visit experience ..... 37
3.3. Beauty and inclusion with old roots ..... 38
E. NEW EUROPEAN BAUHAUS IN QUEDLINBURG ..... 39
1. INVENTORY OF RESIDENTIAL AND NON-RESIDENTIAL SPACES IN QUEDLINBURG ..... 39
2. TRANSFORMING UNUSED SPACES IN QUEDLINBURG: COMMUNITY NEEDS AND BEST PRACTICES ..... 41
F. NEB PRINCIPLES IN THE ZEB4ZEN PILOT ACTIVITIES - SYNTHESIS ..... 43
3. Application of the NEB values in the four pilot neighbourhoods ..... 43
4. Concrete project activities and recommendations per pilot ..... 44
5. Potential of the pilot neighbourhoods to participate in the New European Bauhaus ..... 44
6. Presenting the pilot investments as New European Bauhaus examples ..... 45
7. Awareness workshops in the pilot neighbourhoods ..... 45
8. Common recommendations ..... 45
G. CONCLUSION ..... 46

# The New European Bauhaus and pilot neighbourhoods

## A. INTRODUCTION

The New European Bauhaus (NEB) initiative, launched by the European Commission, represents a foundational paradigm shift in the governance of urban transformation. Its primary mandate is to serve as the "soul" of the European Green Deal (EGD), translating its ambitious climate and environmental targets—particularly the decarbonisation of the built environment—into a process that is simultaneously aesthetically appealing, socially inclusive, and culturally rooted . The NEB is a strategic vehicle designed to forge a functional bridge between the realm of science and technology and the worlds of art, design, and culture, enabling a **transdisciplinary approach** to address complex societal problems through co-creation .

The relevance of the NEB to Europe's architectural legacy is critical. Given that approximately 35% of the European Union's building stock exceeds 50 years of age, many of these structures are protected as historic buildings or fall within designated Historic Urban Districts (HUDs) . The task of achieving the EGD's "energy efficiency first" principle, which mandates deep renovation to meet carbon reduction targets, generates profound structural and ethical conflicts when applied to this sensitive, non-standardised historic fabric .

This paper provides an in-depth, rigorous analysis of the NEB framework as it pertains to HUDs. It moves beyond a simple reconciliation narrative, focusing instead on the **central tensions**—normative, technical, and socio-economic—that arise when NEB's three inseparable core values (**Sustainability, Aesthetics, and Inclusion**) are applied via the high ambition levels defined in the **NEB Compass**.[1] By integrating academic research on adaptive re-use, circular economy (CE), and participatory governance, this publication articulates a comprehensive model for leveraging historic centres as fundamental assets for a regenerative and socially just European future, arguing that NEB constitutes a new imperative for conservation.

Scope: the document consistently covers all four ZEB4ZEN pilot neighbourhoods – Zamość (Poland), the Zvijezda historic centre of Karlovac (Croatia), Palmanova (Italy) and Quedlinburg (Germany). For each pilot it presents (i) the local context, (ii) how the three NEB values – sustainability, inclusion and aesthetics – are applied, and (iii) concrete ZEB4ZEN project activities and recommendations. Three of the neighbourhoods host pilot investments (Zamość, Karlovac and Palmanova), while Quedlinburg participates as a pilot neighbourhood without investment. In line with the project objectives, the document analyses the potential of the four neighbourhoods to participate actively in the NEB initiative and prepares them to present the successful implementation of the three pilot investments. A comparative synthesis is provided in Chapter "NEB principles in the ZEB4ZEN pilot activities – synthesis".

[1] New European Bauhaus Compass, https://new-european-bauhaus.europa.eu/system/files/2023-01/NEB_Compass_V_4.pdf

# 1. Theoretical Anchors: The NEB Compass, Ambitions, and Transdisciplinarity

The operational and ethical backbone of the NEB is the **NEB Compass**, a guiding framework that establishes the initiative's core values and three working principles. Crucially, the Compass mandates an escalating set of ambitions (Ambition I to III) to push projects beyond mere compliance towards regenerative outcomes.[2]

The three core values are designed to be mutually reinforcing, ensuring that a sustainable project is never achieved at the expense of aesthetics or inclusion .

| Value | Ambition I (Baseline) | Ambition II (Systemic) | Ambition III (Highest Transformative Goal) |
|---|---|---|---|
| Sustainability | To Repurpose (Preserve, Repair, Reuse, Reduce Environmental Impacts) [4] | To Close the Loop (Consider product lifecycle, waste transformation, and system circularity) | **To Regenerate** (Carbon storing, enhancing biodiversity, restoration and expansion of ecosystems) [3] |
| Aesthetics | To Activate (Context re-activation, Sensory experience, Aesthetics) [5] | To Connect (Improve physical and mental well-being, foster awareness of heritage and place) [5] | **To Integrate** (Holistic, high-quality design that improves well-being beyond functionality) [3] |
| Inclusion | To Include (Focus on basic needs, security, accessibility) [3] | To Consolidate (Build on solidarity, raise awareness of discrimination) | **To Transform** (Break obsolete social models, create social value, and bring transformative benefits on a societal level) |

The NEB Compass does not require every project to reach Ambition III; it is a self-assessment tool that helps projects move progressively towards higher ambitions. In HUDs, where simple repair (To Repurpose) is often insufficient for complex climate challenges, the higher ambitions are particularly relevant as a direction of development.

The values are brought to life through working principles, where **Transdisciplinarity** is paramount in connecting the seemingly disparate worlds of conservation ethics and high-tech engineering . This approach requires the active merging of scientific rigour, technological innovation, and participatory creative processes with the deep cultural knowledge held by local communities and craftspeople . This intellectual and practical alliance is vital for synthesizing new solutions for architectural and social transformation .

The **Participatory Process** is the mechanism for achieving the Inclusion value.[3] It necessitates the engagement of people at the grassroots level, specifically focusing on neighbourhoods and incorporating the

[2] New European Bauhaus Compass, https://new-european-bauhaus.europa.eu/system/files/2023-01/NEB_Compass_V_4.pdf
[3] New European Bauhaus Compass, https://new-european-bauhaus.europa.eu/system/files/2023-01/NEB_Compass_V_4.pdf

perspectives of diverse stakeholders, including less-represented groups, from the earliest stages of design and implementation . By promoting deep participation, NEB aims to develop technology and policy within the specific context of local traditions, crafts, and economies, leveraging the rich cultural diversity of Europe.[4] The commitment to non-academic, local knowledge[5] ensures that transformations are socially accepted and reflect the actual needs of the community, guarding against top-down interventions.[6]

# 2. The Conceptual Overlap: NEB and the Historic Urban Landscape (HUL)

The NEB initiative is fundamentally aligned with the broader international consensus on heritage management, notably the **UNESCO Historic Urban Landscape (HUL) Recommendation (2011)** . HUL advocates for a holistic approach that moves beyond the protection of tangible structures to encompass the layered cultural, social, and economic attributes of the urban environment .

Both NEB and HUL share the objective of "humanizing" development, addressing change not as a threat but as an opportunity for development . The HUL framework, which emphasizes a comprehensive approach to governing project management, provides a ready-made methodology for NEB projects in historic districts . Specifically, the six critical steps of HUL implementation, often inconsistently applied in practice , find robust reinforcement through the NEB's mandates :

1. **Comprehensive Surveys and Mapping:** HUL requires detailed mapping of natural, cultural, and human resources . NEB's **To Regenerate** ambition necessitates this, for example, through GIS-based procedures for urban mapping to identify eligible areas for deep renovation solutions that respect heritage significance .

[4] NEB Investment Guidelines - New European Bauhaus, https://new-european-bauhaus.europa.eu/tools-and-resources/neb-investment-guidelines_en

[5] New European Bauhaus – Innovative solutions for greener and fairer ways of life through arts and culture, architecture and design for all - Euro Access, https://www.euro-access.eu/en/calls/898/New-European-Bauhaus--Innovative-solutions-for-greener-and-fairer-ways-of-life-through-arts-and-culture-architecture-and-design-for-all

[6] New European Bauhaus: A Handbook | Built4People, https://built4people.eu/wp-content/uploads/2023/10/New-European-Bauhaus-a-handbook.pdf

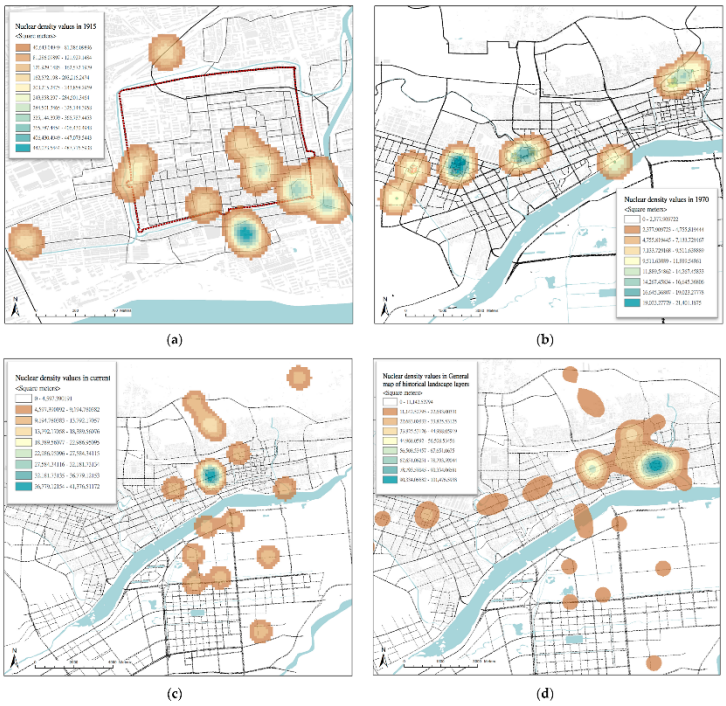



*Figure 1 Historical value richness chart: (a) in 1915; (b) in 1970; (c) in the current time; (d) stacked graphs. Data is visualized and analyzed using a **Geographic Information System (GIS)** (Source: ArcGIS Screenshot), demonstrating the process of detailed **mapping** and resource identification necessary for **deep renovation solutions** under the NEB initiative.*[7]

2. **Consensus through Participatory Planning:** HUL demands reaching consensus through extensive stakeholder consultations . This is directly addressed by NEB's **Participatory Process** and **Inclusion** value, which encourages collaborative governance models to ensure transformations are rooted in community consensus.[8]

[7] **Dong, S.; Shen, D.** A Study of Historical Urban Landscape Layering in Luoyang Based on Historical Map Translation. *Land* **2023**, *12*, 663. https://doi.org/10.3390/land12030663.




*Figure 2 Key governance issues. Those in blue are those key governance issues related to group (I), working (with) institutional complexity, and those in brown are related to group (II), safeguarding a turbulent future, each comprising different subgroups.*[8]

The provided figure illustrates **Key Governance Issues** essential for the effective implementation of the HUL Approach. In the context of the NEB initiative, the necessity of achieving **consensus through participatory planning** is directly reflected in the blue elements, which constitute Group **I. Working (with) institutional complexity**. Specifically, this objective is realized through three interconnected subgroups: **2. Stakeholder and Community Engagement**, **3. Consensus Building and Conflict Mediation**, and **4. Knowledge Sharing, Transparency and Institutional Accountability**. This comprehensive governance framework ensures that the transformations resulting from NEB projects are deeply rooted in **community consensus**, forming the foundation for holistic and sustainable stewardship of the **Historic Urban Landscape**.

The endorsement of HUL principles by key NEB partners, such as Europa Nostra, confirms that Europe's cultural heritage must be recognized as an integral dimension of the New European Bauhaus initiative.[9] Historic buildings and their surrounding landscapes are seen as shaping and nurturing the feeling of "home," providing a vital bridge between the sense of belonging and the need to embrace new, sustainable ways of life.

[8] **Ferreira, T.C.; Rey-Pérez, J.; Roders, A.P.; Silva, A.T.; Coimbra, I.; Vazquez, I.B.** The Historic Urban Landscape Approach and the Governance of World Heritage in Urban Contexts: Reflections from Three European Cities. *Land* **2023**, *12*, 1020. https://doi.org/10.3390/land12051020

[9] Envisioning the futures - iris@unitn, https://iris.unitn.it/retrieve/handle/11572/457130/1049782/C2025_BookOfAbstracts.pdf

# 3. Central Tensions I: The Conflict Between Authenticity and the Regenerative Imperative

The most profound challenge in NEB's application to HUDs is the inherent conflict between the conservation ethics of protecting *authenticity* and the aggressive demands of the *Sustainable* pillar, specifically the Ambition **To Regenerate** .

- The Normative Dilemma of Deep Renovation

Traditional conservation, often guided by the Venice Charter (1964), emphasizes the preservation and transmission of the authenticity and integrity of cultural heritage, including historical construction techniques and materials . In contrast, the European Green Deal and the *Renovation Wave* prioritize the **Energy Efficiency First** principle in building conversions and resilient renovation.[1] This creates a direct tension: achieving the necessary energy reduction targets (e.g., substantial reductions, as suggested by literature ) often requires invasive technical solutions such as thick external insulation, high-performance windows, or complex ventilation systems .

However, the academic consensus notes that there is no universal way to apply energy-efficient retrofitting in heritage buildings . Inaction, driven by rigid preservation, is not a neutral position; it increases the risk of building deterioration due to energy poverty, inadequate comfort, and vulnerability to climate change impacts .

- Integrated and Reversible Retrofit Methodologies

To resolve this normative and technical dilemma, NEB promotes the development of highly specific, integrated methodologies :

1. **Multi-Criteria Decision Making (MCDM):** Retrofit solutions must be selected through an MCDM process that simultaneously evaluates the historical significance, the potential impact on heritage integrity, and the predicted energy performance . This requires a "**whole building approach**" that considers building physics and occupant behaviour holistically .
2. **Reversibility and Circularity:** The highest technical ambition aligns with the circular economy, recognizing historic buildings as a "material bank" . Projects must favour solutions that are **reversible** to ensure long-term adaptability and future authenticity.[10] Innovative dry-construction techniques, such as the e-PANEL and e-CLT systems, developed within Horizon 2020 projects, are being investigated for their applicability in HUDs precisely because they facilitate later deconstruction and re-use, aligning with circularity principles . The example of the BUGA Wood Pavilion, which was designed to be fully reassembled or recycled, showcases a tangible implementation of the "To Regenerate" ambition.[4]

- Systemic Requirements for Circularity and Regeneration

The shift to Ambition III requires systemic policy tools to support circularity in heritage :

  - **Open-Access Data Platforms: NEB calls for the development of EU-wide, easy, and open-access guidelines for sustainable planning and construction . Crucially, it mandates establishing a dismantling and recycling costs data bank and an EU-wide open-access electronic marketspace for secondary raw materials . This is essential for facilitating the**

[10] New European Bauhaus Compass, https://www.urban-initiative.eu/sites/default/files/2022-12/NEB_Compass_V1.pdf

adaptive re-use of historic materials and overcoming barriers to circularity within the construction industry.

- **Embodied Emissions and Regeneration: The NEB is explicitly focused on minimizing embodied greenhouse gas (GHG) emissions and meeting carbon neutrality requirements . This means conservation projects must consider the lifecycle assessment (LCA) of interventions, viewing the existing building's conserved structure as avoided carbon emissions. Regeneration is completed by integrating Nature-based Solutions (NbS), such as building envelopes designed for vegetation and nesting, which actively enhance urban biodiversity.[11]**

# 4. Central Tensions II: Aesthetics, Inclusion, and Socio-Economic Justice

The NEB's insistence on the **Beautiful** and **Together** pillars introduces critical socio-cultural tensions within the transformation process, particularly concerning gentrification and accessibility.

- Aesthetics, Well-being, and the Ethical Imperative

The aesthetic ambition **To Integrate** requires that a project's quality of experience enhances physical and mental well-being.[5] This aligns with the concept of

*Baukultur*, promoting high-quality design in every aspect of the built environment .

- **Ethics vs. Aesthetics: The inherent difficulty in conservation lies in the temptation to pursue aesthetic objectives at the expense of ethical integrity.[12] NEB addresses this by embedding a holistic definition of beauty: it is achieved through the collective application of sensitivity, intelligence, and competence to create an enriching experience beyond mere function.[13] This aesthetic ambition also drives the need for synergies between traditional skills (crafts) and new industrial techniques, revitalizing local knowledge and empowering small players in the economy .**
- **Aesthetics and Ecology: The aesthetic value extends to the natural domain. Philosophers have proposed that the aesthetic appeal of biodiversity is one of the strongest motivations for conservation efforts.[14] However, academic analysis also points out a potential "mismatch" between *apparent* and *real* biodiversity, suggesting that aesthetic values alone can offer only limited support for conservation. This underscores the NEB's need to link aesthetic design (e.g., NbS integration) directly to measurable regenerative sustainability outcomes[15].**

[11] Energy retrofitting of heritage buildings: an integrated methodology - ResearchGate, https://www.researchgate.net/publication/371890775_Energy_retrofitting_of_heritage_buildings_an_integrated_methodology

[12] The Spirit of Time—The Art of Self-Renovation to Improve Indoor Environment in Cultural Heritage Buildings - ResearchGate, https://www.researchgate.net/publication/353019454_The_Spirit_of_Time-The_Art_of_Self-Renovation_to_Improve_Indoor_Environment_in_Cultural_Heritage_Buildings

[13] https://new-european-bauhaus.europa.eu/index_en

[14] About the initiative - European Union, https://new-european-bauhaus.europa.eu/about/about-initiative_en

[15] Horizon Europe-New European Bauhaus Nexus Report - IIASA PURE, https://pure.iiasa.ac.at/id/eprint/17815/1/KI0922035ENN.en.pdf

- The Inclusion Paradox: Affordability and Accessibility

Inclusion, with its highest Ambition **To Transform**, is crucial for ensuring a just transition, especially in HUDs that often suffer from socio-economic stratification.

  - **Gentrification and Affordability: Culture-led urban regeneration, often focused on enhancing heritage and quality of space, has historically been associated with gentrification—a phenomenon where property speculation displaces poor and working classes from central areas . This is compounded in historic districts where conservation regulations may limit new construction, pushing up prices and restricting housing affordability . The NEB directly confronts this by making affordability a core priority . Projects must actively contribute to the affordability of the green and digital transitions, ensuring no person or place is left behind. Projects like the social and affordable housing district demonstrators (IA) under Horizon Europe are specifically funded to address this social crisis.[16]**
  - **Accessibility vs. Integrity: Achieving Ambition III: To Transform requires the breaking of obsolete social models, including physical barriers. Elements integral to historical integrity, such as cobblestones, can actively undermine mobility and accessibility for people with disabilities or reduced mobility . The NEB dictates that interventions must be user-friendly. This means conservation policy must be flexible enough to negotiate and adapt historical structures when the value of inclusion and social equity is compromised.[17]**

- Collaborative Governance and the Empowerment of Communities

To overcome the social risks and achieve genuine transformation, NEB mandates a shift towards **co-creative cultural heritage governance** . This collaborative model moves beyond traditional governmental or service-led approaches, empowering citizens and non-academic local knowledge.[18]

  - **Case Studies in Co-Creation: The Horizon Europe project CrAFt (Collaborative governance models) exemplifies this, focusing on accelerating urban transformation in cities like Bologna and Turin. CrAFt actively develops models for engaging typically difficult stakeholders, such as property owners in multi-apartment buildings, in deep energy renovation processes.19 Furthermore, case studies, such as the adaptive reuse of the IPIM (Provincial Institute for Childhood and Maternity) in Turin into the contemporary art centre Flashback Habitat, illustrate how collaborative planning can transform an asset with "uncomfortable memories" into a site that maximizes its tangible and intangible value through symbiotic reuse . The proposed transformation of church buildings and religious heritage in the EU, developed by a NEB Lab consortium, also relies explicitly on a participatory process to reconcile conservation, religious memory, and new real estate requirements.**

- Financial Instruments and Strategic Policy Implementation

The ambitious scope of the NEB requires dedicated, integrated financial and policy instruments that transcend traditional grant-based models to leverage private capital.

The NEB Facility: R&I and Roll-out Components

[16] NEB Facility Roadmap - Evropska sredstva, https://evropskasredstva.si/app/uploads/2025/03/NEB-Facility-Roadmap.pdf

[17] The Spirit of Time—The Art of Self-Renovation to Improve Indoor Environment in Cultural Heritage Buildings - ResearchGate, https://www.researchgate.net/publication/353019454_The_Spirit_of_Time-The_Art_of_Self-Renovation_to_Improve_Indoor_Environment_in_Cultural_Heritage_Buildings

[18] New European Bauhaus – Innovative solutions for greener and fairer ways of life through arts and culture, architecture and design for all - Euro Access, https://www.euro-access.eu/en/calls/898/New-European-Bauhaus--Innovative-solutions-for-greener-and-fairer-ways-of-life-through-arts-and-culture-architecture-and-design-for-all

[19] New European Bauhaus Concept Paper FINAL, https://new-european-bauhaus.europa.eu/system/files/2021-07/2021-06-30_New_European_Bauhaus_Concept_Paper_HLRT_FINAL.pdf

The NEB Facility is a multi-annual funding framework anchored in the Research and Innovation program, Horizon Europe. Its structure is designed to support the entire innovation pipeline, from fundamental research to large-scale deployment:

1. **Research & Innovation (R&I) Component:** This component, supported by dedicated annual funding, focuses on fundamental research and demonstration projects. Its priorities directly target HUD challenges: "Circular and regenerative approaches for the built environment," "Innovative funding and new business models for the transformation of neighbourhoods," and "Connecting the green transformation, social inclusion, and local democracy" . Funding under Horizon Europe Cluster 2 also supports specific calls focused on "Innovative solutions for greener and fairer ways of life through arts and culture".
2. **Roll-out Component:** Aiming to mobilize a similar budget ambition , this component leverages Cohesion Policy Funds (ERDF) and other EU programs to scale and deploy innovative NEB solutions, including the regeneration of abandoned urban areas and brownfields for renaturation.

Financial De-Risking and the Territorial Development Model

The successful transformation of HUDs often requires high upfront investment and careful mitigation of regulatory and social risks. The EU has provided specific tools to address this:

- **NEB Territorial Development Model (TDM): This model financial instrument utilizes Cohesion Policy resources (ERDF 2021-2027)to provide managing authorities with the building blocks to set up and implement financial instruments (such as loans and guarantees) specifically tailored for NEB projects.[22] The TDM ensures that Cohesion Policy supports urban development aligned with NEB values (sustainability, social inclusion, and green transition).[20]**
- **NEB Investment Guidelines: These guidelines serve as a crucial de-risking tool for investors and developers . They demonstrate how aligning projects with NEB values adds significant non-financial value—by mitigating social risk, enhancing long-term stability, and improving social cohesion—making investments in complex, historic urban areas more appealing and long-lasting . By valuing the quality of experience and inclusiveness, the guidelines help to make the case for investing in projects that go beyond purely financial considerations .**

# 5. Conclusion: The NEB as the New Conservation Imperative

The New European Bauhaus redefines the relationship between cultural heritage and sustainable development. It is a decisive policy intervention that demands the conservation sector adopt a dynamic, regenerative, and transformative role within the European Green Deal. For Historic Urban Districts, the NEB is not an optional add-on but the essential framework for survival and social relevance in the face of climate and social crises.

The paradigm's success hinges on:

1. **Negotiated Authenticity:** Moving beyond rigid preservation of material authenticity to a **negotiated approach** where the superior Ambitions of **Regeneration** and **Transformation** justify non-invasive, reversible, and multi-criteria assessed technical interventions.

[20] Multi-Benefit Decision-Making Process for Historic Buildings: Validation of the CALECHE HUB Conceptual Model Through a Literature Review - MDPI, https://www.mdpi.com/2571-9408/8/2/45

2. **Cultural Capital as Economic Driver:** Recognizing cultural heritage as an inexhaustible source of **cultural capital** and a functional **material bank** , thereby embedding the CE model into adaptive re-use strategies and minimizing embodied GHG emissions .
3. **Prioritizing Social Justice:** Making **Inclusion** the non-negotiable prerequisite, actively managing the risk of gentrification through affordability mandates and ensuring full accessibility through collaborative governance models (e.g., CrAFt) .

By leveraging the NEB Facility and the NEB TDM, urban authorities are equipped to mobilize the necessary capital for **beautiful, sustainable, and inclusive** transformations, ensuring that Europe's historic centres not only endure but flourish as vital, regenerative engines of the future.

# B. NEW EUROPEAN BAUHAUS IN ZAMOŚĆ

## 1. Integrating Heritage, Sustainability and Inclusion

Zamość (population ~60,000) is a UNESCO-listed Renaissance "Ideal Town" whose recent initiatives strongly reflect the New European Bauhaus's values of *sustainability*, *aesthetics*, and *inclusion*. In the heritage-rich Old Town and fortress district, the city has carried out **extensive conservation and adaptive reuse of historic buildings**, breathing new life into the "living museum" while serving modern community needs (NEB ambition *"To Regenerate"*). For example, the EU-funded project **"Creation of the Museum of Fortifications and Arms at Bastion III and the Arsenal"** (2011–15) completely revitalized a dilapidated 17th-century fortress area.




*Figure 3* ***Museum of Fortifications and Arms at Bastion III and the Arsenal*** *(photo Maciej Ukleja)*

The degraded bastion walls and powder magazine were restored, and a new glass-and-steel museum space was built seamlessly **into the historic earthworks**, preserving the original rampart profiles and sightlines. Over 70,000 m² of fortress grounds were re-landscaped with fortress- and park-style plantings; lighting, benches and pathways were added to make the site user-friendly and encourage visitors to linger. This project exemplifies *New European Bauhaus* regeneration: it revives cultural heritage (raising Zamość's profile as an Eastern Polish cultural hub) while providing **green, public museum spaces** for learning and leisure.[21,22]

[21] https://muzeumarsenal.pl/pl/o-muzeum/o-projekcie

[22] https://www.malopolska24.pl/index.php/2013/08/trwaja-prace-restauracyjne-dawnych-fortyfikacji-zamoscia/










*Figure 4 **Museum of Fortifications and Arms** (photo Piotr Krajewski)*

Other recent works continue this regeneration of historic fabric. The historic city gates and the Old Market Square have been meticulously restored using EU, national and even Norwegian grants. In fact, since joining the EU Zamość has invested **over 160 million PLN** in rehabilitating the Old Town ("Perła Renesansu") – refurbishing the Great Market, Renaissance merchant courtyards and the waterside salt market.



*Figure 5 Old market square (source:https://zci.zamosc.pl/page/76/rynek-wielki.html)*

Simultaneously the fortress walls and bastions have seen over **95 million PLN** of EU-backed reconstruction. Key milestones include reconstruction of bridges and moats around the Szczebrzeska gate, renovation of bastions and casemates, and rebuilding the Lwowska gate façade. Bicycle and walking trails now link these restored sites, and landscaped earthworks mark the outline of the vanished walls. These heritage projects *literally reconnect* Zamość's residents and visitors to its cultural past, embodying the NEB aim *"To Regenerate"* by **sustainably preserving history** for future generations.[23]



*Figure 6 Lwowska Gate w Zamościu. (photo MaKa)*



*Figure 7 Brzeska gate (photo MaKa)*

- **Example:** The Arsenal-Fortifications Museum (completed 2015) reused Renaissance defensive structures as museum galleries, illustrating how cultural heritage can be **adaptively reused** for modern educational and leisure functions[24]. This project ("Arsenał") is led by the city's museum and funded by EU infrastructure/culture programs. Likewise, work is under way to restore the Lwowska Gate (18th-century bastion gate) and other fortifications with EU and ministerial support. The outcome is a regenerated urban landscape – a *fortified garden* in which renovated walls, green embankments and plazas co-exist – fulfilling both aesthetic and ecological goals (NEB's *"To Regenerate"* and *"To Transform"*).

[23] https://www.malopolska24.pl/index.php/2013/08/trwaja-prace-restauracyjne-dawnych-fortyfikacji-zamoscia/

[24] https://muzeumarsenal.pl/pl/o-muzeum/o-projekcie

# 2. Green Infrastructure & Mobility (To Transform)

Zamość has also invested heavily in **environmental infrastructure and low-emission mobility**, in line with the NEB value of *sustainability* and the *"To Transform"* ambition. Public transport was rapidly decarbonized: in late 2023 the **Miejski Zakład Komunikacji (MZK Zamość)** took delivery of 14 new zero-emission MAN Lion's City E electric buses (10 standard 12m and 4 articulated 18m vehicles) along with seven double-charging stations on the depot. These "electric lions" now serve 25 city bus lines. (Previously, MZK had already introduced 12 low-floor MAN CNG buses in 2011–12, showing a long-term shift away from dieselhttps://transinfo.pl/infobus/kolejne-14-autobusow-elektrycznych-dla-mzk-zamosc-czy-man-obroni-swoja-twierdze/.)[25] The electrification project was subsidized by a **National Fund for Environmental Protection** grant: the majority of the investment cost was covered by NFOŚiGW under the "Green Public Transport" program. As Mayor Andrzej Wnuk noted, replacing diesel buses is a *"sustainable development"* priority for the 60,000-person historic city: caring for climate and air quality is one of the hallmarks of Zamość's progress.

Electric MAN Lion's City E buses in Zamość's Old Town (Dec. 2023). *"The city invested in 14 new fully-electric buses (backed by a ~29M PLN NFOŚiGW grant) to bring clean, silent transport to its UNESCO district"*[26].



*Figure 8 Electric public transport (photo MAN)*

Alongside clean buses, Zamość has promoted **green public spaces and nature-based solutions**. For example, in October 2020 two *"rain gardens"* were installed at public sites to manage stormwater (mitigating urban flooding and heat) and to provide green social spaces. In workshops organized by Fundacja Sendzimira, residents and schoolchildren helped build a large composite planter at Primary School No. 6 that captures up to 1.25 $m^3$ of roof rainwater. This water-permeable planter, filled with sand, compost and clay pebbles, is planted with pollution-tolerant shrubs; excess runoff is channeled into an adjacent flower bed. A second rain garden was similarly created at the municipal sports center. These installations (realized jointly with the city, a local NGO, and financed in part by BNP Paribas donations) demonstrate *"blue-green infrastructure"*: linking community engagement with urban climate adaptation. Students not only learned

[25] https://transinfo.pl/infobus/kolejne-14-autobusow-elektrycznych-dla-mzk-zamosc-czy-man-obroni-swoja-twierdze/

[26] https://www.truck.pl/pl/article/1506/zamo%C5%9B%C4%87-odebra%C5%82-swoje-pierwsze-autobusy-elektryczne-na-ulice-miasta-wyjedzie-14-pojazd%C3%B3w-man-lion%E2%80%99s-city-e,7

about ecological design in workshops, but the new gardens now serve as living-classrooms and restful "green lungs" in the city.[27]

This echoes NEB's aim *"To Transform"*, by **transforming functional infrastructure into aesthetic, sustainable public amenities**.



*Figure 9 Rain gardens in Zamość City (Photo Fundacja Sendzimira)*

The city has also expanded recreational green areas. As part of an ongoing Old Town revitalization, a large *skate park*, colorful playground, and outdoor fitness zone were built next to the historic Park Miejski (reportedly supported by municipal funds). Moreover, existing fort grounds now include landscaped parks and bike lanes lit for tourism. In sum, Zamość is integrating *ecosystem services* and active transport into its urban plan – a transformation of built heritage into a liveable green environment. These projects are often co-financed by EU cohesion and state funds, aligning with NEB's sustainability pillar.

In recent years Zamość has built out extensive bike and pedestrian paths. Notably, a 685 m pedestrian-cycle path along the Łabuńka River (from Aleje 1 Maja to Okrzei streets) was completed, and a new 900 m bike path on Legionów Street was added. These routes are wide, paved, and protected by railings for safety. By 2017 the city had created a *"20 km ring of bicycle routes"* encircling the center. This network makes everyday transport more sustainable (reducing car use), more **inclusive** (safe routes for schoolchildren, families, the elderly and disabled), and aesthetically pleasing (green corridors along the river and tree-lined streets). It matches NEB ambitions "to transform" city mobility and "to re-connect" people by sharing space, while also highlighting ecology (paths link parks and natural areas). In short, Zamość's bike path investments showcase NEB's fusion of function, beauty and community.

[27] https://sendzimir.org.pl/projekty/ogrody-deszczowe-w-zamosciu/




*Figure 10 Green bike trail in a city park (source:https://zyciezamoscia.pl/informacje/nowa-sciezka-rowerowa)*

# 3. Social Inclusion & Community Engagement (To Connect/To Share)

Inclusivity is a core NEB principle, and Zamość has launched many **community-driven and NGO-led projects** that bring people together. An outstanding example is the *Magiczny Ogród - EKO Serce Zamościa* ("Magic Garden – Eco Heart of Zamość") initiative. In June 2025 the local NGO Stowarzyszenie *Magiczny Ogród* and the city's new Centre for Care and Living (COM) organized a large **intergenerational planting event** around the COM building (a historic former sanatorium on ul. Górna). Residents, volunteers, senior-care center users and youth planted ornamental trees and flowers on the site. The project – supported by a grant from Santander Bank's "Tu mieszkam, tu zmieniam – EKO" program – was explicitly designed "to integrate generations and build ecological awareness" among citizens. Participants included COM elders and people with disabilities, local schoolchildren and young volunteers, as well as partners like the City's Social Integration Center, the regional Youth Labor Corps, Rotary Club and nearby plant nurseries. By greening the care home's surroundings together, this initiative fostered **social dialogue and inclusion** while beautifying the space. NEB's *"To Share/To Connect"* ambition is manifested here: the heritage site (old palace-sanatorium) is re-used for social care, and caring for it becomes a communal act of creativity and environmental stewardship[28].

[28] https://www.kronikatygodnia.pl/artykul/48062,zamosc-magiczny-ogrod-nabiera-kolorow-to-eko-serce-miasta



*Figure 11 Magic Garden - Eco Heart of Zamość (source: https://www.tygodnikzamojski.pl/artykul/141935/zamosc-wspolne-sadzenie-roslin-przy-centrum-opiekunczo-mieszkalnym.html)*

Another inclusion effort targets migrants and multicultural communities. Caritas Zamojsko-Lubaczowska is running a **"Razem na rzecz integracji"** (Together for Integration) project (2025–27) based at the City's Migrant and Refugee Support Center. This EU-funded (FAMI) program provides comprehensive support to 500 third-country nationals in the region. Services include Polish language and cultural workshops, job counselling, legal and psychological aid, plus community events and intercultural training for local schools. For example, the project offers cultural outings, interfaith dialogue events and media skills workshops – all aimed at weaving migrants into the social fabric and **reducing xenophobia**. By empowering newcomers and simultaneously educating the host community, this Caritas initiative directly embodies the NEB inclusion value: "supporting active participation in local life" and *"raising public awareness"* to create a more cohesive society.




*Figure 12 Caritas Project - Together for Integration (source:https://diecezja.zamojskolubaczowska.pl/wiadomosci/4359-projekt-caritas-razem-na-rzecz-integracji)*

- **Examples of other actors:** The Zamość region is also served by social economy and NGO networks. The *Zamojskie Centrum Integracji Społecznej* (City Integration Center) and the Zamość Social Economy Incubator (run by Fundacja Rozwoju Lubelszczyzny) offer skills training and job support to marginalized residents.

Grassroots school initiatives (e.g. Szkolne Koła Caritas) organize volunteer drives and *Pudełka Szczęścia* gift campaigns for families in need.[29]

Local cultural NGOs host inclusive festivals (e.g. cross-cultural music events) and senior clubs host "library benches" to bring the elderly and youth together. Even private donors have joined in: the Santander Foundation and companies like BNP Paribas have sponsored public gardens and playgrounds (with benches, bike repairs stations, etc.) that serve all citizens. Each such project – whether city-run, NGO-organized or privately supported – stresses **community participation** and accessibility, echoing the NEB ethos "beautiful, sustainable, together."

# 4. Heritage, Sustainability and Community: An Integrated Vision

In Zamość, the *intersection* of cultural heritage and community needs is ever-present. Preservation projects consciously include people. For instance, the COM care center is housed in the renovated 19th-century palace (Sanatorium Rehabilitacyjne), so heritage architecture now shelters a disabled adults' day center. Around that same building, the new Magiczny Ogród was planted by and for the community. The city's bustling Old Market Square – restored to Renaissance splendor – now hosts green zones and cultural events under car-free policies, merging aesthetics with livability. The renovated fortress barracks (Arsenal) operate as an interactive museum and park, offering both historic ambiance and tranquil green space for families.

In every case, Zamość's projects show that *protecting heritage and fostering nature are not at odds, but mutually reinforcing*. Restored fortifications and their surroundings serve as green public spaces, accessible paths link the Old Town with the restored bastions, and new recreational areas complement the historic urban structure. These synergies exemplify NEB's holistic ambition: **co-design places that are beautiful, sustainable and inclusive**. The city's multi-stakeholder approach – combining municipal planning, EU funding, active schools and local civil society – ensures broad ownership of these projects. As a result, Zamość is not only shining again as a Renaissance jewel (UNESCO site), but also as an *environmentally forward-thinking, inclusive community*. Its experience is a concrete illustration of NEB values "in brick and plant": a city that **regenerates its past, transforms its present, and connects all its people** in the process.

[29] https://caritas.zamojskolubaczowska.pl/category/aktualnosci/

# C. NEW EUROPEAN BAUHAUS IN ZVIJEZDA

## PROPERTY MANAGEMENT OF UNUSED PUBLIC BUILDINGS AND OPEN SPACES

All buildings within the Zvijezda historic area exhibit compromised structural integrity, failing to meet fundamental building requirements, including structural stability, fire safety, hygiene and health, accessibility, environmental protection, noise protection, and energy efficiency. Public open spaces are predominantly without a specifically designated purpose or functional programming. There is a need for focused analytical and planning efforts aimed at improving existing conditions by carrying out the following activities:

- Identification and evaluation of the current condition of unused public spaces and buildings;
- Spatial analysis, including green infrastructure, use of cultural heritage, and the socio-economic context within the city and specifically for the Zvijezda area;
- Engagement of relevant stakeholders in defining new uses and improving services available to the local community.

The responsible authority to organize these activities within the public administration should be defined through an internal act governing the organization of the administrative bodies of the city.

The scope of activities includes introducing municipal property management along with the establishment of records of real estate owned by the local government and development of guidelines for planning requirements integrated in spatial and urban planning documents.

The objective is to improve the stock of unused public open spaces and buildings by applying the principles of circular economy, in order to achieve environmental, economic, and social benefits for the local community.

The municipal property management should aim to create synergies between available resources, development indicators, citizen needs, and interests of potential investors.

The actions to improve unused public spaces and buildings should be determined based on:

- The current construction properties of the open spaces and the buildings,
- Urban rehabilitation goals,
- Cultural heritage preservation princples,
- Status of green infrastructure,
- Current social and economic indicators,
- Expressed needs of citizens and interests of investors.

The analysis is a starting point to introduce property management practice. Here are the implementation steps:

- Current construction properties of the open spaces and the buildings

The local real estate register should be established and used for the inventory of unused buildings/individual building units, and for collecting supplementary data regarding the structural adequacy of buildings for continued use, as well as for the valuation of properties. Instructions for data collection and condition assessment are provided in the document Guidelines for the Preparation of Building Condition Analysis with Proposed Measures and Investment Estimate30, specifically in the section on mechanical resistance and stability, and seismic resistance of the building. The conclusion of the structural condition assessment must include a recommendation on whether the building could be retained or if improvements are

30 https://mpgi.gov.hr/UserDocsImages/dokumenti/EnergetskaUcinkovitost/Smjernice_APSZ/Smjernice%20za%20izradu%20analize_I_MEHANICKA%20OTPORNOST%20I%20STABILNOST_2021_09_08.pdf

needed based on the evaluation of the structure's mechanical resistance and stability, and the estimated costs of improvement.

## Urban rehabilitation goals

In addition to infrastructural and design-oriented rehabilitation,it is essential to consider social, economic, and environmental issues, addressing various contemporary challenges—such as area revitalization, affordable or energy-efficient housing, quality of life for the elderly, youth employment, prevention of all forms of segregation and the emergence or expansion of ghettoized areas, enhancement of tourism appeal, and other. The targeted goals include preservation and rehabilitation of architectural heritage, even initiating activities in privately owned buildings, due to its importance for overall spatial identity, improvement of transport infrastructure, with a focus on cycling and public transportation, acquiring facilities for public services, involving the community in planning and implementation processes (citizen participation), upgrading public spaces (parks, squares, pedestrian zones) to support public functions, coherent application of modern technologies and solutions in mobility, clean energy, climate adaptation, and smart city development.

- Cultural heritage preservation princples

Buildings that have been unused or unmaintained for many years lose valuable elements, and it is necessary to determine whether their values have been preserved for valuation as architectural heritage. It is important to establish which method is appropriate for their future use: reconstruction, restitution, or revitalization.

- Status of green infrastructure

Interventions on an area level are beneficial establishing network connectivity of green infrastructure and implementing sustainable urban stormwater drainage systems. In areas with insufficient availability of green spaces, such interventions can positively contribute to reducing the urban heat island effect.

- Current social and economic indicators

Social and economic indicators of a local government unit are essential for determining the current demographic situation, economic capacity, social infrastructure, and activities within the city or municipality. The result of the analysis is the identification of necessary facilities to improve access to social, healthcare, and community infrastructure, as well as economic activities. For the selected facilities, it is necessary to determine the intensity of their impact on society, tourism offerings, the economy, agriculture, and other spatial activities.

- Expressed needs of citizens and interests of investors

The purpose of public participation is to identify potential stakeholders within the local community and define their interests, capacities, and issues. The goal of the analysis is to increase social, economic, and institutional benefits for target groups and end users, while reducing negative impacts and potential conflicts among stakeholders.

Next acitivites on municipal property management include preparation of targeted projects. First, the property valuation must be carried out in accordance with current regulations, with particular emphasis on justifying the highest and best use of the property . Both the current and future use of the property must be considered. Future use must be legally permissible, economically justified, physically feasible, and is determined in the participatory process with general public and investors.

When an unused public space or building can be put into use immediately, or when the city has sufficient funds to independently finance the necessary works, the local government may issue a call for expressions of interest for leasing the property. Here, the interested applicants must submit a property use proposal, describing the planned activity, targeted users, and specify the expected benefits in accordance with the classification of the activity’s impact intensity on social and economic indicators.

# 1. INVENTORY OF RESIDENTIAL AND NON-RESIDENTIAL BUILDINGS AND OPEN SPACES IN ZVIJEZDA

The New Bauhaus initiative holds significant potential for the Zvijezda neighborhood, particularly in revitalizing its considerable unused closed spaces. With an extensive overview revealing large square footage of these areas, both public and privately owned, the New Bauhaus principles can guide their transformation into vibrant, multifunctional facilities. By applying sustainability, these closed spaces can

be renovated using energy-efficient materials and technologies, turning them into eco-friendly hubs that reduce the neighborhood's carbon footprint. The aesthetic aspect will ensure that these spaces are not only functional but also visually appealing, with designs that honor the historical and cultural heritage of Zvijezda while incorporating modern artistic elements. Inclusivity will be a cornerstone in repurposing these areas, ensuring they are accessible and welcoming to all community members, regardless of age, ability, or socio-economic status. This could involve converting these spaces into community centers, cultural venues, co-working spaces, or affordable housing units that foster social interaction and community engagement. By integrating these New Bauhaus concepts, the Zvijezda neighborhood can transform its unused closed spaces into valuable assets that enhance the quality of life for all its residents.

*Table 1: Overview of unused Residential spaces and condition*

| OWNERSHIP, USAGE, CONDITION | RESIDENTIAL GROSS AREA [M$^2$] |
|---|---|
| MIXED (PRIVATE, PUBLIC) | 2.069 |
| OUT OF USE | 1.551 |
| Bad condition | 696 |
| Demolished | 800 |
| Very bad condition | 55 |
| UNKNOWN | 518 |
| Bad condition | 365 |
| Moderate condition | 153 |
| PRIVATE | 4.688 |
| OUT OF USE | 3.023 |
| Demolished | 1.151 |
| Moderate condition | 154 |
| Under Renovation / Construction | 352 |
| Very bad condition | 1.366 |
| UNKNOWN | 1.665 |
| Bad condition | 315 |
| Great condition | 220 |
| Very bad condition | 1.130 |
| PUBLIC | 1.697 |
| OUT OF USE | 1.273 |
| Demolished | 1.273 |
| UNKNOWN | 424 |

| | |
|---|---|
| Very bad condition | 424 |
| UNKNOWN | 90 |
| OUT OF USE | 90 |
| Under Renovation / Construction | 90 |
| TOTAL: | 8.544 |

*Table 2: Overview of unused Non-Residential spaces and condition*

| OWNERSHIP, USAGE, CONDITION | NON-RESIDENTIAL GROSS AREA [$M^2$] |
|---|---|
| CHURCH | 4.149 |
| OUT OF USE | 4.149 |
| Bad condition | 84 |
| Moderate condition | 70 |
| Under Renovation / Construction | 3.995 |
| MIXED (PRIVATE, PUBLIC) | 2.754 |
| OUT OF USE | 2.034 |
| Bad condition | 1.592 |
| Demolished | 355 |
| Very bad condition | 87 |
| UNKNOWN | 720 |
| Bad condition | 690 |
| Moderate condition | 30 |
| PRIVATE | 13.403 |
| OUT OF USE | 11.226 |
| Bad condition | 2.826 |
| Demolished | 116 |
| Good condition | 41 |
| Moderate condition | 479 |
| Under Renovation / Construction | 88 |
| Very bad condition | 7.676 |
| UNKNOWN | 2.177 |
| Bad condition | 380 |

| | |
|---|---|
| **Good condition** | 1.058 |
| **Great condition** | 55 |
| **Moderate condition** | 473 |
| **Very bad condition** | 211 |
| **PUBLIC** | 15.579 |
| **OUT OF USE** | 14.996 |
| **Bad condition** | 1.979 |
| **Demolished** | 376 |
| **Moderate condition** | 106 |
| **Under Renovation / Construction** | 8.868 |
| **Very bad condition** | 3.667 |
| **UNKNOWN** | 583 |
| **Bad condition** | 48 |
| **Moderate condition** | 535 |
| **UNKNOWN** | 331 |
| **OUT OF USE** | 331 |
| **Bad condition** | 196 |
| **Under Renovation / Construction** | 135 |
| **TOTAL:** | 36.216 |

In the second half of the 19th century public open spaces and facilities are improving in the Zvijezda area by introducing community services – grand promenade in the northwest area, music pavilion, luxury hotel, cinema, city reading room. Inside the building blocks the courtyards feature green areas, formerly with gardens. The parks within Zvijezda were mostly created in the 19th and 20th centuries. These include the area on Cesarčeva Street with the Monument to the Fallen Soldiers of World War I, or the Small Gloriette, and Reiner Park, a small grove on Cesarčeva Street in front of the Music School with valuable specimens of weeping beech, spruce and maple. Courtyards and squares with greening potential are in Stjepan Radić street no 8 and 10 and Ban Jelačić square[31] to mitigate heat island effect and create comfortable open spaces. Conservation study for the Zvijezda area[32] presents a list of upgrades to open public spaces to preserve their historical values: Basketball court can be upgraded with urban equipment to host entertainment events; pedestrian and bike path in Count Juraj Drašković street should present more visibly the lost rampart location; historical part next to Karlovac Polytechnic should reveal historic elements and facts providing reconstruction of rampart and bastion in renesaince - baroque geometric style garden;

[31] Strategy for green urban renewal of the City of Karlovac, 2025 https://www.karlovac.hr/wp-content/uploads/2025/03/SZUO-Karlovac_NACRT-JS_032025_compresse.pdf

[32] Study of architectural features with conservation documentation, Book 1 (2017), https://www.karlovac.hr/prostorni_planovi/urbanisticki-plan-uredenja-zvijezda/

Courtyard in Stjepan Radić street no. 8 and 10 can be upgraded to present previous historic appearance from 1904; Strossmayer square and parking facility should introduce shading on the perimeter, with regard to presentation of the location of the demolished church.

*Table 3: Overview of public open spaces with improvement potential*

| OWNERSHIP, USAGE, CONDITION | GROSS AREA [M$^2$] |
|---|---|
| **OPEN SPACES** | |
| **IN USE (Public)** | |
| **Moderate condition** | |
| **Bana Josipa Jelačića square** | 3.600 |
| **Basketball court** | 3.600 |
| **Pedestrian and bike path in Count Juraj Drašković street** | 230 m |
| **Courtyard in Stjepan Radić street no. 8 and 10** | 800 |
| **Historical park next to Karlovac Polytechnic** | 5.000 |
| **Strossmayer square and parking facility** | 3.600 |

# 2. TRANSFORMING UNUSED SPACES IN ZVIJEZDA: ADDRESSING COMMUNITY NEEDS THROUGH THE NEW BAUHAUS INITIATIVE

After thorough data processing and analysis, it was determined that Zvijezda has a significant number of unused non-residential spaces. This discovery aligns perfectly with the New Bauhaus initiative, which seeks to revitalize and repurpose such areas in ways that meet community needs while adhering to principles of sustainability, aesthetics, and inclusivity.

**Community interviews highlighted a pressing demand for affordable housing and rental spaces for entrepreneurs**. Addressing this need, the New Bauhaus initiative can guide the conversion of unused spaces into affordable living units, providing much-needed accommodation for individuals and families, thereby attracting new residents to the neighborhood. Simultaneously, creating affordable rental spaces for entrepreneurs can stimulate local economic growth, fostering a vibrant business community within Zvijezda.

Older respondents expressed a need for a nursing home, which can be met by transforming some of the vacant non-residential spaces into a modern, comfortable facility for the elderly. This would not only provide essential services to the aging population but also ensure they remain integral members of the community. Additionally, younger respondents identified a need for kindergartens. These can be established in the unused spaces, offering high-quality early childhood education and care, which supports working families and contributes to the neighborhood's attractiveness for young parents. Karlovac County is one of the counties in Croatia that measures the largest increase in the number of newborns in 2023 compared to 2022. Additionally, since the pandemic, interest in buying real estate has increased, especially among younger married couples. It is assumed that this trend will continue, providing an additional argument for systematic planning and organization of renovation and provision of residential and non-residential spaces. This demographic shift underscores the urgency of creating affordable, family-friendly housing and community amenities to accommodate the growing population.

By focusing on these diverse needs, the New Bauhaus initiative can ensure that the transformation of unused spaces in Zvijezda is sustainable, aesthetically pleasing, and inclusive. This holistic approach will create a dynamic and cohesive community that honors its heritage while embracing growth and modernization.

All respondents also agreed on the **necessity of cheap rent for entrepreneurs, especially young, new entrepreneurs,** to attract them to Zvijezda. To address this, it is essential to develop models for organizing the renovation of these spaces and to establish business models that enable entrepreneurs to operate cheaply and sustainably.

To publicize the need for affordable rental spaces for entrepreneurs and propose models based on examples of good practice, the following models can be addressed:

PUBLIC-PRIVATE PARTNERSHIPS (PPPS)

Forming PPPs can pool resources from both public entities and private investors to fund renovations. This approach has been successfully used in various European cities where local governments provide incentives or tax breaks to private investors who contribute to urban revitalization projects.

CO-WORKING SPACES AND INCUBATORS

Developing co-working spaces and business incubators can provide affordable, shared workspaces for entrepreneurs. Successful examples include WeWork and Impact Hub, which offer flexible rental agreements and support services like mentoring, networking events, and access to funding opportunities.

GRANTS AND SUBSIDIES

Securing grants and subsidies from government programs and non-profit organizations dedicated to urban development and entrepreneurship can significantly reduce renovation costs and rental prices for new businesses. For example, the European Union's Cohesion Fund has supported numerous projects aimed at regional development and innovation.

COMMUNITY-BASED MODELS

Implementing community-based models such as cooperatives or community land trusts can help manage and maintain these spaces collectively. This approach ensures that rental prices remain low and that profits are reinvested into the community.

ADAPTIVE REUSE PROJECTS

Adaptive reuse of historical or unused buildings can preserve cultural heritage while creating modern business environments.

HOUSING COOPERATIVE MODEL

This model of housing ownership and management allows residents collectively own and govern their housing development. Instead of buying individual property units outright, members purchase shares in a cooperative corporation, which in turn owns the entire property. This can be found applicable for existing unused buildings.

URBAN GREEN INFRASTRUCTURE PROJECTS

Improvement of public open spaces has the potential to develop areas resilient to climate change effects and features for comfortable outdoor use while respecting the historical layers.

# 3. GOOD PRACTICE OF PROJECTS

## 3.1. Old Armory Building

The construction of today's "Armed" building began after Emperor Josip II. visited Karlovac (1783) and ordered its construction in the same year. The designer of this two-story baroque palace was Josip Stiller. In "Putositnica" by Antun Nemčić (1843), there is information that it contained weapons for 20,000 soldiers. A smaller armory was located in its place since the founding of the city.The Armory served as a storage facility for weapons and supplies, reflecting the strategic importance of Karlovac in the defense against potential invasions. Its robust design, characterized by sturdy stone walls and classical architectural elements, not only met the practical needs of the military but also embodied the era's artistic sensibilities. As Karlovac evolved through the centuries, so too did the purpose of the Armory. Its vast halls and spacious interiors were repurposed for various administrative functions, adapting to the changing needs of the community. However, as time passed, the building began to show signs of neglect, with its historical significance overshadowed by modern developments in the region. In recent years, a renewed interest in the preservation of cultural heritage has encouraged initiatives to revitalize the Armory. This resulted in the transformation of the building into the Regional Center of Competence, a hub designed to foster education, innovation, and collaboration among students, businesses, and local communities.

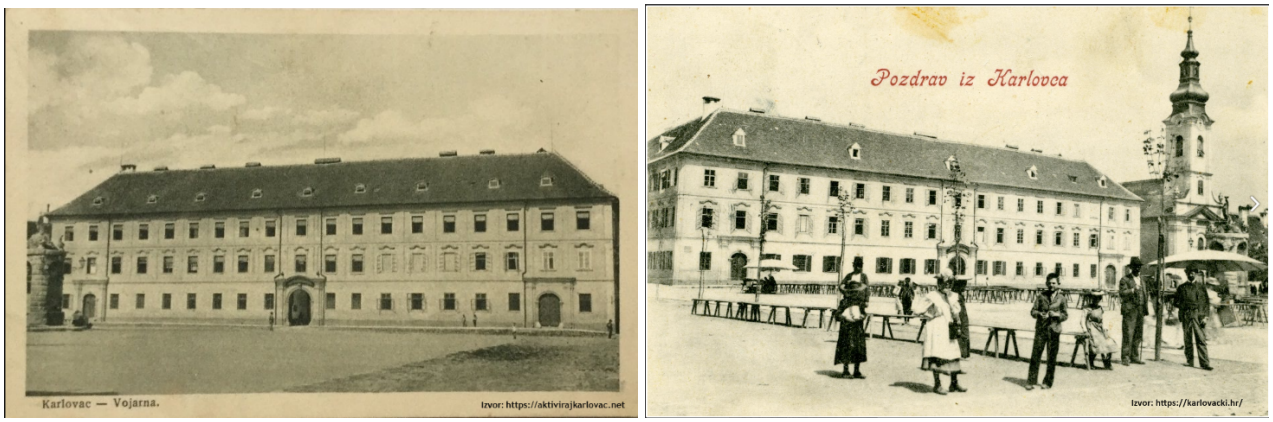



*Figure 13: Old Armory Building, Zvijezda*

The concept of the New European Bauhaus seeks to blend sustainability, aesthetics, and inclusiveness in design. The New Bauhaus movement, inspired by the original Bauhaus school founded in Germany in the early 20th century, emphasizes the importance of creating spaces that are both functional and beautiful, while also considering their ecological footprint. The renovation of the Armory aligns perfectly with these principles, as it seeks to restore the building's historical elements while introducing modern, sustainable technologies. The Regional Center of Competence aims to create an environment that nurtures creativity and skill development. By integrating innovative design processes and community engagement, the project promotes and encourages interdisciplinary collaboration. In revitalizing the Armory, the initiative honors the craftsmanship of the past while embracing the innovations of the future. It stands as a symbol of resilience—a bridge connecting history with contemporary educational needs. As this iconic building continues to serve the community, it embodies the spirit of the New Bauhaus, illustrating how we can repurpose our shared heritage to foster a more sustainable, inclusive, and aesthetically pleasing future.



*Figure 14: The future appearance of the Armory Building, Zvijezda*

## 3.2. The former Barracks of Ban Josip Jelačić

The old building of the former barracks of Ban Josip Jelačić has been transformed into the most modern student dormitory in Croatia. The entire dormitory project cost 21 million kuna. Of this, 75% of the total funds were financed from the students' own sources. About 1.5 million kuna was financed from the Environmental Protection and Energy Efficiency Fund (EPEEF). A heat pump was used, the pump of which is located 26 meters below the building, which uses the heat contained in the air to heat the hot water used for heating and domestic hot water.



*Figure 15: Student dormitory Bedem before and after renovation and conversion*

The Ministry of Science, Education and Sports (MZOS) financed the interior design of the dormitory with 3 million kuna. It can be said that the dormitory in Karlovcu is a smart building. Smart cards are used for identification, opening rooms and activating electricity. The dormitory has 160 beds divided into single, double and triple rooms. Two rooms are specially equipped for students with disabilities and special needs. Each room has its own refrigerator, LCD TV, bathroom block and bedside lamps for studying. On each floor there is an equipped kitchenette with a living room for socializing, and there is also an IT classroom.

## 3.3. The Bosnian storage redevelopment

Bosnian magazine was built in 1850 in the center of the bastion of St. Josipa as a free-standing semi-buried gunpowder magazine. It was extended during the 20th century. Given that it was built as part of the preparation for the occupation of Bosnia, it was called the Bosnian Magazine. The building is of outstanding value due to its original layout and shape, as well as the fact that it is an example of typical military architecture of the 19th century. Its location on the Bastion of St. Josip, which is the only bastion preserved in its basic dimensions.

After more than 5 years of project preparation activities, the building of Bosnian storage is to be redeveloped in restaurant facility for students and interpretation center on cultural heritage of old fortresses in the Karlovac County for all citizens. The restaurant facility is complementary to existing student dormitory and other faculty facilities and completes the campus services. Pedestrian path between the buildings and the surrounding green areas will also be developed in the scope of this project. The project implementation is joint action of the City of Karlovac with the Museums of Karlovac and Karlovac Polytechnic. It is implemented through the integrated territorial investment mechanism with 72% of grant funding and the total investment cost is 7 Mil EUR. The refurbishment aims nearly zero emission standard including renewable energy sources. The finalization of works is expected in 2027.



*Figure 16: Existing condition and new development of the student restaurant in the Bosnian storage building*

## 3.4. Hotel Central

The first hotel in Karlovac is abandoned and various plans have been changing in the past years. Since its original use is not likely to be resotred other similar can be expected. Possible use is accommodating offices for young entrepreneurs or providing accommodation facilities for erderly or housing cooperative. Design documentation has been carefully developed respecting all conservation requirements in 2017 for a hotel use with 25 rooms and additional facilities. The expected refurbishment were estimated at 3 Mil EUR. In current prices this could reach a double amount.




*Figure 17: Hotel Central in the begining of 20th century and today*

# D. NEW EUROPEAN BAUHAUS IN PALMANOVA

The New European Bauhaus (NEB) is a cultural movement aiming to bring the Green Deal in our lives thanks to a creative and interdisciplinary approach.

The NEB is based on three values - aesthetics, sustainability, inclusion - and through project activities the ZEB4ZEN project puts NEB in practice, contributing to future living spaces in historic towns in Central Europe.

In particular, the Palmanova small-scale demonstration pilot is the implementation of a renewable solar energy community (REC). In accordance with the tasks implemented in the project, two PV plants have been built and commissioned on abandoned, non-productive land (a former landfill) outside the city walls, where PV plants are permitted. The energy is virtually shared among the members of the community (households, SMEs and public bodies such as the Municipality of Palmanova) whose consumption points are located inside the UNESCO-protected fortress town.

The pilot in Palmanova fully embraces the three NEB values: we can fight energy poverty and guarantee equal access to clean energy and we can achieve decarbonisation and sustainability goals; at the same time, we can preserve cultural and historic heritage that makes our European cities and towns so beautiful. This provides a model for zero-emission standards in historic neighbourhoods.

APE FVG is a New European Bauhaus Partner since 2021 and, as technical partner for ZEB4ZEN for Palmanova territory, applied the New European Bauhaus Compass - the guiding framework for decision and project makers wishing to apply the NEB principles and criteria to their activities - to the pilot project. The results of the analysis are presented in the two following chapters.

## 1. NEB VALUES

The three New European Bauhaus values are:

- aesthetics, quality of experience and style, beyond functionality;
- sustainability, from climate goals, to circularity, zero pollution, and biodiversity;
- inclusion, from valuing diversity and equality for all, to securing accessibility and affordability.
- The NEB Compass puts the focus on the end goals to achieve (the ambitions), as explained in the following figure:

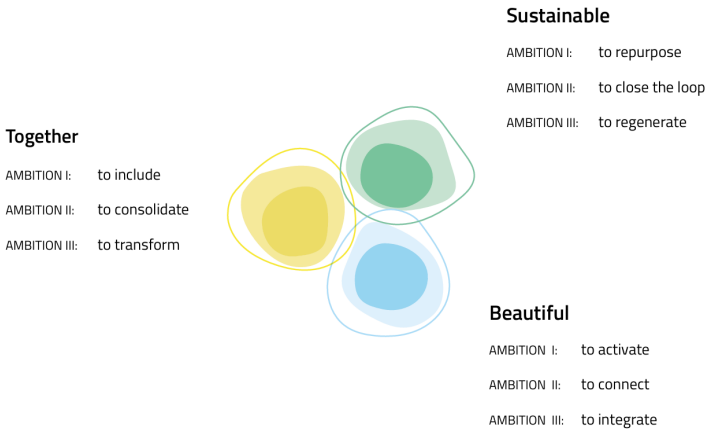



*Figure 18: NEB Values - source: New European Bauhaus Compass*

## 1.1. Beautiful

In Europe, monuments and buildings in conservation areas are protected by law and cannot benefit of some of the most common energy retrofit measures, nor install plants that use renewable energy sources, in order to preserve the appearance of old city centers. Among them, Palmanova: since 2017 the "star-shaped town" of belongs to the UNESCO heritage with Zara, Sibenik, Cattaro, Bergamo Peschiera del Garda, and inside the city walls solar roofs are forbidden.

Our pilot activity meets NEB values in terms of aesthetics and quality of experience beyond functionality by recognizing the importance to preserve cultural and historic heritage that makes our European cities and towns so beautiful. At the same time, it proves that renewable energy and energy efficiency solutions can be improved without altering the beauty of our cities.

## 1.2. Sustainable

Decarbonization goals are at the core of clean energy measures implemented within the ZEB4ZEN project: a renewable energy community in the old town of Palmanova, which benefits from solar energy produced outside the city walls, where solar plants are not banned.

Starting from this, sustainability goals will be addressed in many ways: promote the reduction of greenhouse gas emissions and reduce the environmental impact of households. Palmanova will also become a best-practice for zero-emission standards in historic neighbourhoods.

## 1.3. Together

According to the European Parliament, "in 2020, about 36million Europeans were unable to keep their homes adequately warm. Energy poverty is a multi-dimensional phenomenon, considered to be caused by a combination of low income, high energy expenses, and poor energy efficiency in buildings".

The pilot activity provides possible solutions to face energy poverty, involving a wide range of interested individuals and making local communities aware, in accordance with the "Clean energy for all" package. Moreover, the idea of sharing energy strengthens the sense of community inside the neighbourhoods involved.

# 2. NEB WORKING PRINCIPLES

- The NEB working principles describe the process through which a project should operate and work to achieve the highest level of ambition in the three values, as explained in the following figure:

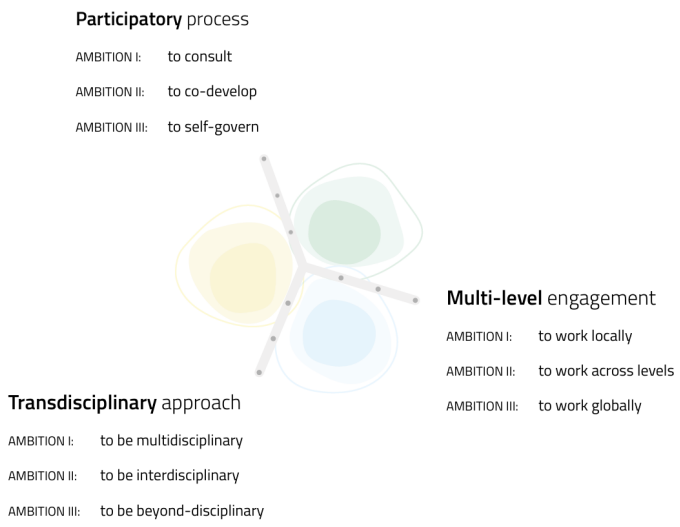



Figure 19: NEB Working Principles - source: New European Bauhaus Compass

By working across disciplines, sectors and levels of governance and by involving everyone in an open and equal manner, a project should ensure that it promotes a fair transformational outcome which is not only accepted, but also beneficial for everyone and mindful of the systemic and close relationships between complex social, environmental and structural factors. Working at the intersection of the three principles, a project should also yield knowledge and insights which can be transferred to other projects.

## 2.1. Participatory process

Presenting clean energy solutions that can be adopted by local communities, the pilot in Palmanova strengthens the sense of belonging to a specific place and initiates a participatory process. It also enables self-governance: within the renewable energy community, all participants take part in the decision-making processes.

## 2.2. Multilevel engagement

The engagement is multilevel, to anticipate the effects that global issues can have on the local dimension, and vice versa.

Starting from local public authorities (the Municipality of Palmanova) and from a very local dimension, the pilot involves all levels of population and ensures effective multi-level collaboration; still, it faces a global challenge.

## 2.3. Transdisciplinary approach

The approach to the pilot in Palmanova is transdisciplinary, touching different fields of knowledge with the final goal to give equal access to energy efficiency and renewable energy sources, while protecting the

historic cultural heritage. Experts worked on solutions that affect different aspects of a project – social, economic, cultural, artistic, architectural, ecological etc.

The integration of the values and principles is always found in a project inspired to the New European Bauhaus.

# 3. PREVIOUS EXAMPLES OF NEB IN PALMANOVA

The city of Palmanova has a good potential to actively participate in the New European Bauhaus initiative, with some good examples of actions implemented in the past and already responding to the NEB values.

## 3.1. Bastioni and city walls: form abandoned ramparts to a cradle of biodiversity and a place for all

The bastion is a wide arrow-shaped enclosed in a stone or a brick wall that forms the first of three sets of walls with its unique nine-pointed star structure. The bank is up to 7 meters high. On this wall you can see, even today, a stone curb that marks the level of the ground before the excavation of the ditch. On the rampart covers, called “ears”, there were two lodges for soldiers. The one on the left side was equipped with a sortie ramp that led directly out of the fortress while the one on the right was used by the troops as a place of guard and shelter and was equipped, inside, with a fireplace and niches for lighting. Today it has lost its military function and it is a green area that surrounds the urban one: the Bastioni Historic Park.

Abandoned for decades, it had gone wild, until the first major cleanup operation took place in 2011, involving 4,000 volunteers from the regional Civil Protection Department. After a second cleaning operation in 2014, with another 1,000 volunteers, an agreement was signed with the Friuli Venezia Giulia Region, granting for three months each year the presence of 35 forestry specialized workers from the Regional Land Service, enabling extensive maintenance work. These workers, and the institution to which they belong, were granted honorary citizenship in 2021.

Meanwhile, a regional law on UNESCO cities also allocates new resources on an annual basis for mowing and maintenance work in the Historic Park.



Figure 20: Gathering on the Bastions
source: Palmanova Municipality

The results of these actions are:

the restoration of an historic monument (bastioni);

the preservation of the biodiversity along the city walls, with stable meadows and a moat and their peculiar fauna and flora;

the creation of place for all, where citizens can meet or play sports and tourist can enjoy the city visit.

A local association was born, “Amici dei Bastioni” (translated in English as “bastions’ friends”): it brings together people who want to keep Palmanova's fortifications clean and to develop ideas, projects, and initiatives that enhance them.

Palmanova municipal administration believes the 1,5 million square meters of the Bastioni Historic Park are a key asset for the city's tourism growth. In 2022, the Municipality of Palmanova requested to transfer the fortified wall to the Municipality's assets from the Region, in order to preserve the area and make it more usable.




Figure 21: The poster of an event that presents and promotes biodiversity and historic values in Palmanova bastions
Source: Amici dei Bastioni Facebook page

## 3.2. VR for an enhanced visit experience

The most amazing view of Palmanova is from above, to capture the symmetry and the beauty of the nine-pointed star. Nevertheless, until this year, this experience was available only for a few lucky ones who could fly above Palmanova or use a drone.

In July 2025 was inaugurated “Virtual lift Palmanova”, a virtual elevator that simulates a journey into the sky thanks to high-definition LED screens, real videos, sound effects, and infographics, for an immersive experience. The elevator is accessible to people with reduced mobility and there is no need to use special visors or earphones. The Palmanova view from above is now inclusive.



Figure 22: Palmanova Virtual Lift – outside and inside
Source: Palmanova Municipality

## 3.3. Beauty and inclusion with old roots

Teatro Gustavo Modena, the city theatre, was restored and reopened to the public in 2000, with a diversified cultural offer for people from Palmanova and its surroundings.

The theatre's one is a story of beauty and inclusion since its foundation, anticipating of almost two centuries two out of three pillars of the NEB conceptualization: indeed, the idea of building a "social theater" in Palmanova arose in 1841 and was initiated by a group of bourgeoisies led by lawyers Antonio Simoni and Antonio Monte Rumici, who financed the construction. Between 1841 and 1843 architect Giovan Battista Bassi created the neoclassical façade with a giant order of doric semi-columns. During the Risorgimento uprisings, the theater took on a civic function thanks to the actor Gustavo Modena, a collaborator of Giuseppe Mazzini (an Italian politician, journalist, and activist for the unification of Italy). Having arrived in Palmanova with his theater company, he led the anti-Austrian uprising of 1848, using the theater as his headquarters.




Figure 23: Teatro Gustavo Modena in Palmanova
Source: https://patrimonioculturale.regione.fvg.it/

# E. NEW EUROPEAN BAUHAUS IN QUEDLINBURG

Quedlinburg's potential lies less in its unused spaces and more in the many buildings currently in poor or deteriorated condition. The available data does not provide clarity on whether these structures are actively in use, but it does offer valuable insight into their physical state. For this reason, the analysis focuses on buildings identified as being in poor condition or worse, and considers how they might be transformed into spaces that serve the city and its citizens.

Central to this process is the careful preservation and enhancement of Quedlinburg's unique heritage, ensuring that architectural character is not only maintained but also strengthened. At the same time, any upgrading efforts must align with broader goals of sustainability, economic vitality, and social inclusion. By balancing heritage with forward-looking strategies, these buildings can be turned into resilient and meaningful assets that benefit both present and future generations..

## 1. INVENTORY OF RESIDENTIAL AND NON-RESIDENTIAL SPACES IN QUEDLINBURG

The dataset includes **91 non-residential** and **154 residential buildings** in Quedlinburg. Among these, **around 20 non-residential structures** and **31 residential buildings** are in very poor condition, neglected, endangered, or emergency secured. Altogether, this means that **about 50 buildings** across the city stand out as potential targets for transformation efforts. Spread across private, public, company, church, and mixed ownership, these buildings highlight not just the scale of the challenge but also the opportunity to strategically invest in renewal that benefits both the city and its citizens.

*Table 4: Overview of Non-Residential spaces and condition*

| OWNERSHIP, USAGE, CONDITION | Number of Buildings |
|---|---|
| **MIXED (PRIVATE, PUBLIC)** | **3** |
| **Commercial** | **1** |
| Properly Maintained | 1 |
| **Garage, Warehouse** | **2** |
| Properly Maintained | 1 |
| Needs Maintenance | 1 |
| **PRIVATE** | **45** |
| **Commercial** | **21** |
| Properly Maintained | 16 |
| Needs Maintenance | 2 |
| Very Poor | 3 |
| **Mixed (Commercial, Warehouse)** | **2** |
| Properly Maintained | **1** |
| Needs Maintenance | **1** |
| **Mixed (Community, Commercial, Warehouse)** | **6** |
| Properly Maintained | 4 |
| Needs Maintenance | 1 |
| Very Poor | 1 |
| **Garage, Warehouse** | **16** |
| Properly Maintained | 8 |
| Needs Maintenance | 1 |

| | |
|---|---|
| Very Poor | 5 |
| Neglected Maintenance | 2 |
| **PUBLIC** | **2** |
| **Commercial** | **2** |
| Properly Maintained | 2 |
| **COMPANY** | **32** |
| **Commercial** | **22** |
| Properly Maintained | 16 |
| Needs Maintenance | 3 |
| Very Poor | 2 |
| Neglected Maintenance | 1 |
| **Mixed (Commercial, Warehouse)** | **4** |
| Properly Maintained | 2 |
| Needs Maintenance | 1 |
| Very Poor | 1 |
| **Garage, Warehouse** | **6** |
| Properly Maintained | 2 |
| Needs Maintenance | 2 |
| Very Poor | 1 |
| Neglected Maintenance | 1 |
| **CHURCH** | **2** |
| **Mixed (Community, Church, Warehouse)** | **1** |
| Needs Maintenance | 1 |
| **Garage, Warehouse** | **1** |
| Needs Maintenance | 1 |
| **UNKNOWN** | **7** |
| **Commercial** | **6** |
| Properly Maintained | 4 |
| Neglected Maintainance | 2 |
| **Garage, Warehouse** | **1** |
| Properly Maintained | 1 |
| **TOTAL:** | **91** |

*Table 5: Overview of Residential spaces and condition*

| OWNERSHIP, USAGE, CONDITION | Number of Buildings |
|---|---|
| **MIXED (PRIVATE, PUBLIC)** | **6** |
| **Mixed (Commercial, Residential)** | **5** |
| Properly Maintained | 1 |
| Very Poor | 4 |
| **Residential** | **1** |
| Properly Maintained | 1 |
| **PRIVATE** | **110** |
| **Mixed (Commercial, Residential)** | **43** |
| Properly Maintained | 26 |
| Needs Maintenance | 5 |
| Very Poor | 9 |
| Endangerment of Building | 1 |
| Neglected Maintenance | 2 |
| **Residential** | **49** |
| Properly Maintained | 31 |
| Needs Maintenance | 11 |

| | |
|---|---|
| Very Poor | 5 |
| Endangerment of Building | 2 |
| **Residential, Warehouse** | **18** |
| Properly Maintained | 7 |
| Needs Maintenance | 4 |
| Neglected Maintenance | 3 |
| Very Poor | 1 |
| Emergency Secured | 1 |
| Endangerment of Building | 2 |
| **PUBLIC** | **4** |
| **Mixed (Commercial, Residential)** | **3** |
| Properly Maintained | 2 |
| Neglected Maintenance | 1 |
| **Mixed (Community, Church, Residential)** | **1** |
| Needs Maintenance | 1 |
| **COMPANY** | **25** |
| **Mixed (Commercial, Residential)** | **16** |
| Properly Maintained | 12 |
| Needs Maintenance | 3 |
| Very Poor | 1 |
| **Residential** | **5** |
| Properly Maintained | 3 |
| Needs Maintenance | 2 |
| **Mixed (Residential, Warehouse)** | **4** |
| Needs Maintenance | 3 |
| Very Poor | 1 |
| **UNKNOWN** | **9** |
| **Mixed (Commercial, Residential)** | **2** |
| Properly Maintained | 2 |
| **Mixed (Community, Church, Residential)** | **5** |
| Properly Maintained | 4 |
| Very Poor | 1 |
| **Residential** | **2** |
| Properly Maintained | 2 |
| **TOTAL:** | **154** |

# 2. TRANSFORMING UNUSED SPACES IN QUEDLINBURG: COMMUNITY NEEDS AND BEST PRACTICES

Quedlinburg has already established strong foundations for aligning urban development with community needs. Through the Wirtschaftsförderung & Citymanagement, citizens, entrepreneurs, and stakeholders have a direct contact point with the city. This office acts not only as a service hub but also as a mediator, collecting input that ranges from large investment projects to everyday concerns. It plays a crucial role in ensuring that the voices of residents and businesses are heard and translated into tangible urban strategies. In addition, the establishment of formats such as the Runder Tisch for entrepreneurs and investors fosters cooperation across sectors, encouraging a shared identity and coordinated action that strengthens the local economy and urban fabric.

The city is also experimenting with innovative vacancy management. Shopfronts in the Bockstraße, for example, are being staged with striking visuals and messages that invite curiosity: “I feel so empty. Do you

have an idea what I could become?", turning unused premises into opportunities for imagination. This proactive approach makes vacancies visible in a positive way, sparking ideas for temporary or long-term uses and reinforcing the potential of the inner city. The same strategic spirit is reflected in Quedlinburg's heritage conservation plan, which integrates a vacancy analysis and a brownfield register, ensuring that unused sites and buildings are systematically documented and considered for future reuse.

In parallel, Quedlinburg has benefited extensively from federal Städtebauförderung since 1991, with funding channeled into both public and private initiatives. Around 60 percent of resources have supported private renovation efforts, while 40 percent have enhanced public spaces and buildings. This partnership has already produced visible good practices: securing ruinous structures such as the Kaiserhof, rescuing historic Fachwerkhäuser, modernizing residential and commercial buildings, preserving original building elements, improving streets and squares, and revitalizing cultural and recreational areas. These interventions not only protected the city's World Heritage status but also improved the quality of life for its residents.

The Kulturkirche St. Blasii exemplifies how historic buildings can be reactivated in ways that enrich both cultural life and community identity. Once a sacred space, it now serves as a vibrant cultural venue, hosting exhibitions, concerts, and readings from April to December each year. With its certification under the "Reisen für Alle" program, the church also demonstrates Quedlinburg's commitment to accessibility and inclusion, ensuring that cultural heritage is open to as many people as possible.

Looking ahead, the Welterbemanagementplan outlines further potential. It emphasizes adaptive reuse of disused industrial sites, reactivation of vacant housing, and creative temporary uses that keep the historic fabric alive while meeting contemporary needs. Campaigns to attract new residents, support for innovative mixed-use projects, and the strengthening of the Altstadt as a living and commercial space all point toward a holistic vision of renewal. Green spaces and the cultivation of Quedlinburg's cultural landscape, summarized in the motto "Quedlinburg blüht auf", reinforce this ambition by connecting heritage preservation with ecological and social sustainability.

Together, these practices and potentials demonstrate how Quedlinburg can balance preservation with innovation. By combining citizen participation, targeted funding, collaborative platforms like the Runder Tisch, vacancy management strategies, and cultural beacons such as St. Blasii, the city has the tools to address community needs while continuing to evolve as a vibrant, inclusive, and resilient World Heritage city.

# F. NEB PRINCIPLES IN THE ZEB4ZEN PILOT ACTIVITIES – SYNTHESIS

The previous chapters describe the NEB context of each pilot town. This chapter links the three NEB values directly to the ZEB4ZEN project activities carried out in each pilot neighbourhood and distinguishes between activities already IMPLEMENTED and those PLANNED / PROPOSED.

## 3. Application of the NEB values in the four pilot neighbourhoods

| Pilot | Sustainability | Inclusion | Aesthetics |
|---|---|---|---|
| Zamość (PL) | Thermal modernisation of the public building at Ormiańska 11 with vapour-open internal insulation; substantial reduction of heating demand, confirmed by measurements (IMPLEMENTED). | Public utility building serving residents; results shared with conservators, designers and the Lublin University of Technology; citizen involvement in action planning. | Façades and historic windows of the protected frontage preserved; all measures approved by the conservator; invisible internal solutions. |
| Karlovac – Zvijezda (HR) | Rooftop PV, bidirectional charging, V2L electric vehicle and EMS at the City Hall; reduced grid electricity purchases and emissions (IMPLEMENTED). | NEB Festival satellite event with the Technical School Karlovac – workshop for young people on renewable energy and demonstration of a solar electric vehicle; vacancy analysis based on community interviews (affordable housing, space for entrepreneurs). | PV installed under special conservation conditions to minimise visual impact; proposals for upgrading public open spaces in line with the conservation study (rampart, courtyards, squares). |
| Palmanova (IT) | PV plants outside the walls supplying a REC (IMPLEMENTED); reuse of a former landfill. | REC bringing together households, SMEs and public bodies; tool against energy poverty; self-governance of the community. | No PV inside the UNESCO star-shaped town – the integrity of the historic townscape and the Bastioni park is fully preserved. |
| Quedlinburg (DE) | Neighbourhood energy and $CO_2$ baseline, Library of Buildings and digital twin as basis for decarbonisation planning (IMPLEMENTED). | Data and involvement of the city administration, Stadtwerke, owners and residents (surveys, interviews); vacancy management and Citymanagement as contact point. | Heritage valorisation integrated in the building database to define permissible depth of renovation; adaptive reuse of buildings in poor condition (e.g. Kulturkirche St. Blasii as good practice). |

# 4. Concrete project activities and recommendations per pilot

| Pilot | ZEB4ZEN activities (status) | Recommendations |
|---|---|---|
| Zamość | IMPLEMENTED: research station and monitoring in the Zamoyski Palace; thermal modernisation of Ormiańska 11; post-retrofit measurements. PLANNED: use of results in the local action plan. | Replicate vapour-open internal insulation in municipal heritage buildings; link energy retrofits with the city's green-infrastructure and mobility projects (rain gardens, cycle ring, e-buses); open the pilot building for guided visits to raise awareness. |
| Karlovac - Zvijezda | IMPLEMENTED: PV + V2L + EMS at City Hall; inventory of unused buildings and open spaces. NEB satellite workshop with Technical School Karlovac within the NEB Festival. | Introduce municipal property management for unused public buildings; prioritise circular adaptive reuse (affordable housing, entrepreneur spaces); upgrade open spaces listed in the conservation study; extend PV/EMS to other public buildings. |
| Palmanova | IMPLEMENTED: two PV plants outside the walls; REC with households, SMEs and public bodies; NEB Compass self-assessment by APE FVG. IN MONITORING: shared energy and $CO_2$ savings. | Enlarge the REC with more households inside the walls, giving priority to energy-poor families; communicate the model to other UNESCO fortress towns; combine the REC with Bastioni biodiversity and tourism activities. |
| Quedlinburg | IMPLEMENTED: Library of Buildings, energy-flow analysis, digital twin; VR tool testing. PLANNED: integration in the World Heritage management plan and action plan. | Use the digital twin to select pilot buildings in poor condition for heritage-compatible deep renovation; combine vacancy management with energy advice for owners; involve the Runder Tisch in NEB-oriented projects. |

# 5. Potential of the pilot neighbourhoods to participate in the New European Bauhaus

| Pilot | Strengths and assets | Potential for active NEB participation |
|---|---|---|
| Zamość | UNESCO Renaissance "ideal town"; strong record of heritage-led regeneration, green infrastructure and low-emission mobility; active NGOs and schools; pilot building demonstrating invisible thermal modernisation | Showcase of heritage-compatible deep renovation; local NEB events with schools and NGOs; participation in NEB networks and calls as a "living lab" of energy retrofit in a World Heritage town |
| Karlovac - Zvijezda | Renaissance star fortress; large potential of unused public and private buildings; cooperation with education institutions; green and digital pilot at the City Hall | Adaptive reuse of vacant buildings following NEB values; NEB Festival satellite events with schools; combination of renewable energy, e-mobility and public-space upgrading as an NEB demonstration |
| Palmanova | UNESCO fortress town; APE FVG as an official NEB partner; Bastioni park with biodiversity and volunteer tradition; renewable energy community | Model of "clean energy without altering the townscape"; NEB Compass already applied; potential candidate for NEB recognition schemes and exchange with other fortress towns |

| Pilot | Strengths and assets | Potential for active NEB participation |
|---|---|---|
| Quedlinburg | UNESCO World Heritage town; long-standing urban renewal tradition; vacancy management and citizen participation structures; neighbourhood energy baseline and digital twin | Data-driven, participatory planning of heritage renovation in the NEB spirit; adaptive reuse of buildings in poor condition; cultural venues as places for NEB dialogue |

# 6. Presenting the pilot investments as New European Bauhaus examples

To prepare the neighbourhoods to present the successful implementation of the three pilot investments, the following key messages and formats are recommended:

- **Zamość – "Energy efficiency you cannot see":** internal, vapour-open insulation and modern building services improve comfort and reduce energy demand while the protected façade remains unchanged.
- **Karlovac – "Sun, car and smart control":** rooftop PV, an electric vehicle used as mobile storage and digital energy management turn a historic City Hall into an active part of the energy system.
- **Palmanova – "Clean energy from outside the walls":** a renewable energy community shares solar energy produced outside the fortress with residents, businesses and public bodies inside the UNESCO town.
- **Formats:** guided visits of the pilot sites, local workshops and open days, short videos and visualisations (including the digital twins and VR tools developed in the project), presentations at NEB events and at least one EU-wide event, and joint communication with the thematic and associated partners.

# 7. Awareness workshops in the pilot neighbourhoods

In accordance with the tasks implemented in the project, workshops in the pilot neighbourhoods aim to raise awareness of the importance of deep energy renovation of historic buildings. They present decision-making guidelines for key stakeholders, showing how energy efficiency can be achieved while preserving the significance and appearance of historic buildings, and place these actions in the context of the New European Bauhaus. The target groups include local, regional and national public authorities (including ministries of culture), conservation and restoration institutions, SMEs such as architects and engineers, and interest groups focused on cultural heritage.

# 8. Common recommendations

- Treat sustainability, inclusion and aesthetics as one design brief: every retrofit or RES project in a historic neighbourhood should state how it preserves the townscape and who benefits.
- Use off-site or invisible solutions (REC, internal insulation, EMS) where the historic image must remain unchanged.
- Link energy measures with the reuse of vacant buildings and the upgrading of public spaces.
- Involve schools, NGOs and residents through NEB-type events and co-creation workshops.
- Apply the NEB Compass as a self-assessment tool in all pilots, as done in Palmanova.

# G.CONCLUSION

The New European Bauhaus demonstrates that the future of Europe's historic urban districts lies not in preserving them as static monuments, but in transforming them into living, adaptive, and resilient environments. Across the pilot neighbourhoods presented in this publication — Zamość, Zvijezda, Palmanova, and Quedlinburg — a common vision emerges: cultural heritage can become a driver of sustainable development, social cohesion, and climate resilience when approached through integrated and participatory strategies.

Each case study illustrates a different dimension of the NEB values and ambitions. Zamość demonstrates how heritage-led regeneration can successfully combine conservation, green mobility, ecological infrastructure, and community-oriented public spaces within a UNESCO-listed urban structure. Zvijezda reveals the transformative potential of systematic vacancy management, adaptive reuse, and circular urban planning in addressing demographic, economic, and social challenges. Palmanova highlights how renewable energy systems and clean-energy communities can coexist with strict heritage protection requirements, proving that sustainability goals can be achieved without compromising historical identity. Quedlinburg, meanwhile, shows how long-term heritage management, public participation, and strategic funding mechanisms can support the continuous revitalization of historic buildings and urban spaces while maintaining the vitality of a living World Heritage city. Despite their different contexts, these pilot neighbourhoods share several common principles that are fundamental to the New European Bauhaus approach. First, they recognize heritage not as a limitation, but as a resource for innovation and regeneration. Existing buildings, historic urban layouts, and cultural landscapes become assets that can support climate adaptation, circular economy strategies, and social activation. Second, they demonstrate the importance of participatory governance. Sustainable transformation cannot be achieved solely through technical interventions; it requires the active involvement of citizens, local communities, institutions, entrepreneurs, and cultural actors. Third, they underline that aesthetics, sustainability, and inclusion are inseparable dimensions of successful urban transformation. Projects that address only environmental performance without considering social value, accessibility, or quality of experience cannot fully meet the ambitions of the NEB.

The experiences gathered within the ZEB4ZEN project also highlight the growing importance of adaptive reuse and the reactivation of vacant or underused buildings. Historic urban districts across Europe face similar challenges: aging building stock, demographic change, energy inefficiency, and economic pressure. However, the pilot examples presented here show that these challenges can be transformed into opportunities. Through careful planning, targeted investments, and interdisciplinary collaboration, neglected spaces can become affordable housing, cultural venues, educational facilities, community hubs, or innovative business environments. In this way, regeneration becomes not only a technical process but also a social and cultural one. Equally important is the role of green infrastructure and climate-responsive design. Nature-based solutions, pedestrian and cycling infrastructure, rainwater management systems, renewable energy communities, and biodiversity-oriented interventions are increasingly becoming integral parts of heritage-sensitive urban development. The pilot neighbourhoods demonstrate that ecological transition and heritage conservation do not represent opposing goals; rather, they can reinforce one another when implemented through holistic planning approaches.

Finally, the New European Bauhaus provides more than a conceptual framework — it offers a practical methodology for shaping the future of Europe's historic cities. By combining long-term sustainability goals with local identity, social justice, and high-quality design, the NEB encourages a shift from fragmented interventions toward integrated urban transformation. The pilot neighbourhoods described in this deliverable represent concrete examples of this transition in practice. They illustrate how historic urban districts can evolve into more inclusive, climate-resilient, and culturally vibrant environments while preserving the values that make them unique.