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Post-conflict housing in Ukraine: The Baugruppen model as a catalyst for sustainable urban regeneration

Abstract. The aim of the study was to analyse the possibilities of applying the Baugruppen model in Ukraine as a tool for affordable housing and post-war reconstruction, combining legal, institutional, and spatial dimensions. Comparative analysis of legal and policy contexts between the two countries identified gaps in Ukraine's regulatory environment, such as insufficient municipal authority, lack of financial incentives, and absence of intermediary organisations. This study explored the potential application of the Baugruppen (community-led development) model for addressing modern housing challenges in Ukraine. The paper examined the historical trajectory of cooperative housing in Germany and Ukraine, highlighting how Germany's supportive legal frameworks and institutional mechanisms had fostered Baugruppen initiatives. Using the Vauban district in Freiburg, Germany, as a case study, the research demonstrated how participatory design, ecological principles, and collaborative governance contributed to the success of Baugruppen projects. The findings underlined the need for Ukraine to reform its housing policies, incorporating lessons from Germany's Baugruppen model, and highlighted the possibilities for cooperation between municipalities, local communities, and international partners to create conditions for Baugruppen projects. It was determined that these changes should encompass a reorientation of land-allocation policies, the introduction of concept-based tendering mechanisms, and the establishment of new development frameworks, in which end users were directly involved in decision-making processes and exert a substantially greater influence over project outcomes. If such institutional gaps were addressed, the model could help Ukraine rebuild destroyed housing, provide homes for displaced people, and support sustainable urban development in line with national and international reforms

Keywords: sustainable urban development; affordable housing; building cooperative; post-conflict reconstruction; participatory design

INTRODUCTION

Ukraine's modern housing crisis cannot be explained solely by wartime destruction. Although the large-scale damage caused since 2022 had intensified the situation,

many structural weaknesses of the housing sector predated the invasion. V. Teremetskyi *et al.* (2024) noted that the national housing system continued to operate within

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a regulatory framework largely inherited from the late Soviet period. The 1983 Housing Code formally remained in force despite profound socio-economic transformation and Ukraine's ongoing European integration trajectory. T. Hudima *et al.* (2025) suggested that meaningful reform cannot be limited to legislative amendments; it required a reconsideration of governance principles, including transparency, social targeting, and sustainability-oriented regulation aligned with EU standards. The urgency of this institutional reconsideration had been amplified by the scale of wartime destruction. According to the latest Ukraine recovery and reconstruction needs assessment by the A. Himmelfarb (2025), housing constituted one of the most heavily affected sectors, with estimated damages reaching USD 57.6 billion and millions of square meters of residential space destroyed or rendered uninhabitable. Yet reconstruction was not merely a technical task of rebuilding housing stock. It also raised fundamental questions about how housing was financed, governed, and delivered.

In this context, the debate increasingly shifted from quantity to mechanisms. Reproducing pre-war delivery models, whether state-driven or market-led, risks perpetuating earlier systemic limitations, including affordability gaps and weak community integration. Governance-based alternatives, particularly those that incorporated participatory planning and collective ownership structures, offered a different trajectory. Such approaches resonated with broader European discussions on sustainable urban development and aligned with the objectives of Sustainable Development Goal, which called for inclusive, safe, resilient, and sustainable cities (Blinova & Rodyk, 2024). While the Baugruppen model had not yet been the subject of targeted research within the Ukrainian academic context, there was already a growing body of literature on participatory urban planning and collaborative governance that could serve as a foundation for its adaptation. K. Mezentsev *et al.* (2020) analysed public space planning in Kyiv through the lens of citizen participation, while N. Antonenko (2022) examined the integration of participatory practices in post-Soviet urban redevelopment in Southern Ukraine. D. Pasyuta *et al.* (2023) offered practical tools for embedding stakeholder engagement into the planning process. Although these works were not focus directly on cooperative housing delivery, it established an important theoretical and practical foundation for considering community-led development frameworks.

I. Hamiduddin & N. Gallent (2016) emphasised that community-led and cooperative housing frameworks, widely discussed in European planning literature, offered one such direction. It repositioned future residents from passive beneficiaries to active participants in spatial and financial decision-making, thereby linking affordability, long-term stewardship, and environmental performance. P.A.C. Pfatteicher *et al.* (2024) analysed the German experience of housing cooperatives over the long term, arguing that their resilience to

political and economic shocks was grounded in self-help logics, cooperative principles, and robust auditing with member-controlled surpluses. The authors traced five historical phases – from 19th century origins and legal consolidation to reunification-era harmonisation – showing how policy, legislation, and macroeconomic cycles shaped cooperative governance and operating models. Researchers concluded that transferability depended on enabling regulation that protected cooperative purpose and supported long-term stewardship rather than short-term market extraction. G.J. Coates (2013) conceptualised Freiburg's Vauban as a district-scale operationalisation of sustainable urbanism, in which architectural performance, mobility systems and participatory governance were treated as mutually reinforcing. Vauban integrated compact mixed-use planning with local services, light-rail accessibility, extensive cycling/walking networks and car-sharing, thereby reducing private car dependence. A key architectural contribution was the Baugruppen-led, resident-architect co-design process, which produced socially cohesive yet typologically diverse housing and shared outdoor spaces. The R-50 cohousing precedent study performed by ArchDaily (2013) documented a Baugruppe-led, architect-initiated project at Ritterstraße 50 in Berlin-Kreuzberg and explained its delivery model – site acquisition through a bidding process, collective financing, and an intensive co-design workflow. It reported key parameters (19 flats, ~2,130 m² total living space, ~80-132 m² unit sizes, and an average cost of about EUR 2,150/m²) and highlighted shared and semi-public spaces as social infrastructure. Baugruppen/cohousing models can support sustainable urban outcomes, while cautioning that such projects tended to over-represent middle-class households and may exclude lower-income groups without explicit policy instruments.

Although housing reform in Ukraine and cooperative housing models in Europe had each been studied in considerable depth, they were rarely examined in relation to one another. Ukrainian scholarship tended to concentrate on legislative changes, social housing provision, or participatory planning as separate themes. At the same time, research on Baugruppen and collaborative housing had largely evolved within relatively stable institutional settings, with limited attention to post-conflict environments. This left open the question of how such governance-based housing frameworks might function under the specific legal, urban and socio-economic conditions currently shaping Ukraine's reconstruction process. Therefore, the research goal was to substantiate Baugruppen (community-led development) as a governance-ready instrument for post-conflict housing delivery in Ukraine by comparing German and Ukrainian cooperative-housing trajectories and regulatory frameworks, and by operationalising conditions from the Vauban case across affordability, environmental performance, governance, and participation.



MATERIALS AND METHODS

This study employed a qualitative, sustainability-oriented research methodology to assess the potential of a community-led development (Baugruppen) approach for delivering affordable, inclusive, and environmentally responsible housing in Ukraine. The research was organised in three stages: first – analysis of the historical context of cooperative housing in Germany and Ukraine; second – review of legal frameworks and policy documents; third – a case study of the Vauban district in Freiburg. This structure allowed both theoretical comparison and practical evaluation for Ukraine’s recovery. The first stage examined the historical trajectory of cooperative, group-built and social housing in Germany and Ukraine, with attention to how cooperative traditions had supported long-term resilience, social cohesion, and resource efficiency in the built environment. This stage situated the Baugruppen model within a broader sustainable development context, drawing lessons from both countries’ socio-economic and environmental histories. The city of Lviv and the social housing project on Mykolaychuk Street, the concept of social housing on Hlynianskyi Trakt Street, Hansen Village in Tarasivka, Kyiv region, the city of Bila Tserkva, and a housing complex for internally displaced persons from Mariupol were selected as examples for the study. These cities experimented with pilot projects for affordable housing, but it was also determined that they lacked the targeted measures and competitive land allocation processes observed in Germany, such as conceptual bidding (Konzeptverfahren). These projects were chosen as the most recent affordable housing cases implemented in Ukraine after the full-scale invasion began. Competitive land allocation methods, such as concept-based bidding, were absent, and state-backed financial tools similar to those provided by Germany’s KfW Bank were not yet available. The second stage involved a systematic review of relevant literature, policy documents, and legal frameworks, applying a structured content analysis to identify enabling conditions for community-led housing. The review compared German instruments such as Building Code (BauGB) (1960), Act on Cooperative Societies (2024). Also, it was analysed municipal regulations with The Housing Code of Ukraine No. 5464-X (1983), Law of Ukraine No. 1087-IV (2003), The Civil Code of Ukraine No. 435-IV (2003), and Draft Law of Ukraine No. 4586-IX (2025). Special focus was placed on how each system addressed sustainable land allocation, climate-responsive design standards, financing for low-carbon housing, and mechanisms for multi-stakeholder collaboration between local governments, communities, and intermediary organisations. This comparative analysis highlighted, where Ukrainian policy could be adapted to embed cooperative housing within a sustainability-oriented planning framework.

The third stage applied a case study methodology to the Vauban district in Freiburg, Germany. This district was selected to assess the relevance of Baugruppen

practices for Ukraine for three main reasons: 1) Vauban demonstrated the integration of ecological and climate-responsive principles, including high standards of energy efficiency, the use of renewable energy, and the implementation of green infrastructure, which directly corresponded to sustainability goals for the reconstruction and regeneration of Ukrainian cities; 2) Vauban highlighted the potential of cooperative housing development to lower construction costs, while meeting the needs of diverse social groups, from middle-income households to residents with limited resources. This experience was particularly relevant for Ukraine, where there was an urgent need to provide socially inclusive housing solutions for internally displaced persons, veterans, and other vulnerable populations; 3) Vauban established innovative mechanisms for collaboration among municipal authorities, developers, and citizen groups, offering a model for participatory governance and cross-sector partnerships in urban planning that could inform sustainable housing strategies in Ukraine (Hamiduddin & Gallent, 2016). The case study was used to assess the transferability of Baugruppen practices to Ukraine, particularly for post-war reconstruction, integration of internally displaced persons, and achievement of Sustainable Development Goals (n.d.) on inclusive, safe, resilient, and sustainable cities. Findings from each stage were compared using qualitative content analysis, focusing on four themes: affordability, environmental performance, governance, and participation. These themes were then juxtaposed with Ukraine’s legislative, socio-economic, and ecological realities to identify critical success factors and formulate policy recommendations.

RESULTS AND DISCUSSION

Legal framework and institutional mechanisms for building cooperative housing (Baugruppe)

According to data presented by UkrInform (2024) approximately 50 million square meters of residential housing stock have been destroyed or damaged due to Russian military aggression. This massive destruction, coupled with the aging of existing buildings and an outdated Soviet-era social policy, had created a critical housing deficit (Fig. 1). As of 2025, over 600,000 Ukrainians remained on the national housing register, a figure that does not fully account for the 4.9 million officially registered internally displaced persons (IDPs), 26% of whom required immediate social protection. The infographic underscored the demographic diversity of those affected by the crisis. Moreover, with every third citizen having a low-income level, there was an urgent need to transition from inefficient privatisation models to modern instruments like social rental housing and “rent-to-own” schemes. Creating these conditions was essential not only for the integration of IDPs but also for the potential return of 6.6 million refugees from abroad, whose homecoming depended on the availability of stable and resilient housing solutions.

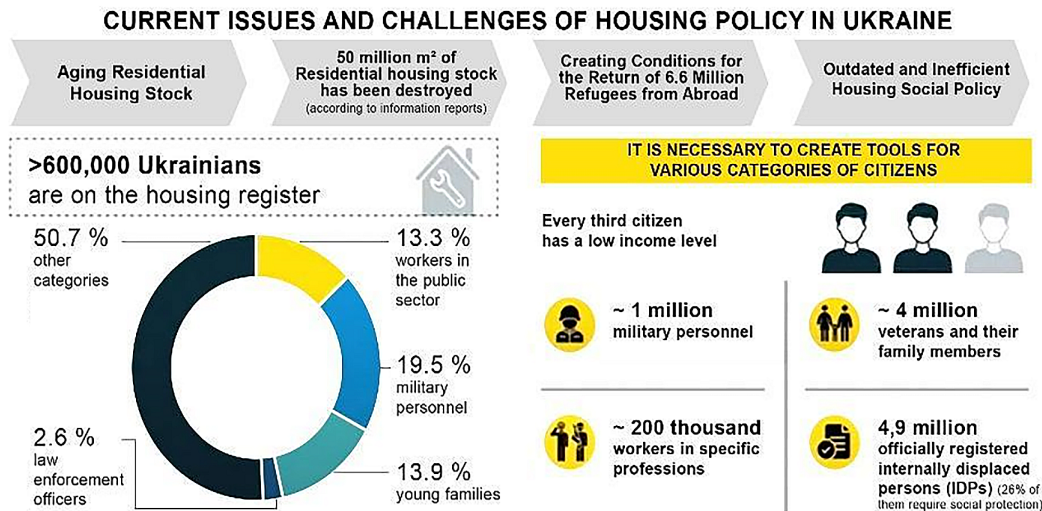


Figure 1. Modern issues and challenges of housing policy in Ukraine

Source: UkrInform (2024)

The situation was further complicated by the Soviet-inherited Housing Code, which was designed for a fully state-owned housing stock and a centralised policy framework. As it was demonstrated by Ye. Vlasenko (2017), following mass privatisation in the early 1990s, leaving less than 4% of the housing stock under state or municipal ownership, the legal framework became largely obsolete. During the transitional period, the state of social and affordable housing deteriorated sharply, while the cooperative housing tradition, which had provided non-commercial, community-oriented housing solutions, was almost entirely lost. In the 1980s, cooperative construction reached a peak, allowing individuals and legal entities to pool resources for building or renovating homes for their own use. Ye. Vlasenko (2015) noted that with the shift toward market relations, this approach was abandoned, and the housing sector became predominantly profit-driven, with limited provision even of basic economy-class housing at prices accessible to the majority of citizens. In modern context of post-war recovery needs, the demand for socially inclusive, affordable, and environmentally sustainable housing had become unprecedented. As mentioned during the discussion on the theme of the housing crisis in Ukraine with the support of the International Renaissance Foundation (2025), citizens have submitted over 850,000 applications via the Diia system, covering more than 60 million m² of damaged housing, versus the pre-war annual commissioning of only 9-10 million m². While some progress had been achieved in the social housing sector through government initiatives and international support, the challenge of creating affordable housing that was also resource-efficient, climate-adaptive, and socially cohesive remained unresolved.

To explore the potential for implementing cooperative housing models such as Baugruppen in Ukraine, it was necessary to examine the legislative and institutional mechanisms in Germany that had both enabled the adoption of this model and embedded it within a wider

sustainable development agenda. The legal and institutional framework supporting Baugruppen was grounded in a combination of historical legislation, cooperative law, urban planning policies, and innovative institutional mechanisms that collectively addressed housing affordability, while advancing participatory, socially inclusive, and environmentally responsible urban development. The foundation for cooperative housing in Germany lain in the Act on Cooperative Societies (2024), first enacted in 1867 and subsequently reformed, particularly in 1889 and 2006. This law secured limited liability for cooperative members, ensured democratic governance principles, and promoted the equitable distribution of benefits. P.A.C. Pfatteicher *et al.* (2024) had described that amendments in 2006, 2009, and 2017 modernised its provisions by integrating digitalisation, simplifying administrative procedures, and enabling virtual participation, thereby strengthening inclusivity and accessibility. In parallel, Germany's municipal land use and zoning laws, particularly the Building Code (BauGB) (1960), provided a legislative basis for prioritising cooperative housing within sustainable urban regeneration strategies. This document allowed local governments to designate land for non-speculative and community-oriented housing projects, often at reduced prices, thus directly linking land policy to social equity and low-carbon urban development objectives. I. Hamiduddin & N. Galient (2016) demonstrated that cities such as Berlin and Hamburg had implemented these principles through structured land allocation competitions and targeted financial incentives. While H. Haas (2020) highlighted that the 1990 Tax Reform Act ended the formal non-profit status of housing cooperatives, it retained tax benefits for those meeting conditions related to member-based revenue generation. This shift prompted cooperatives to adjust business models, but many maintained their commitments to affordability, participatory decision-making, and resource-efficient building practices.





Germany's experience showed that success in Baugruppen development was underpinned by institutional mechanisms that connected legal frameworks with practical implementation. R.C. Bartholomäi (2004) specified that at federal and state levels, instruments such as low-interest loans, targeted grants, and tax incentives reduced financial barriers for members, while promoting environmental performance and long-term community resilience. Given the high cost and scarcity of urban land, municipal policies like fixed-price tendering and concept-based bidding (Konzeptverfahren) were vital. These methods allocated public land based not only on financial bids but also on a project's social and ecological value to the local community. As concluded by S. Schwarz & I. Sabatier-Schwarz (2017), Baugruppen often excelled in these evaluations due to their integration of affordability, inclusive governance, and sustainable design. In several municipalities, portions of residential development land were reserved for Baugruppen, reflecting political commitment to community-led and climate-conscious housing. D. Scheller (2019) noted that cities such as Hamburg, Freiburg, and Tübingen allocated around 40% of municipal land sales for such projects. Long-term lease arrangements of up to 100 years at low interest rates further support financial feasibility, while allowing municipalities to retain ownership and influence over urban sustainability outcomes. R.C. Bartholomäi (2004) pointed out that participatory urban planning practices were systematically embedded into Baugruppen processes, enabling future residents to collaborate with architects, planners, and municipal authorities to achieve socially cohesive and environmentally efficient neighbourhoods. Intermediary organisations, including the Forum Gemeinschaftliches Wohnen e.V. (Reimer & Peters, 2025) and regional cooperative associations, provided critical expertise in legal compliance, financing, and architectural planning, while also disseminating best practices in sustainable construction. Building cooperatives and community-led housing projects were also becoming a significant part of the UK's property landscape. T. Archer & C. Harrington's (2021) report provided a sector-wide, funding-focused appraisal of the community-led housing (CLH) pipeline in England and the institutional conditions required to deliver it. Authors interpreted England's CLH pipeline as an SDG-aligned delivery system that linked affordable homes with place-based outcomes – placemaking, community wealth-building, and local empowerment. They contended that CLH's architectural and urban value should be evidenced through energy efficiency and climate action contributions, design-led wellbeing gains, including shared spaces, adaptable layouts, and resident stewardship, and by linking self-help housing models to local skills, jobs, and training pathways. The report recommended embedding CLH-supportive policies in spatial plans and strengthening impact measurement to justify targeted, long-term investment.

In contrast, the Ukrainian legislative and institutional environment for cooperative housing remained underdeveloped. The Civil Code of Ukraine No. 435-IV (2003) and

the Law of Ukraine No. 1087-IV (2003) provided a general basis for cooperative formation but were not tailored to the specific requirements of housing cooperatives, including long-term affordability, participatory governance, and integration of ecological design principles. P. Fedoriv & N. Lomonosova (2019) noted that repeated attempts to revise the Housing Code between 2010 and 2021 were unsuccessful, but the Russian-Ukrainian war, which started in 2022, and the resulting displacement crisis renewed urgency for reform. Consultations among government ministries, local authorities, and international partners had led to the Draft Law of Ukraine No. 4586-IX (2025), which outlined a systemic approach to housing strategy, included cooperative forms, and had the potential to embed sustainability criteria into housing policy. In 2020, Ukraine lacked the kind of institutional support ecosystem found in Germany. Municipalities in Ukraine played a limited role in supporting cooperative housing. K. Höller (2024) pointed out that the Law of Ukraine "On Local Self-Government in Ukraine" granted local authorities the power to allocate municipal land and implement housing programmes, but cooperative housing was rarely a priority in these policies. As stated in the Resolution of the Cabinet of Ministers of Ukraine No. 695 (2020), the lack of affordable housing had become one of the main socio-economical issue since the beginning of the full-scale invasion. O. Avramova *et al.* (2023) noted that existing housing programmes focused primarily on individual ownership or social housing provision, without fully addressing cooperative models. The State Fund for Support of Youth Housing Construction (n.d.) could potentially be expanded to include cooperative housing, with eligibility tied to sustainability performance and community participation standards. Additionally, international financial institutions and development partners could play a role in providing blended finance for Baugruppen-style projects that meet social inclusion and environmental quality benchmarks.

By aligning future legislative reforms and institutional mechanisms with principles of sustainable development, Ukraine can create a policy framework that promoted cooperative housing as a driver of affordable, inclusive, and low-carbon urban regeneration. Drawing on the German experience, embedding Baugruppen within Ukraine's housing strategy can support the achievement of the Sustainable Development Goals (n.d.), particularly Goal 11 on inclusive, safe, resilient, and sustainable cities, while also accelerating post-conflict recovery. Such cooperative approaches as Baugruppen, in which future residents form a "building group" that directly participated in the design and management of housing to meet long-term needs, reducing reliance on speculative developers helped to address three key policy challenges (Hamiduddin & Gallent, 2016): 1) improving housing affordability through cost savings of 20-25% by eliminating developer margins; 2) strengthening social cohesion by fostering interaction and shared responsibility among residents; 3) enabling design diversity and environmental performance improvements through direct collaboration between



residents, architects, and contractors. Given Ukraine's urgent housing needs, the Baugruppen model offered a pathway to reconstruction that combined affordability, community integration, and low-carbon urban development. This relevance was reinforced by the inclusion of cooperative practices in the Draft Law of Ukraine No. 4586-IX (2025), which prioritised such approaches for both new construction and the restoration of damaged housing. Within the framework of sustainable urban development, the concept of community extended beyond a purely sociological category and acquired a distinct spatial and governance-related dimension. Research on the notion of the "closed community" emphasised that it should not be understood solely as a form of physical isolation, but rather as a specific mode of organising social life that shaped patterns of spatial use, levels of resident participation, and degrees of collective responsibility. From this perspective, cooperative housing models, including Baugruppen, can be interpreted as controlled yet socially permeable communities, capable of integrating security, social cohesion, and the core principles of sustainable development.

Although no scholarly works had focused specifically on investigating community-led development (Baugruppen) practices in the architectural design of affordable housing in the Ukrainian context, international studies demonstrated the model's capacity to integrate affordability, sustainability, and inclusivity. For example, A. Sharam (2020) explored cooperative housing in Australia as a pathway to greater community inclusiveness and environmental responsibility, while M.G. Lloyd *et al.* (2015) examined the mainstreaming of self-development in the UK and the Netherlands to address housing shortages through citizen-led initiatives. S. Bresson & S. Denèfle (2015) investigated the diversity of self-managed co-housing in France, highlighting how cooperative frameworks can be adapted to different socio-economic and regulatory environments. Evidence of the Baugruppe model's international adaptation included the handbook, prepared by M. Kopeć *et al.* (2015) in conjunction with the Prague exhibition "Baugruppe ist super! Contemporary housing – inspiration from Berlin". The volume systematised key terminology, articulated prospective advantages for members, and offered a cost model demonstrating financial efficiency. These works collectively underlined the adaptability of Baugruppen principles across diverse national contexts.

Features of the sustainable urban district of Vauban in Freiburg, Germany

The Vauban redevelopment was undertaken between 1993 and 2006 on a 38-hectare site formerly occupied by military barracks. G.J. Coates (2013) noted that after the French military's departure in 1992, the area experienced a period of informal occupation before the Freiburg City Council acquired the land and initiated a redevelopment process centred on ecological sustainability and social integration. The non-profit "Forum Vauban" was mandated to lead a comprehensive public participation process, ensuring that residents and stakeholders shaped the district's vision in line with the principles of the Local Agenda 21 (United Nations Sustainable

Development, 1992) and the emerging discourse on sustainable urban regeneration. Land allocation policies strongly favoured community-led housing groups. Over 40 Baugruppen were awarded plots through competitive processes prioritising families, seniors, and residents. Many of these projects incorporated passive house standards, with more than 200 dwellings built to ultra-low energy specifications, including Germany's first multi-family passive house (Fig. 2).



Figure 2. The Vauban sustainable urban district project in Freiburg, Germany – aerial view

Note: photo by A. Schwarzkopf. The bottom right part of the image depicts Solar Settlement – 59-home Plus Energy housing community, designed by R. Disch

Source: based on G.J. Coates (2013)

S. Fastenrath & B. Braun (2018) and Rolf Disch solar architektur (n.d.) mentioned that the district also integrated landmark sustainability projects such as the Solar Settlement and the "Sun Ship" commercial building, developed by Solar Settlement Ltd. and financed partly through four Freiburg Solar Funds, pioneering ethical-ecological investment vehicles (Fig. 3). Constructed primarily from timber and ecological materials, these buildings featured extensive photovoltaic systems with a total capacity of approximately 445 kWp, generating about 420,000 kWh of renewable energy annually. Urban mobility strategies reinforced environmental goals: the district was designed as a car-free zone, supported by underground parking, car-sharing schemes, and extensive pedestrian and cycling networks, thereby reducing transport-related emissions and fostering active lifestyles. Institutional support was critical.



Figure 3. The Vauban sustainable urban district project in Freiburg, Germany. Residential houses at Solar Settlement

Note: photo by C. Andrewglaser

Source: based on G.J. Coates (2013)





G.J. Coates (2013) and S. Fastenrath & B. Braun (2018) highlighted that the Freiburg municipality established dedicated bodies such as the Vauban Project Group and the Freiburg Local Authority Vauban Committee were created to coordinate planning, infrastructure provision, and stakeholder engagement. As noted by A. Staub (2025), cooperative housing organisations, notably the Genova Cooperative, took responsibility for designing and managing shared facilities, ensuring that communal spaces strengthened social cohesion. Public-private-community partnerships facilitated job creation, supported local businesses, and encouraged socio-economic diversity, enabling the inclusion of low-income households, internally displaced persons, and vulnerable groups. The Vauban case demonstrated that a cooperative, sustainability-driven redevelopment model can achieve multiple objectives: delivering affordable housing, fostering inclusive communities, reducing ecological footprints, and enhancing urban resilience. These outcomes were enabled by transparent land allocation, targeted financial instruments, strong municipal leadership, and embedded participatory processes. For Ukraine, adapting these strategies could support war-damaged housing reconstruction, enable climate-smart neighbourhoods, and advance the national commitment to the Sustainable Development Goals (n.d.), while reinforcing local governance and citizen participation.

Examples of social housing in Ukraine

After the beginning of Russia's full-scale invasion in 2022, the topic of housing for IDPs had become one of the main socio-economic issues. Ukrainian social-housing initiatives demonstrated a predominantly provider-led delivery – logic municipal, state-business, or philanthropic – in which participation was typically mediated through institutional design choices (competitions, “needs-based” programming, partnership governance) rather than through resident co-production of projects. In Lviv, the pilot municipal scheme on Mykolaychuka Street was developed via an architectural competition and was financed with external support. As stated by D. Krutko (2025), it targeted IDPs and war-affected residents, embedded universal design through fully barrier-free apartments, and was planned as municipal housing owned by the city community, while indicating limited evidence of resident co-governance beyond beneficiary targeting. The Big City – Lab (2025) concept and the related case-study for Hlynyanskyi Trakt in Lviv, as it was mentioned in the project description, focused on a 15-minute access, integration with social infrastructure (school), green spaces, and a mixed-tenure model with a substantial social-housing share – yet participation was framed primarily as transparency, shared responsibility and community integration within an institutional management model, not as formalised resident decision-making across the project cycle.

Hansen Village in Tarasivka (Kyiv region) exemplified philanthropic provision of rent-free housing with extensive communal amenities (including shelters, sports and

education); however, available documentation at the Village webpage does not specify participatory governance mechanisms for residents beyond service provision (Hansen Ukrainian Mission, 2025). Finally, the “My Home. Ukraine” pilot in Bila Tserkva for Mariupol IDPs, as mentioned at Metinvest (2025), operationalised a multi-actor partnership and a social-rental affordability rule (rent capped at 30% of household income), with the housing retained as property of the Mariupol community, while again leaving participation largely at the level of institutional representation rather than resident co-management. Across considered Ukrainian cases, the strongest convergence with the Vauban logic was visible in social inclusion and welfare outcomes, while the weakest alignment concerns participatory urban governance, transparent land allocation for resident-led groups, and the institutional ecosystem (intermediaries, legal/financial advisory) that enabled Baugruppen-type delivery. Thus, the projects mostly treated residents as beneficiaries/tenants, not as co-producers of development.

To align the reviewed Ukrainian cases with Baugruppen principles, projects should institutionalise resident co-governance by establishing councils with formal decision rights over layouts, shared spaces, rules of use and post-occupancy management, supported by documented consultation and feedback cycles. Municipalities should introduce concept-based land allocation through competitions for cooperative/collective groups (including tenant-to-cooperative pathways), scoring social inclusion, affordability, stewardship and low-carbon design rather than price. Social rental schemes should be complemented by stewardship instruments: enforceable long-term affordability and anti-speculation covenants, mixed-income quotas and mechanisms for tenant participation (e.g., gradual cooperative membership or shared equity). Environmental alignment required NZEB/passive-house procurement standards (Bureau 69 architects, 2023) with subsidies and technical support, plus legal-financial routes for resident-owned renewables (PV/heat pumps) and revolving or green finance. Car-light planning and dedicated cooperative-housing offices were essential enabling infrastructures. To support a structured analysis of the Vauban case study and to assess the relevance of its sustainability principles for the Ukrainian context, Table 1 was developed as an analytical framework. Table 1 systematised the key ecological, social, and governance mechanisms identified in the Vauban district and related them to their potential modes of adaptation in Ukraine, taking into account differences in legislative frameworks, institutional capacity, and post-war recovery priorities. Thus, it was synthesised the key sustainability mechanisms demonstrated in the Vauban district, including participatory urban governance, transparent land allocation, high energy efficiency standards, integration of renewable energy, sustainable mobility strategies, social inclusion policies, and dedicated institutional support structures, and outlined their potential applicability within the Ukrainian context. While these



mechanisms indicated a feasible framework for adapting the Vauban concept to post-war housing reconstruction and sustainable urban regeneration in Ukraine, their practical implementation required further empirical investigation, contextual adjustment to national legislative and institutional conditions, and in-depth interdisciplinary research to assess their long-term social, environmental, and governance impacts. Beyond the German context, collaborative and community-led housing models had been extensively examined across Europe, particularly in the United Kingdom and the Netherlands. Studies of community land trusts and self-help housing initiatives in the UK demonstrated how collective ownership structures and locally embedded governance mechanisms can address

affordability challenges, while fostering long-term stewardship of housing assets (Moore & Mullins, 2013). At a broader theoretical level, R. Lang *et al.* (2020), in systematic review of collaborative housing research between 1990 and 2017, identified governance transformation as a central analytical theme. Researcher's findings suggested that collaborative housing should be understood not merely as a spatial or architectural typology, but as a reconfiguration of relationships between residents, public authorities, and market actors. The authors emphasised that the durability and scalability of such initiatives depended on supportive legal frameworks, municipal facilitation, and intermediary structures – factors that directly resonated with the institutional conditions examined in this study.

Table 1. Vauban sustainability mechanisms and their adaptation potential for Ukraine

Sustainability mechanism	Vauban example	Adaptation potential for Ukraine
Participatory urban governance	Mandatory community consultation led by “Forum Vauban”; collaborative decision-making integrated into planning and design	Establish local participatory planning bodies with decision-making authority; integrate civil society and IDPs in post-war housing design processes
Transparent land allocation	Competitive concept-based bidding prioritising social, environmental, and affordability criteria	Introduce municipal-level concept competitions for cooperative housing plots, with criteria rewarding low-carbon design and social inclusion
Energy efficiency standards	Over 200 passive houses; first German multi-family passive house; bioclimatic design principles	Incorporate passive house or NZEB standards into cooperative housing legislation; incentivise with subsidies or tax benefits
Renewable energy integration	Solar Settlement and “Sun Ship” generating ~420,000 kWh/year; funded via ethical-ecological investment funds	Promote community-owned renewable energy projects; enable green bonds and cooperative investment funds for solar and heat-pump integration in housing
Sustainable mobility	Car-free district design; underground parking; car-sharing schemes; pedestrian- and cycling-friendly infrastructure	Prioritise pedestrian- and cycle-friendly layouts in new developments; integrate car-sharing hubs; limit on-street parking in cooperative housing projects
Social inclusion policies	Mixed-income residents, senior housing, and low-income inclusion; cooperative management of shared spaces	Ensure quota systems for vulnerable groups (IDPs, veterans, low-income households); support cooperative governance training for residents
Institutional support structures	Dedicated municipal units (Vauban Project Group, Local Authority Vauban Committee) coordinating cross-sector collaboration	Establish municipal or regional cooperative housing offices to provide technical, legal, and financial advisory support

Source: developed by the authors

CONCLUSIONS

This research demonstrated that implementing a Baugruppen (community-led) approach to affordable housing in Ukraine was both timely and feasible, particularly in the context of post-war recovery and long-term urban sustainability. The analysis confirmed, that while Ukraine once had a strong tradition of cooperative housing, subsequent Soviet centralisation and post-independence market liberalisation significantly weakened this tradition. Modern legislative reforms revealed an opportunity to revive cooperative practices and adapted them to modern sustainability-oriented priorities. Germany's experience showed that a robust legal framework, municipal support, and intermediary organisations were crucial for the success of Baugruppen projects. Mechanisms such as land allocation competitions, long-term leases, low-interest loans, and dedicated advisory structures provided a fertile ground for participatory and environmentally responsible housing development. The Vauban Sustainable Urban district

illustrated how principles of resource efficiency, ecological construction, inclusive governance, and low-carbon mobility can be integrated into community-led housing.

For Ukraine, adapting these lessons required strengthening municipal authority, developing financial instruments for cooperative groups, and tailoring cooperative legislation to safeguard affordability, inclusiveness, and resilience. In parallel, the establishment of intermediary support bodies could consolidate expertise and provide technical guidance, bridging gaps between policy and practice. The Baugruppen model could simultaneously respond to Ukraine's urgent housing needs and set a direction for future urban development. Its principles combined affordability, ecological standards, and social inclusion, which were essential for building resilient communities after the war. Study provided a foundation for future research on the spatial morphology of community-led neighbourhoods, the integration of cooperative typologies within existing urban grids, and the impact of Baugruppen-based





development on density, mobility, and environmental performance in reconstructed districts.

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CONFLICT OF INTEREST

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Постконфліктне житло в Україні: модель Baugruppen як каталізатор сталого відродження міст

Анотація. Метою дослідження було аналізувати можливості застосування моделі Baugruppen в Україні як інструменту для доступного житла та відновлення після війни, поєднуючи правові, інституційні та просторові виміри. Порівняльний аналіз правового та політичного контексту між двома країнами виявив прогалини в регуляторному середовищі України, такі як недостатнє повноваження місцевих органів влади, відсутність фінансових стимулів та відсутність посередницьких організацій. У цьому дослідженні розглянуто потенційне застосування моделі Baugruppen (розвиток, ініційований громадою) для вирішення сучасних проблем житлового будівництва в Україні. У статті досліджено історичний розвиток кооперативного житла в Німеччині та Україні, зокрема, як підтримуючі правові рамки та інституційні механізми Німеччини сприяли розвитку ініціатив Baugruppen. Використовуючи район Ваубан у Фрайбурзі (Німеччина) як приклад, дослідження продемонструвало, як участь у проектуванні, екологічні принципи та спільне управління сприяли успіху проєктів Baugruppen. Результати підкреслили необхідність реформування житлової політики України, враховуючи уроки з моделі Baugruppen Німеччини, та зазначили можливості для співпраці між муніципалітетами, місцевими громадами та міжнародними партнерами для створення умов для реалізації таких проєктів. Було визначено, що ці зміни мають охоплювати переорієнтацію політики розподілу земель, впровадження механізмів конкурсного відбору на основі концепцій та створення нових рамок розвитку, в яких кінцеві користувачі братимуть активну участь у прийнятті рішень і матимуть значно більший вплив на результати проєктів. Якщо такі інституційні прогалини будуть усунені, модель може допомогти Україні відновити зруйноване житло, забезпечити житлом переміщених осіб та підтримати сталий розвиток міст у рамках національних та міжнародних реформ

Ключові слова: сталий розвиток міст; доступне житло; будівельна кооперація; відновлення після конфлікту; участь у проектуванні