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Abstract

Poland's housing market exhibits a structural mismatch between supply and demand, particularly for families seeking larger apartments in urban locations. The market is dominated by developer-built investment-oriented smaller units in cities and individual self-build houses in suburban areas, forcing families to either compromise on space or relocate to suburbs, fundamentally altering their lifestyle preferences. This thesis examines collective self-development (CSD) as a potential alternative that addresses this gap in housing provision. Through analysis of established German building groups model and pioneering Polish initiatives, the research identifies three key requirements for successful implementation: developing a procedural framework, strategic market positioning, and rebranding traditional cooperativism to overcome local cultural barriers.

The project demonstrates a comprehensive four-stage implementation process (Interest, Planning, Building, and Owner Communities) to develop a multi-family residence on an urban infill site in Poznań, Poland. It utilizes a computational design workflow that allows the development to mediate between 9-15 households' specific needs while integrating shared amenities that would be unaffordable individually. The design achieves a 20-30% cost advantage over comparable developer-built housing while maintaining high-quality and creating spaces that foster community interaction.

By addressing procedural complexity, land acquisition challenges, and the tension between economic and social considerations, this thesis establishes collective self-development as a viable "third way" between developer-built and self-build housing. The implementation model provides a template that can be adapted across Poland's urban centers, enabling families to remain in cities while accessing appropriately sized housing that meets their spatial needs, lifestyle preferences, and financial constraints.

Introduction

Housing affordability

Rising living costs represent the primary concern for residents across developed nations (Ipsos, 2025). In Europe, housing affordability emerged as a particularly critical challenge as the housing market has experienced price growth that significantly outpaces general inflation. Between 2015 and 2023, residential property prices increased by an average of 48% across the European Union, whereas in Poland by 79.8% (Eurostat, 2023). The political importance of this issue is evident in voting patterns, as housing affordability became the leading motivation for voter participation in the 2024 European elections (Eurobarometer, 2024).

This exceptional price growth results from multiple factors affecting both market supply and demand. On the supply side, construction activity faces limitations from increasing building material costs and persistent labor shortages. On the demand side, the housing market has transformed as properties increasingly serve as investment vehicles rather than primarily as homes. High interest rates have further complicated this situation by raising financing costs for middle-income buyers seeking to purchase homes (Eurostat, 2023).

Poland presents a particularly instructive case of these affordability challenges. Research by the European Observation Network for Territorial Development and Cohesion (ESPON) highlights that Polish housing prices follow an approximately normal distribution, unlike the right-skewed pattern (indicating a larger proportion of lower-priced homes) common elsewhere in Europe (ESPON, 2024). This distribution signifies a relative scarcity of lower-cost housing options in the Polish market. This supply characteristic creates a significant affordability gap when

considered alongside Poland's income structure, where the median income falls substantially below the average income (Statistics Poland, 2024).

The affordability problem is most severe for families seeking appropriately sized housing. When examining the financial requirements for a 100m² unit—a size typically needed by families—Poland ranks among the European Union's least accessible housing markets. Figure 1 shows, how in many regions families require over 35 years of dedicating 40% of annual income for purchase. Lack of adequate housing is shown as a major factor in driving suburbanization as young families leave the cities for cheaper suburbs (ESPON, 2024).

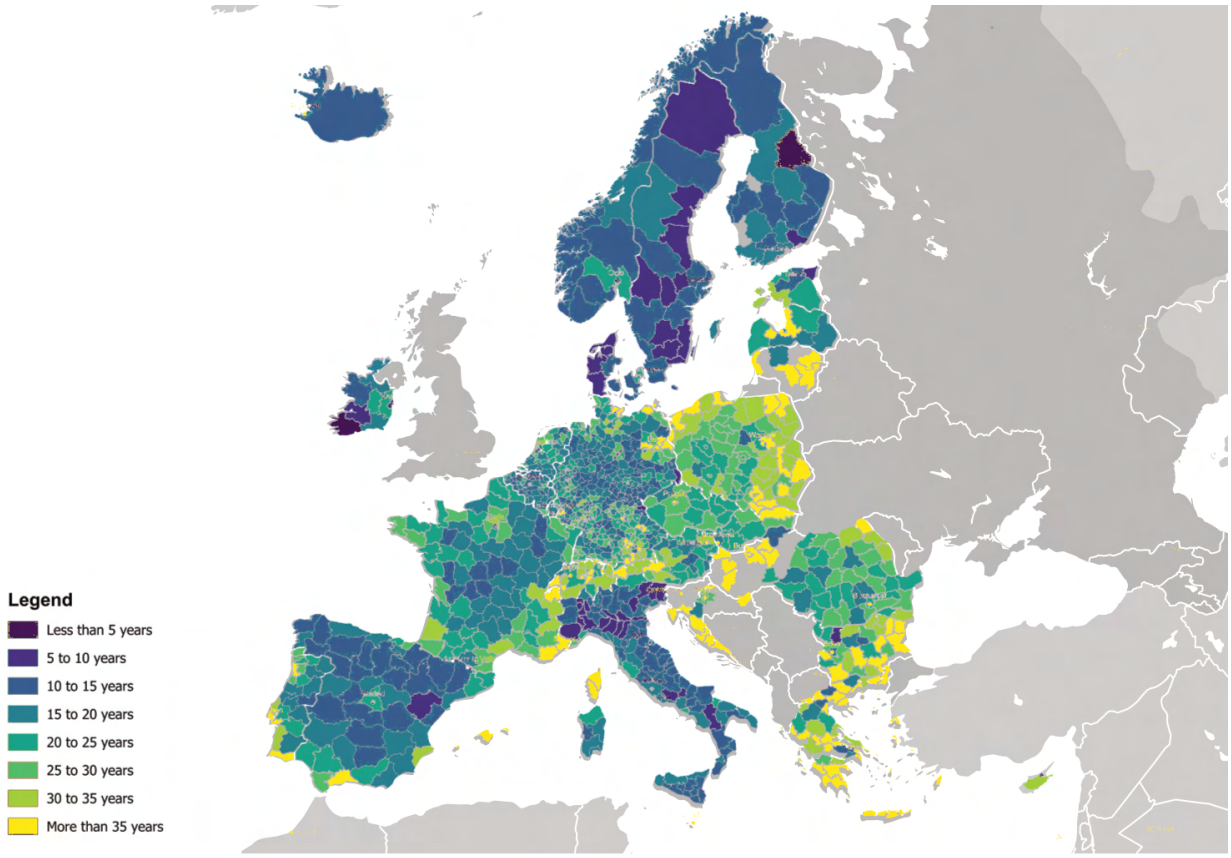

Figure 1 Number of years to assume buying 100m2 spending 40% of annual income. Source: ESPON House For All 2024

Structure of the housing supply

The ability of a family to find adequate housing is directly tied to housing supply. Poland's construction sector has achieved remarkable output levels. Between 2016 and 2021, the sector delivered more new dwellings than the entire housing stock of Warsaw (Lis et al. 2023). However, this impressive quantity masks a concerning lack of diversity in housing delivery methods. The market is highly concentrated, with real estate developers and individual investors accounting for nearly all new housing stock. In 2024, of 199,931 new housing units, 62% came from commercial developers, 35% from individual investors, and only 3% from housing cooperatives and other non-market actors (Statistics Poland, 2025). Moreover, since 1991 the share of developer-built housing has been steadily increasing, while the share of housing cooperatives has plummeted (Figure 2)

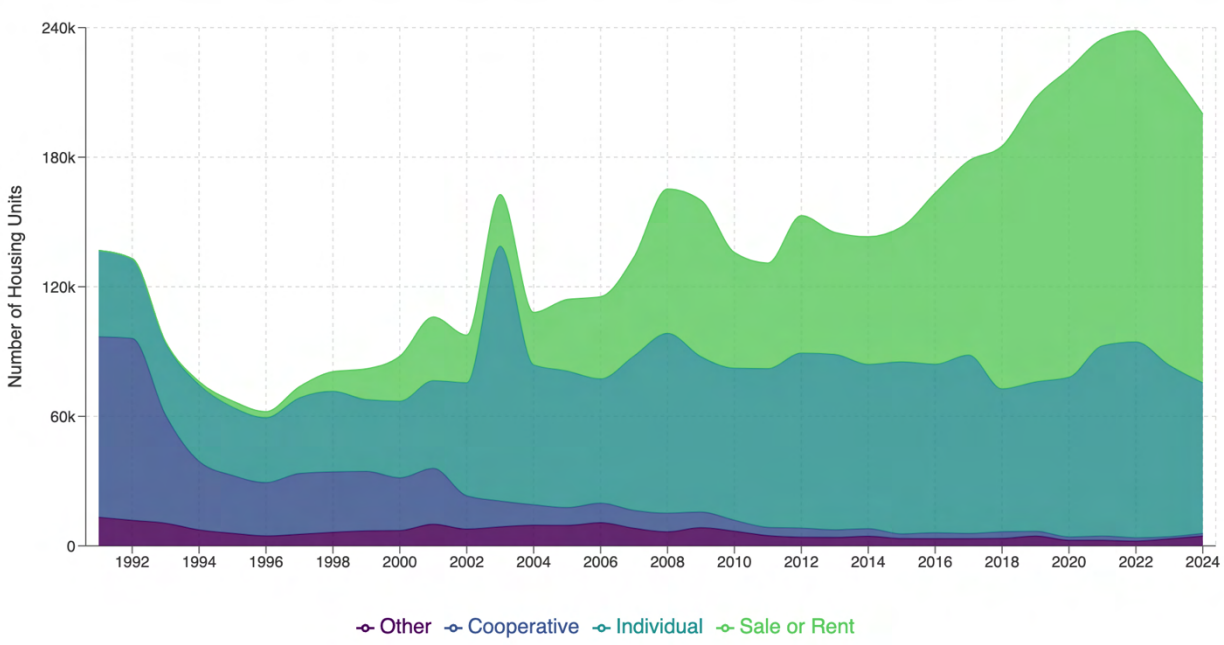

Figure 2 Share of the housing market by investor type 1991-2024. Source: Statistics Poland

This market structure presents prospective homeowners with a binary choice: developer-built units or self-build single-family houses. These options represent fundamentally different approaches to housing development, each with distinct characteristics and trade-offs.

Developer-built housing dominates the multi-family sector. Real estate developers manage the entire development process from land acquisition through construction to sales, focusing on risk management, feasibility analysis, and market alignment (Graaskamp, 1992). Operating as risk-minimizing enterprises, they prioritize standardized designs and mainstream market segments, typically delivering either multi-family buildings with investor-friendly smaller units or standardized single-family houses (Krings-Heckemaier et al., 2009).

The developer model offers several advantages, particularly in terms of scale and efficiency as these firms undertake large-scale projects to offset fixed costs. While buyers are provided with a hands-off experience and regulatory protections, this convenience comes at a cost as developer-built housing includes 20-30% profit margins (National Bank of Poland, 2025). Moreover, to minimize risk, developers operate almost exclusively in high-demand urban areas with appropriate zoning and naturally prioritize short-term returns over long-term operating costs.

At the other end of the spectrum is individual self-build housing. Individual investors directly manage their development, typically building single-family houses or duplexes in rural or suburban locations. While self-builders assume full financial and project management risk, they gain complete control over design and customization. This approach eliminates developer margins but requires significant personal involvement and expertise in construction management.

This stark contrast in development approaches has created pronounced market segmentation. Developers dominate urban areas with large-scale, standardized projects, while individual self-builders operate primarily in rural or suburban locations with available smaller plots.

Collective self-development: an alternative model

One promising approach to bridging this market gap is collaborative housing, an umbrella term encompassing various forms of resident-led development. While diverse forms of collaborative housing have gained traction across Europe, implementing such models in Poland requires careful consideration of the local context. Research (Lis et al., 2023) indicates that collaborative housing faces several cultural and practical barriers in Poland. Young Poles strongly prioritize individual homeownership, viewing it as a marker of life success, and generally resist shared living arrangements. For those more inclined to sharing resources, financial savings emerge as the primary motivation, while concerns about lengthy development processes, limited space, and shared ownership structures act as significant deterrents.

Given these cultural preferences and constraints, this thesis focuses specifically on one branch of collaborative housing —collective self-development— as the most promising collaborative housing model for the Polish market. At its core, collective self-development involves coordination between future residents and other stakeholders throughout the development process, with residents actively participating in planning, design, and sometimes construction while maintaining individual autonomy in their living spaces (Czischke et al., 2021). This approach aligns with local preferences while leveraging the benefits of group coordination.

Table 1 illustrates how collective self-development positions itself as a middle ground between traditional developer-built and individual self-build housing:

Table 1 Comparison of developer, collective self-development and self-build housing. Source: Author

Characteristic	**Developer-built Housing**	**Collective Self-development**	**Self-build Housing**
Scale	Large developments	Medium-sized projects (10-20 units)	Single units or duplexes
Location	Urban and suburban areas with existing zoning	Urban and semi-urban areas with municipal support	Rural and suburban areas, including agricultural land
Project Risk	Assumed by developer; buyer protected by regulations	Shared among group members; partially mitigated by collective approach	Fully assumed by the owner-builder
Economies of Scale	Significant cost advantages in materials and labor	Moderate economies of scale through collective purchasing	None; each project unique
Customization	Limited; standardized designs	Balanced; individual units within collective framework	Full customization possible
Buyer Involvement	Minimal; turnkey solution	Moderate to high; shared decision-making process	Extensive; manages entire process
Cost Structure	Includes 20-30% developer margin	No developer margin; shared overhead costs	No developer margin; direct costs only
Time Horizon	Short-term focus; limited post-sale involvement	Medium to long-term; emphasis on community building	Long-term perspective on maintenance and operations
Target Market	Investment-oriented buyers, first-time homeowners seeking convenience	Urban middle-class families seeking affordability and community	Families seeking customization and cost control

The affordability crisis and structural market gaps identified earlier create a compelling need to examine collective self-development in depth. With housing prices outpacing incomes by significant margins and current market options failing to serve middle-income families adequately, alternative approaches that can deliver quality housing at lower costs become essential.

Therefore, the aim of this thesis is to investigate the potential of Collective Self-Development (CSD) as a viable alternative housing model in the Polish urban context,

specifically addressing the needs of families. It seeks to identify key implementation challenges and propose a procedural and design framework, demonstrated through a case study in Poznań, to bridge the gap between developer-built and individual self-build housing.

State of the art

Collective self-development represents a significant innovation in housing delivery systems that has emerged across various global contexts (Palmer, 2020; Barenstein & Pfister, 2019).

German building groups model

Germany's building groups model stands as a particularly instructive case study that has evolved from experimental beginnings to achieve substantial market presence. Building groups are groups of people that participate in the planning, design, and sometimes construction of multi-unit housing projects while maintaining individual ownership of their units. The model adapts Germany's earlier Genossenschaften (cooperative) tradition for contemporary contexts. Beginning as isolated projects among friend networks in the 1970s, building groups gained momentum in the mid-1990s through systematic implementation in Tübingen and Freiburg's urban redevelopment areas. This evolution from marginal experiment to established practice has resulted in the model now accounting for approximately 15-17% of new housing production in Germany, demonstrating its viability at meaningful scale (Tummers, 2015; Krings-Heckemaier et al., 2009).

The building groups approach addresses three fundamental housing policy challenges. First, it achieves affordability improvements through the elimination of developer profit margins and the leveraging of collective negotiation power for procurement. Second, the model fosters social cohesion by establishing neighborhood bonds during the early planning phase. These connections frequently evolve into enduring support networks that enhance residential satisfaction. Third, it enables housing quality by facilitating direct collaboration between residents and architects, thereby prioritizing sustainable materials and ecological considerations that are frequently subordinated in profit-oriented development (Krings-Heckemaier et al., 2009).

Building groups initiatives are often supported by German municipalities, which have developed institutional frameworks to facilitate the development process. Cities such as Freiburg, Berlin, Tübingen, and Hamburg have implemented comprehensive programs that combine direct promotion, public-private partnerships, and targeted incentives (Hamiduddin & Gallent, 2016). These typically encompass land allocation, several-month reservation periods with performance-based extensions; infrastructure support through meeting spaces and dedicated municipal contact persons; and public engagement through coordinated information campaigns (Droste, 2015).

The efficacy of the building groups model derives substantially from professional facilitation and procedural clarity. With expert architectural and supervisory support, projects typically progress from initial meeting to construction commencement in 6-9 months, contrasting sharply with the 5–7-year timeline often experienced without professional guidance (Krings-Heckemaier et al., 2009). This efficiency stems from a clearly articulated four-phase development process:

1. The Interest Community phase concentrates on group formation and site selection

2. The Planning Community phase establishes a civil law partnership and develops detailed architectural plans

3. The Building Community phase manages construction execution and project accounting

4. The Owner Community phase transitions the group into a legal community under the german law

Empirical research demonstrates that building groups projects consistently deliver several advantages over conventional development approaches. The model facilitates stronger neighborly relationships while providing customized architectural solutions that reflect specific household requirements (Droste, 2015). Significantly, building

groups often succeed in challenging locations rejected by traditional developers, creating high-quality developments in previously undervalued areas. Their projects demonstrate stronger orientation toward demand satisfaction and quality optimization than developer-led initiatives, thereby contributing to sustainable housing markets through long-term resident commitment and community-based initiatives (Krings-Heckemaier et al., 2009).

Nevertheless, the german model presents notable challenges. Practical difficulties include construction delays, financial uncertainties, and cost escalations resulting from member turnover. The mutual dependence between group members can lead to demanding mediations and extended decision-making timelines (Seeman et al., 2019). Moreover, while collective self-development effectively serves middle-class households, its capacity to accommodate economically disadvantaged groups remains limited due to the required financial commitments and substantial personal involvement in the development process (Droste, 2015).

To showcase how these advantages and challenges manifest in practice, we can examine two contrasting building groups projects that illustrate different approaches to implementation.

Building Community "Südlicht" in Berlin-Pankow

The Südlicht project in Berlin-Pankow exemplifies the building groups model's adaptation to established urban contexts. Initiated in 2006, the project serves as a pioneering development in the Eschengraben area, subsequently inspiring several neighboring Building groups initiatives. Planned for nine residential units on a 940m² plot, the development achieves an optimal balance between the efficiencies of collective development and the manageability of group decision-making processes.

The project follows the standard four-phase process, with professional facilitation from AREA agency, which moderated monthly group meetings and supported the selection of project partners including architects and building services engineers. Within a year, the project had secured a land option, established its planning company (Planungs-GbR), and reserved approximately half of its units (Baugemeinschaft Eschengarten, 2025). This efficient timeline demonstrates how structured professional support can accelerate the development process.

Südlicht's legal structure illustrates the model's approach to risk management. The evolution from Planning GbR through Building GbR to final homeowners' association provides a framework that balances collective action during development with individual ownership rights after completion. As resident Andrea Reichert-Clauß explained: "We were skeptical at first... after all, building yourself is complex. You feel at the mercy of so many coincidences." The professional support structure mitigated these concerns through procedural clarity and expert guidance.

The project's demographic composition reflects the model's appeal to urban middle-class families. Most future residents originated from the central Prenzlauer Berg district, seeking to maintain their urban lifestyle while gaining access to more family-friendly housing. The location offered an ideal balance: a quiet residential street providing both tranquility and bicycle-distance access to their former neighborhood.

Community development represents a distinctive success of the project. The communal garden, accessible to all residents, functions as a focal point for interaction. As Reichert-Clauß observes, "The social and communicative aspects of a building group were especially important to us... Usually, a house community develops only after years of living together. For us, it happened even before moving in." This social cohesion, established during the planning process, represents a significant advantage over conventional housing delivery systems.

The project achieved competitive pricing (2100 euro/m2) by eliminating developer margins, which enabled high-quality materials and customization while maintaining affordability—exemplifying the building groups model's balanced approach to quality and cost considerations.

Building Group K20 in Berlin-Friedrichshain

The K20 project in Berlin-Friedrichshain presents an innovative variation on the traditional Building groups approach. Unlike Südlicht's more conventional group-led approach, K20 originated when two private individuals purchased a 693m² plot at auction, subsequently partnered with architects to develop the concept, and then recruited additional group members (Krings-Heckemaier et al., 2009). This "initiator-led" approach represents a hybrid between traditional developer-led projects and pure collective self-development that may hold relevance for markets new to the building groups concept.

The project's timeline illustrates how professional support, and clear leadership can accelerate the development process. Following the land purchase in September 2005, the initiators collaborated with architects to develop the design concept, established the planning company in July 2006, and completed group formation by January 2007. Through this process, the project expanded to include 15 participants combining individuals seeking affordable housing with others interested in experimental building approaches.

K20's mixed-use program of nine residential and two commercial units reflects a sophisticated urban approach to collective self-development. The six-story building occupies a development gap in Kreutzigerstraße, demonstrating how building groups can activate underutilized urban sites. The architectural design balances individual customization with collective identity. Each floor contains approximately 180m²

divided flexibly into two apartments, with all units organized around a services shaft that facilitates customized configurations. The building achieves a generous 3.14m clear room height by foregoing an additional floor, creating exceptional living spaces that would be unlikely in conventional development.

Communal areas include a roof terrace with solar panels, sauna, multifunctional room, and shared garden, fostering community interaction while respecting private spatial domains. At 16% lower cost for square meter than the district's average, K20 achieved remarkable value despite its high energy and finishing standards. This success derives partly from the residents' direct involvement in construction management, with each member overseeing specific building trades (roedig.schop architekten, 2025).

The project maintained the typical three-stage legal evolution through Planning GbR, Building GbR, and finally homeowners' association, demonstrating how the standard Building groups framework can accommodate innovative initiation and management approaches while delivering substantial quality-of-life enhancements and cost advantages.

Adapting the Building groups Model to the Polish Context

The German Building groups model offers a promising approach for addressing Poland's housing challenges, but successful adaptation requires careful consideration of local conditions. The building groups model's emphasis on individual ownership within a collective framework aligns well with Polish cultural preferences, where homeownership is strongly prioritized as a marker of life success while financial savings represent the primary motivation for considering alternative housing models.

Germany's case shows that municipal support is very beneficial but not always required for implementation. However, given the track record of developing high quality, affordable housing, fostering long-term neighborhood community and developing in otherwise difficult locations, collective self-development might start to be seen favorably by Polish municipalities. Their assistance might begin with minimal models featuring single contact points within existing departments, gradually expanding as the concept gains traction. Land allocation policies would need particular attention, as access to appropriately zoned urban land represents a significant barrier in Poland's developer-dominated market. Performance-based reservation systems like Tübingen's six-month periods with extension options could provide a balanced approach that both supports building groups and protects municipal interests.

Professional facilitation would be essential but would need to be developed largely from scratch, as Poland lacks the established network of building group supervisors found in Germany. This represents both a challenge and an opportunity for creating a new professional field aligned with local needs.

The initiator-led approach demonstrated by K20 may prove especially relevant for Poland, as collective self-development concept remains unfamiliar to most potential participants. Architects, forward-thinking municipalities, or entrepreneurial individuals could serve as catalysts, acquiring land or options and then recruiting participants around a developed concept. This approach reduces initial uncertainty for participants while maintaining the core benefits of collective self-development. Medium-sized projects of 9-15 units would represent an ideal starting point, balancing the efficiencies of collective action with manageable group dynamics for this novel approach.

Rebranding represents a final critical consideration for Polish implementation. As cooperatism researchers noted, housing cooperatives in Poland carry the stigma of

the socialist era, despite their core principle of collective action remaining valid (Corduroy de Lille, 2015; Skorupska, 2024). The building groups model demonstrates how traditional cooperative housing concepts can be successfully reframed to appeal to a younger demographic. This rebranding approach, combined with targeted pilot projects demonstrating tangible benefits, could help overcome initial skepticism and establish collective self-development as a viable alternative in Poland's housing market.

Experimental initiatives in Poland

While collective self-development has historical roots dating to the nineteenth century in Poland, contemporary implementations emerged only in the 2010s through pioneering projects in Gdynia and Wrocław. The emergence of these projects coincides with growing recognition of what Skorupska (2024) identifies as the "rent gap"—a segment of the Polish population with incomes too high for state housing assistance yet insufficient for conventional market-rate housing acquisition.

Additional boost to the topic of collective self-development was given by the Act on Housing Cooperatives from 2022, which introduced a legal form for collective self-development. This legislation provides a dedicated legal framework specifically designed to facilitate contemporary collective self-development projects, aiming to simplify their establishment and operation (Act on Housing Cooperatives, 2022). It distinguishes these new entities from the traditional, often large-scale housing cooperatives (*spółdzielnie mieszkaniowe*) associated with the socialist era, addressing some of the perceived bureaucracy and inflexibility of the older model.

Key provisions relevant to fostering CSD include establishing a minimum requirement of only three natural persons to form a cooperative, significantly lowering the barrier to entry. Crucially, the Act introduces specific mechanisms

enabling cooperation with public entities, particularly municipalities. It outlines possibilities for agreements involving the acquisition of public land or property under preferential terms, potentially allowing the cooperative to offset purchase costs by undertaking investments beneficial to the municipality, such as constructing or renovating units for local social housing needs (Act on Housing Cooperatives, 2022). This legal instrument represents a significant step towards formalizing and potentially encouraging collective self-development as a distinct housing delivery model in Poland.

Pioneering initiatives, however, developed before the introduction of the Act. They represent distinct approaches to collaborative housing that reflect Poland's unique socioeconomic context and cultural preferences, with the contemporary collective self-development landscape characterized by two contrasting implementation models that demonstrate the concept's adaptability to different institutional contexts.

The "Kooperatywa Pomorze" in Gdynia exemplifies a bottom-up, citizen-led approach developed entirely through grassroots initiative without governmental support. In contrast, "Kooperatywa Mieszkaniowa Nowe Żerniki" in Wrocław represents a municipality-supported model that demonstrates how institutional frameworks can facilitate collective self-development.

Kooperatywa Mieszkaniowa Nowe Żerniki

The "Kooperatywa Mieszkaniowa Nowe Żerniki" represents Poland's most direct adaptation of the German Building groups model, established within a broader urban development framework. Initiated in 2011 as part of a comprehensive greenfield project, this initiative drew inspiration from both contemporary German collaborative housing practices and Wrocław's own architectural heritage—specifically the 1929 WuWa exhibition that showcased innovative housing solutions during the modernist period. This historical connection provided cultural legitimacy to what might otherwise have been perceived as a foreign housing concept.

The Wrocław municipality played a decisive role in establishing this initiative through a multifaceted support framework. City officials visited Berlin specifically to examine Building groups implementations, subsequently developing proposal templates for joint project implementation agreements based on German experiences (Habitat for Humanity Poland, 2025). The municipality's commitment extended beyond knowledge transfer to include concrete policy interventions that addressed key implementation barriers. Most significantly, the city designated three plots in Nowe Żerniki district specifically for housing cooperatives, offering them through perpetual usufruct arrangements that reduced land costs by approximately 80% compared to market sale prices (Lis et al., 2022). This intervention directly addressed what research has identified as the primary obstacle for collective self-development in Poland's developer-dominated urban land market.

The municipality enhanced project viability through carefully designed selection criteria that balanced financial considerations with qualitative factors. The auction process for cooperative plots excluded commercial entities from participation and evaluated proposals based not only on price but also on conceptual quality, including floor plans, visualizations, and the design of common spaces. This approach ensured that the projects would achieve architectural quality while remaining financially viable. Additionally, municipal officials participated directly in negotiations with financial institutions, helping to legitimize the cooperative housing model and secure financing for participants when commercial banks proved reluctant (Habitat for Humanity Poland, 2025).

The Nowe Żerniki initiative has achieved notable success in translating the collaborative housing concept into completed projects. The first cooperative building, formed by a group of ten friends who secured perpetual usufruct rights in early 2014, had already commenced construction by April 2015. Subsequent tenders resulted in additional cooperative buildings, creating what Lis et al. (2022) describe as "an engaged civil society on a micro-scale" within just a few years. The completed projects

feature common spaces including stroller storage, bicycle facilities, and community rooms, with additional service spaces such as dental offices, kindergartens, and cafés integrated into the development.

Particularly noteworthy is the evolution of the model. Follow-up research reveals that three buildings function close to the cohousing form, emphasizing ongoing community interaction and resource sharing, while one project transformed over time into a form of collective self-development more like the construction group model seen in Gdynia's Pomorze project (Rataj, 2023). This diversity demonstrates the flexibility of collaborative housing approaches to accommodate different participant priorities and community dynamics. As one resident explained: "We started with approximately seventy-square-meter apartments, and ended up on average at one hundred meters," illustrating how the participatory design process allowed living spaces to evolve in response to changing family needs (Lis et al., 2022).

Despite these successes, the initiative encountered significant challenges that reveal systemic barriers to collaborative housing implementation in Poland. The most substantial obstacles emerged in the financing domain, where commercial banks demonstrated both conceptual resistance and practical limitations in accommodating collective borrowing arrangements. As one resident recounted, bank officials struggled with basic administrative procedures: "Sir, there are twelve people, and I have only three boxes to enter the names." This institutional inflexibility reflects broader issues of limited regulatory frameworks for collaborative housing in Poland (Lis et al., 2022).

The Nowe Żerniki cooperative housing initiative represents a significant milestone in Poland's exploration of alternative housing delivery models. By combining municipal support with resident participation, the project has created housing that achieves both affordability improvements and enhanced quality of life. Participants report cost

reductions of 20-30% compared to conventional market options while gaining access to shared resources that would be unaffordable individually. The project demonstrates how institutional support can overcome implementation barriers while allowing for adaptation to local conditions and participant preferences.

Kooperatywa Pomorze

Kooperatywa Pomorze emerged as the first collective self-development initiative in the country since World War II. Founded in 2012 in the Chwarzno-Wiczlino district of Gdynia, this grassroots housing cooperative was initiated by Roman Paczkowski, who drew inspiration from Scandinavian housing models (Sobolak, 2023). The project emerged in response to pressing housing affordability challenges, particularly for young families facing limited access to conventional housing markets.

Unlike Nowe Żerniki in Wrocław, Kooperatywa Pomorze developed entirely through grassroots initiative without municipal or institutional support. The cooperative was formed by several families—both friends and strangers—who collectively managed the entire development process from land acquisition through design to construction. The cooperative's approach was characterized by a singular focus on cost reduction and individual ownership rather than community-building or shared facilities. This fundamental distinction positions it as a pure construction group within the collaborative housing typology (Rataj, 2023). As Paczkowski explains, "ownership is the basic idea and principle of a cooperative" (Sobolak, 2023). This pragmatic orientation stemmed from the founders' primary motivation: providing affordable housing for young families who could not access conventional market options.

Kooperatywa Pomorze's achievements extend beyond its initial implementation. The cooperative successfully completed four consecutive projects in Gdynia, providing housing for 36 families in total (Kutypa et al., 2018). The cost advantages proved

substantial and consistent across implementations. According to Paczkowski, two Kooperatywa Pomorze projects achieved documented savings of 37% (Sobolak, 2023). These savings derived from eliminating developer profit margins and other overhead costs inherent in commercial development.

Perhaps most significantly, the cooperative model expanded housing access to previously excluded demographics. Paczkowski notes that "almost half of the participants did not have the ability to buy an apartment from a developer or on the secondary market but had this ability when implementing their own cooperative" (Sobolak, 2023).

The success of Kooperatywa Pomorze catalyzed broader interest in the cooperative housing model throughout Poland. Information about the project spread via social media, attracting visitors from across the country seeking to replicate its approach. Moreover, Paczkowski, together with the Habitat for Humanity Foundation, leveraged the cooperative's success to advocate for legislative recognition, ultimately contributing to the passage of the Housing Cooperatives Act in 2022.

Despite its achievements, Kooperatywa Pomorze faced significant challenges that highlight the limitations of its approach. Financing represented the most formidable obstacle, with major Polish banks initially reluctant to support the cooperative model despite accepting its business plan. As Paczkowski recounts, "Banks feared that when multiple investors focused on a single goal, misunderstandings could easily arise, threatening the implementation of the investment" (Sobolak, 2023). The cooperative eventually secured financing through a smaller cooperative bank after nearly two months of negotiations, illustrating the structural barriers facing alternative housing models in Poland's financial system.

The cooperative also encountered indifference from municipal authorities, receiving no support from local government in terms of land allocation, regulatory assistance, or infrastructure coordination. This lack of institutional engagement contrasts sharply with the Wrocław municipality's proactive approach to supporting housing cooperatives through land allocation, legal templates, and financing negotiations.

The cooperative's singular focus on cost reduction and individual ownership also produced certain disadvantages. Critics note that the cooperative's utilitarian approach resulted in limited architectural ambition (Kutypa et al., 2018). The projects utilized ready-made designs that did not include common spaces except for gardens accessible to all residents. These choices prioritized cost efficiency over architectural quality, contextual sensitivity and community-building (Lis et al. 2022).

Kooperatywa Pomorze stands as a pioneering example of collective self-development, demonstrating both the potential and limitations of grassroots housing initiatives. The cooperative's achievement of substantial cost reductions, completion of multiple successful projects, and expansion of housing access to previously excluded demographics represents a significant contribution to addressing housing affordability challenges. However, the cooperative's experience also highlights the importance of institutional support, urban integration, and balanced priorities beyond cost reduction alone. Importantly, the challenges encountered by Kooperatywa Pomorze informed subsequent policy developments, including the 2022 Housing Cooperatives Act, which aims to provide a more supportive framework for future initiatives.

Summary of pioneering CSD in Poland

The pioneering collective self-development initiatives in Poland—Kooperatywa Pomorze and Nowe Żerniki—demonstrate the model's adaptability while revealing

contrasting implementation approaches. Despite their methodological differences, both projects delivered significant benefits that align with the theoretical advantages of collective self-development: cost reductions of 20-30% compared to conventional market options, enhanced design flexibility during planning, and the development of supportive social networks (Skorupska, 2024; Lis et al., 2022).

The implementation strategies, however, diverged substantially. Nowe Żerniki, benefiting from municipal support through land allocation and legal frameworks, emphasized community spaces and social integration within a comprehensive urban development framework. This institutional approach facilitated higher architectural quality and urban coherence but primarily served middle to upper-income demographics. In contrast, Kooperatywa Pomorze developed through purely grassroots initiative without institutional support, prioritizing cost minimization and individual ownership at the expense of common areas and urban integration. This utilitarian approach successfully expanded housing access to previously excluded demographics but sacrificed opportunities for community-building features that characterize more comprehensive collaborative housing models (Lis et al., 2022).

These contrasting approaches highlight flexibility as a fundamental advantage of collective self-development in addressing Poland's housing challenges. The ideal implementation would combine Pomorze's grassroots affordability with Nowe Żerniki's institutional framework and urban and social qualities. These pioneering projects offer complementary insights for developing a "third way" between developer-built and individual self-build housing that responds to the country's specific cultural and economic context.

Gaps Hindering Adoption

While these pioneering Polish projects demonstrate CSD's potential, a closer comparison with the more established German model reveals several critical gaps that hinder broader adoption in Poland. German Building groups projects have achieved maturity through decades of implementation, creating established frameworks and professional support systems. In contrast, Polish initiatives remain in an experimental phase, adapting various aspects of collaborative housing without fully developed methodologies or support structures. Identifying these gaps is essential for developing a more effective approach to collective self-development in Poland.

Procedural Framework Deficiencies

The most significant gap between German and Polish implementations lies in procedural clarity and professional facilitation. The building groups model's success derives substantially from its clearly defined four-phase progression: Interest Community, Planning Community, Building Community, and Owner Community. This staged approach allows participants to join at different phases according to their risk tolerance and desired level of involvement, while providing clear milestones and decision points throughout the development process.

Polish initiatives, by contrast, typically attempt to establish what might be termed an "Everything Community" from the outset—requiring participants to simultaneously address group formation, site selection, planning, and construction management without clear procedural boundaries. This approach significantly increases complexity and risk perception, particularly given that some participants naturally prefer higher involvement while others seek more finished solutions.

A more structured approach could involve a core group of highly committed individuals (as few as three, the minimum required for a under the Act on Housing Cooperatives, 2022) handling the initial phases before onboarding additional

members for the building community stage. This phased approach would reduce the risk of member turnover while simplifying early decision-making processes. The absence of such procedural clarity represents a significant missed opportunity for Polish initiatives to reduce complexity and increase appeal to potential participants.

Professional services specifically tailored to cooperative housing represent another critical gap in Poland's collective self-development landscape. While German projects benefit from specialized agencies that provide expert facilitation, Polish initiatives rely primarily on independent actors without access to established professional support networks. This absence increases the burden on participants while potentially reducing efficiency and increasing risk. As demonstrated by both Südlicht and K20 projects, professional guidance significantly reduces development timelines. The absence of these specialized services in Poland represents a substantial obstacle to wider adoption of collective self-development models.

Strategic Market Positioning

Current approaches to collective self-development in Poland have yet to develop sophisticated strategies for land acquisition and market positioning. Kooperatywa Pomorze succeeded partly because its chosen plot was unattractive for a developer due to size and configuration, while Nowe Żerniki relied on municipal land allocation specifically reserved for cooperatives (Sobolak, 2023; Lis et al., 2022). In the absence of such formal allocation policies and rather than directly competing with developers for prime locations, successful collective self-development requires identifying strategic niches within the land market. The most promising opportunities lie in plots that are too small or awkwardly shaped to attract developer interest but too large for individual self-builders. Moreover, future initiatives would benefit from targeting specific site types such as urban infill locations (like Berlin's K20 project), brownfield redevelopments, or urban renewal areas—creating value in locations that commercial developers might initially overlook.

Demographic targeting represents another underdeveloped aspect of market positioning for Polish initiatives. Collective self-development appears most effective when targeted specifically at demographics underserved by conventional development approaches. Young urban families seeking larger, centrally located apartments represent an especially promising demographic, as they often face significant challenges in finding suitable housing within developer-dominated markets that prioritize smaller, investment-oriented units. Despite this potential alignment, current Polish initiatives have not fully articulated or leveraged this strategic positioning in their development and marketing approaches.

Public perception challenges continue to hinder wider adoption of collective self-development in Poland. Despite potential advantages, cooperative housing continues to face association with socialist-era housing cooperatives (spółdzielnie mieszkaniowe), which many younger Poles perceive negatively (Corduroy de Lille, 2015; Skorupska, 2024). Effective branding represents a critical gap in current approaches. A successful rebranding should appeal to proud, entrepreneurial individuals who believe they can achieve better results than conventional developers. This reframing, like how the building groups concept reinvigorated cooperative principles in Germany, could help overcome initial skepticism while attracting participants who might otherwise dismiss collaborative housing options.

Tensions Between Economic and Social considerations

Existing Polish initiatives reveal an unresolved tension between economic optimization and community development. Kooperatywa Pomorze achieved impressive cost reductions but sacrificed common areas and architectural ambition (Kutypa et al., 2018). While this approach successfully increased housing access, it missed opportunities to leverage collective purchasing power for shared amenities that could enhance long-term resident satisfaction.

The ideal approach would balance cost considerations with strategic investments in common spaces and architectural quality. Shared resources become affordable when costs are distributed. However, projects must carefully manage this balance to avoid "scope creep" that could undermine the fundamental affordability advantage—if the cooperative becomes more expensive than a developer, it ceases to fulfill its primary purpose. The absence of clear frameworks for identifying and implementing high-value common elements while maintaining overall affordability represents a significant gap in current Polish approaches.

Current implementations also lack sufficient flexibility to accommodate the evolving preferences of community members. Since how a cooperative will evolve cannot be fully predicted prior to development, projects should incorporate adaptive frameworks that permit independent living for privacy-oriented residents while accommodating greater sharing for those who prefer more communal arrangements. Both German and Polish examples demonstrate significant evolution during the development process, with residents in Nowe Żerniki having radically transformed their spatial requirements during planning (Lis et al., 2022). This adaptability represents an essential feature for accommodating changing participant needs and preferences, yet few projects explicitly design for this flexibility from the outset.

Institutional Challenges

While municipal support significantly facilitates collective self-development, current approaches have not developed effective strategies for securing institutional backing. The Nowe Żerniki experience demonstrates the substantial advantages of municipal involvement, including land allocation, legal templates, and assistance with financing negotiations (Habitat for Humanity Poland, 2025). However, as Kooperatywa Pomorze's experience shows, cooperatives cannot rely on municipal support,

particularly in the early stages when the benefits of collective self-development remain poorly understood by stakeholders (Sobolak, 2023).

Future initiatives would benefit from strategically addressing municipal priorities to increase support likelihood, potentially by incorporating elements that provide direct community benefits beyond housing. Cooperatives could provide municipalities with assets that serve broader community needs, and this would in turn unlock the benefits of institutional support and specific provisions in the 2022 Act on Housing Cooperatives, that were unavailable to earlier initiatives.

Research objectives

The analysis of existing collective self-development models has revealed four critical domains where current implementations fall short: procedural frameworks, strategic market positioning, balancing economic and social benefits, and institutional engagement. These gaps represent practical obstacles that hinder the wider adoption of an otherwise promising housing delivery approach.

Rather than attempting to address all possible improvements to collective self-development, this project focuses on elements that would most significantly enhance viability and appeal in the Polish context. The emphasis on procedural clarity addresses the "Everything Community" problem that has complicated early Polish initiatives, while the focus on strategic market positioning acknowledges the reality of Poland's developer-dominated land market. Similarly, the objectives related to balancing economic and social benefits respond directly to the tension observed between Kooperatywa Pomorze's cost-focused approach and Nowe Żerniki's community orientation. These objectives collectively aim to address the fundamental challenge identified in the analysis: how to transform collective self-development from an innovation to a genuinely desirable housing alternative.

Procedural Frameworks

To address the lack of clear procedural frameworks in current Polish initiatives, this project will implement a structured development process modeled after four-stage building groups. Project is conceptualized as following the K20 approach, where a small, focused group acquired a suitable site and developed an architectural proposal (completing the Interest Community and Planning Community phases, so it can be presented as ready for Building Community formation), thereby reducing complexity for potential participants.

Since in this approach the Building Community members are not involved earlier but still expect a level of customization characteristic of collective self-development, the project will ensure flexibility in the design. The project will develop at a total scale of 9-15 residential units—large enough to achieve meaningful economies of scale while remaining manageable for group decision-making processes. This size aligns with successful German implementations while avoiding the excessive complexity that can arise in larger collaborative projects. The total size of the development will be fixed to sufficiently exploit the land but the number and mix of units will be subject to change.

Market Positioning

In response to the challenges of market positioning and land acquisition, the project will target a specific demographic currently underserved by conventional development: urban families and individuals with high agency which seek larger, customized apartments in central locations. This demographic choice focuses on participants with both the motivation and capacity to engage in a collaborative development process.

The project will identify and develop a site that is zoned for multi-family residential but possessing characteristics that make it unattractive to conventional developers. By focusing on brownfield, urban infill, or urban renewal locations, the project will create value in areas overlooked by conventional development.

Economic and Social Objectives

To resolve the tension between economic optimization and community development evident in existing projects, this project will incorporate thoughtfully designed communal amenities that enhance long-term resident satisfaction while maintaining overall affordability. By identifying high-value common elements that become economically viable through cost-sharing, the project will demonstrate how collective development can achieve quality-of-life enhancements that would be unaffordable individually.

The project will demonstrate measurable cost savings compared to equivalent developer-built housing options, quantifying the economic advantage. This analysis will include a comprehensive cost breakdown that identifies specific sources of savings and strategic investments, supporting both financing efforts and participant decision-making. By clearly articulating the economic case while highlighting quality-of-life enhancements, the project will address the common misconception that collaborative housing necessarily involves significant compromises.

Institutional and Perception Objectives

To overcome institutional barriers to cooperative housing, the project will emphasize community benefit through developing additional spaces that provide direct value to the surrounding neighborhood. These spaces will create clear benefits for municipal stakeholders, potentially serving as a basis for negotiating favorable terms for land acquisition or regulatory approval. By demonstrating how collective self-development can contribute to broader urban revitalization, the project will position these initiatives as valuable partners in addressing municipal priorities.

The project will identify specific provisions of the 2022 Housing Cooperatives Act that can be leveraged to facilitate implementation, creating a model for how future initiatives can navigate this relatively new legal framework.

Methods

To translate these objectives into a tangible demonstration of collective self-development's potential, this research employs a case study design. The following section outlines the process undertaken to simulate the development of a multi-family residence in Poznań. This simulation begins with establishing the project's vision and core parameters (Envisioning), followed by a systematic search for a suitable location meeting strategic criteria (Site Selection). The chosen site's development potential is then assessed through a feasibility analysis grounded in local planning regulations. Based on this analysis, a flexible architectural proposal is developed, designed to meet the procedural, economic, and social objectives previously defined. Finally, a concept for a digital reservation system is outlined to address the objective of facilitating participant customization. This methodological approach allows for a concrete exploration of how the identified gaps in current Polish CSD practices can be addressed through a structured, strategically positioned, and value-oriented implementation model.

Envisioning

The initial phase involved defining the core vision for the case study project, directly responding to the research objectives. Poznań was selected as the general urban context due to data availability and its significant housing market pressures. The project was conceptualized as a medium-scale collective self-development, comprising 9-15 households, situated in a central, well-connected urban location. This scale aims to balance economies of scale in construction and shared amenities with manageable group dynamics, aligning with successful Building groups precedents.

The target demographic was defined as young, entrepreneurial families and individuals seeking larger, customized apartments within the city – a group often underserved by the standard developer offerings, which typically prioritize smaller, investment-focused units. This demographic is assumed to possess the agency and motivation required for engagement in a collaborative development process. Furthermore, the vision included the integration of cost-effective shared amenities and potentially commercial or community-oriented spaces on the ground floor. These elements address the objective of balancing economic efficiency with social value creation, offering benefits both to residents (shared resources, potential rental income offsetting operational costs) and the wider neighborhood (activating the streetscape, providing local services). This envisioning stage established the fundamental parameters guiding the subsequent site selection and design process.

Site selection

The site selection process aimed to identify a specific plot in Poznań that aligned with the project vision and strategic positioning objectives. Given the focus on supporting an urban lifestyle for families, the search focused on environments characterized by sufficient density, access to amenities, mixed-use development, and a built form defining clear public spaces. To operationalize this search, the maximum permissible Floor Area Ratio (FAR) specified in the planning zones of Poznań's provisional General Plan (Miejska Pracownia Urbanistyczna, 2025) served as a proxy for identifying areas with urban characteristics.

The General Plan divides the city into planning zones, defining permitted uses and basic urban form metrics for each zone, including Floor Area Ratio, Building Site Coverage, Building Height, and Green Area Coverage. Analysis of the General Plan's map (Figure 3) revealed that areas zoned for multi-family residential use with moderate-to-high maximum FAR values (greater than 4) predominantly correspond to the historic cadastral districts of Jeżyce, Łazarz, and Wilda. These districts surround

the city's medieval core. The central 'Poznań' cadastral district was excluded due to anticipated high land prices and intense developer competition, which would likely place prime sites beyond the reach of a cooperative initiative.

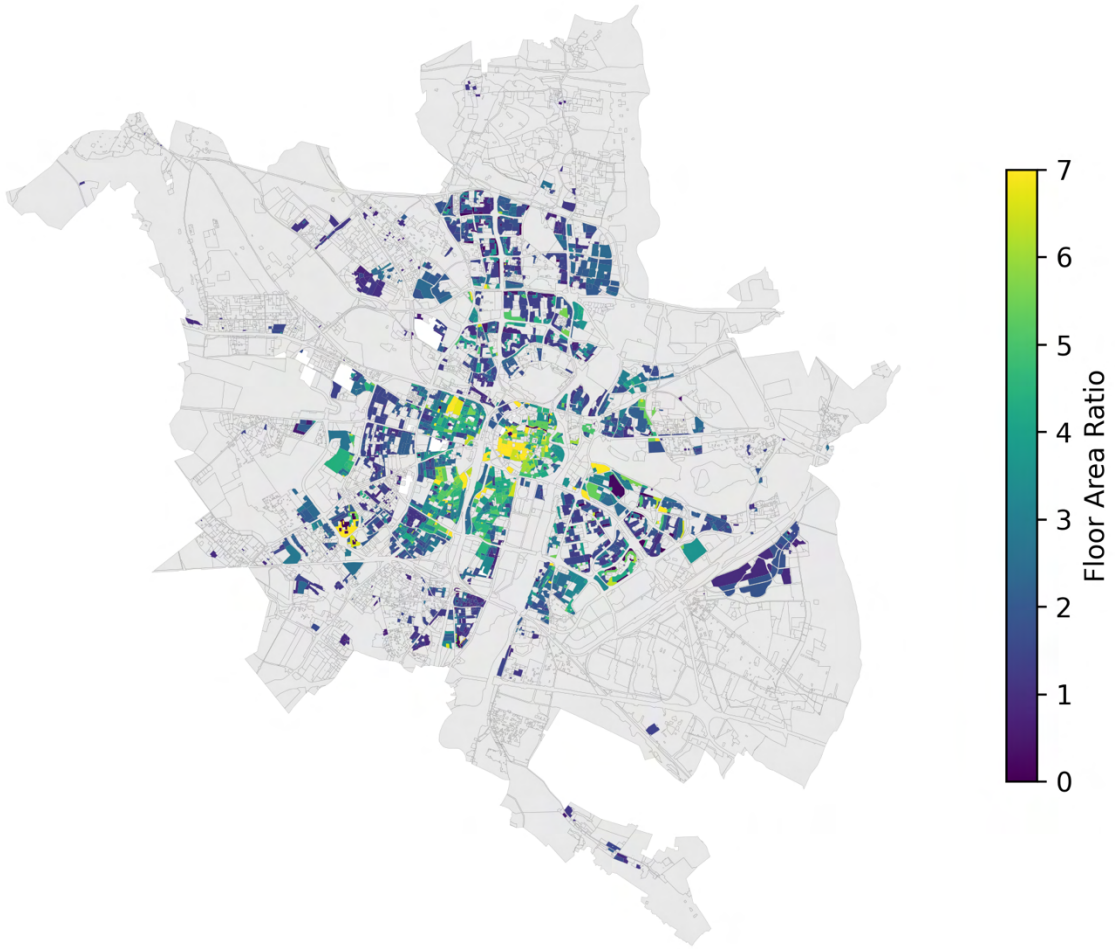

Figure 3 Planning zones allowing multi-family residential development and their allowed Floor Area Ratio.

The chosen districts—Jeżyce, Łazarz, and Wilda—largely comprise nineteenth-century urban fabric. These are dense areas with a variety of uses, amenities, and a well-defined network of public streets and squares, thereby matching the desired criteria for an environment supporting an urban lifestyle (Figure 4). Furthermore, as these districts are largely developed, potential vacant plots were expected to be urban infill or redevelopment sites, aligning with the strategic market positioning objective.

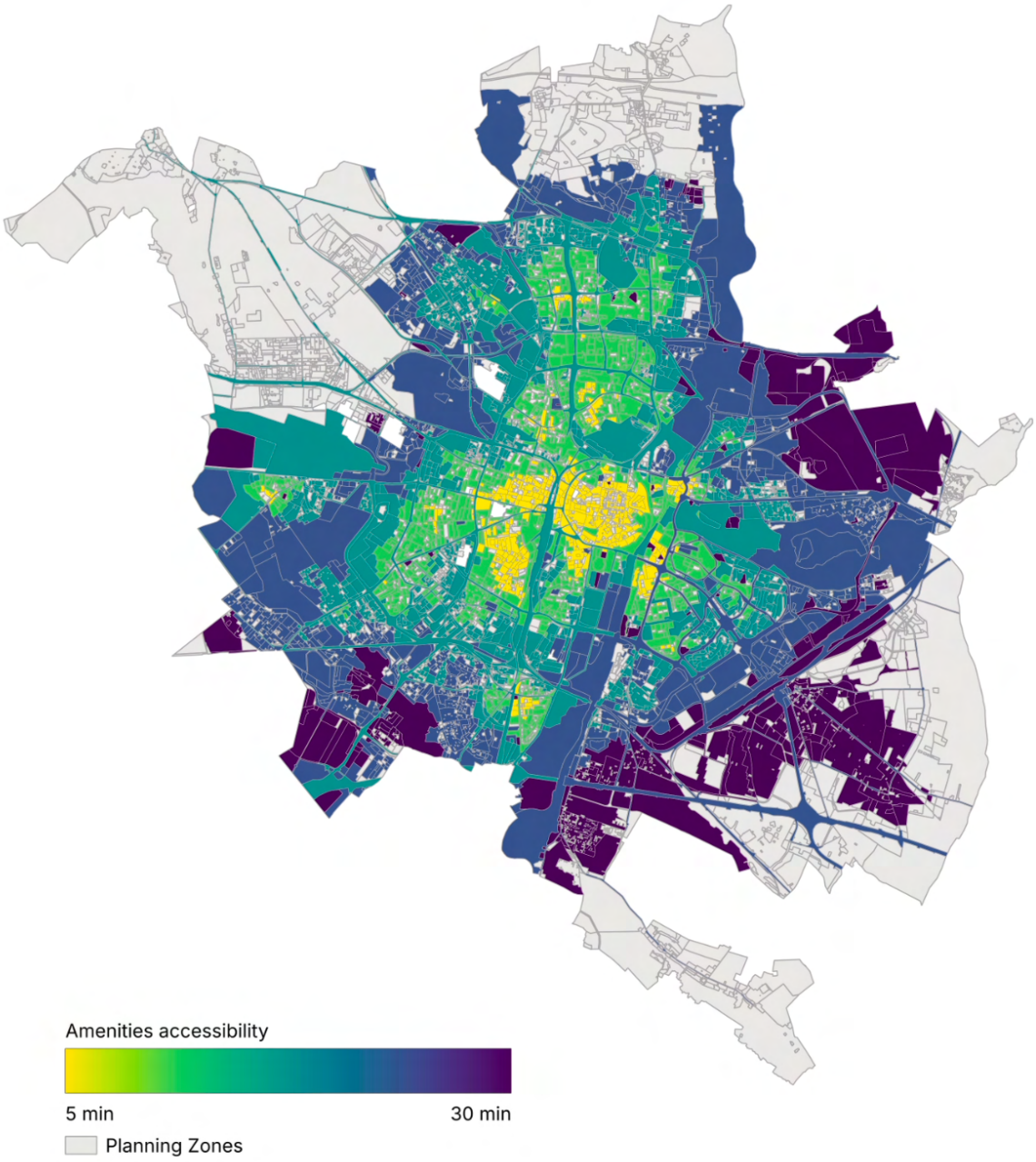

Figure 4 Amenities accessibility in Poznań. Data source: Nicoletti et al., 2022

To avoid direct competition with professional developers, the search prioritized plots zoned for medium-to-high density multi-family housing but possessing characteristics potentially making them less attractive for large-scale commercial development – such as smaller size, awkward configuration, or specific regulatory

complexities. This aligns with the objective of identifying strategic niches within the urban land market.

Data from the Polish cadaster (Ewidencja Gruntów i Budynków) was utilized to find potential sites. All plots within the cadastral districts Jeżyce, Łazarz, and Wilda were imported, and the data was preprocessed to exclude sites unsuitable for development. This filtering removed developed plots, plots smaller than 200m², non-buildable land categories (roads, parks, water bodies, etc.), and awkwardly shaped plots (defined as having a shape index lower than 0.3).

The remaining plots were spatially intersected with planning zones allowing for a maximum FAR greater than 4. This filtering produced a list of 43 potential locations, consisting of empty plots zoned for multi-family residential development within the target urban environments. These sites included urban infill opportunities as well as potential redevelopments, such as areas within the former chocolate factory in Jeżyce, the H. Cegielski factory site in Wilda, and land adjacent to railway lines in Łazarz.

Subsequently, larger plots and contiguous groups of plots suitable for large-scale development were excluded, as these would likely attract strong competition from established developers. To finalize the choice, the Poznań municipal investment map (Poznań, 2025)—an online inventory of properties the municipality intends for sale and future development—was consulted. Selecting a site from this list was prioritized to align with the objective of demonstrating clear neighborhood benefit and potentially facilitating cooperation with the municipality (Figure 4). “Gąsiorowskich” was the only site meeting all previous criteria and appearing on the municipal investment list and it was chosen for the case study.

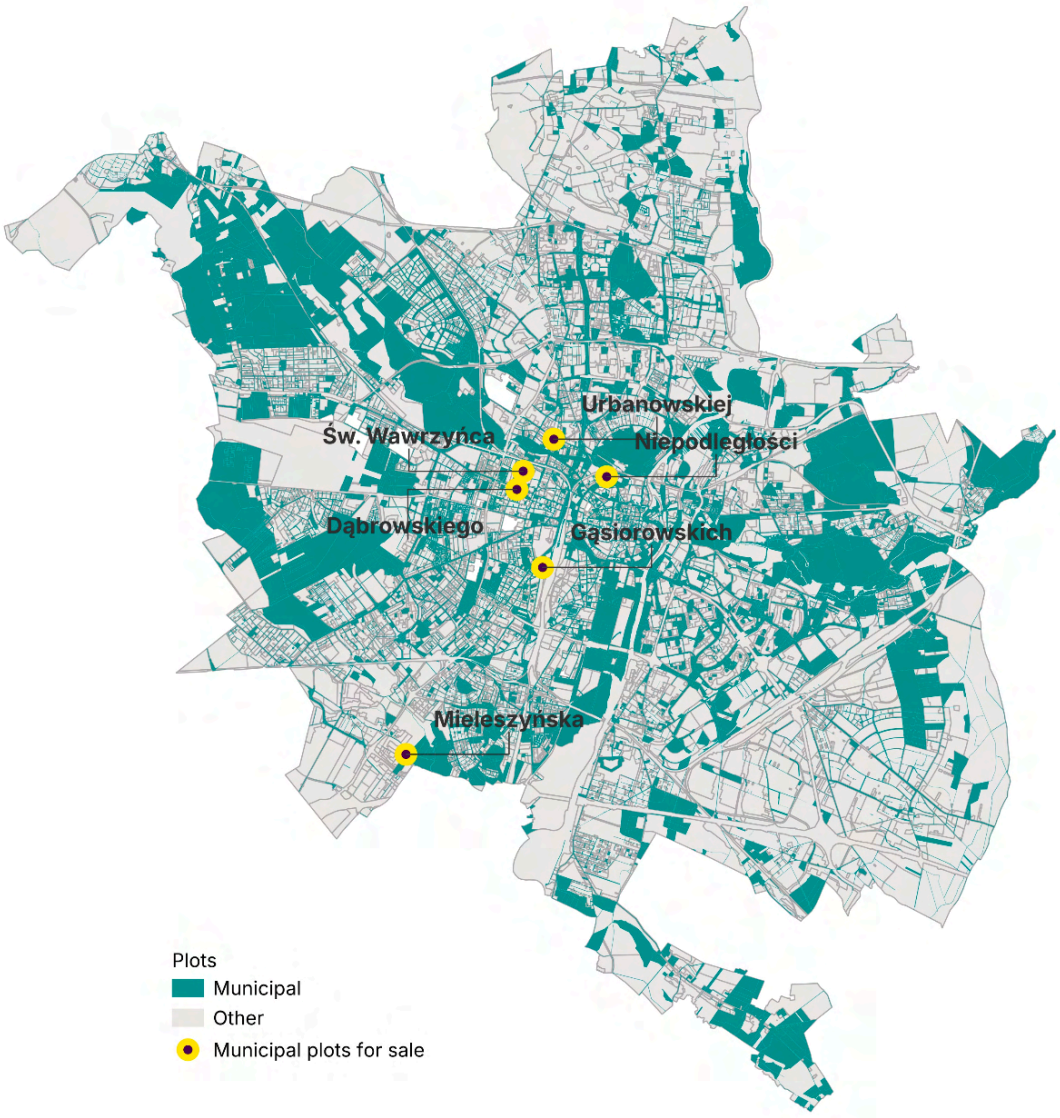

Figure 5 Municipal plots and their announced sales. Source: City of Poznań

The selected site is located at Gąsiorowskich 6 in the Łazarz cadastral district, situated within a former railway area near the city's main station. Łazarz is described as a vibrant neighborhood featuring retail establishments, parks, a well-known farmers market (Rynek Łazarski), and Poznań's renowned fairgrounds (Międzynarodowe

Targi Poznańskie). The location offers good connectivity to the city center via tram and to northern districts via the light-rail line (Poznański Szybki Tramwaj) (Figure 6).

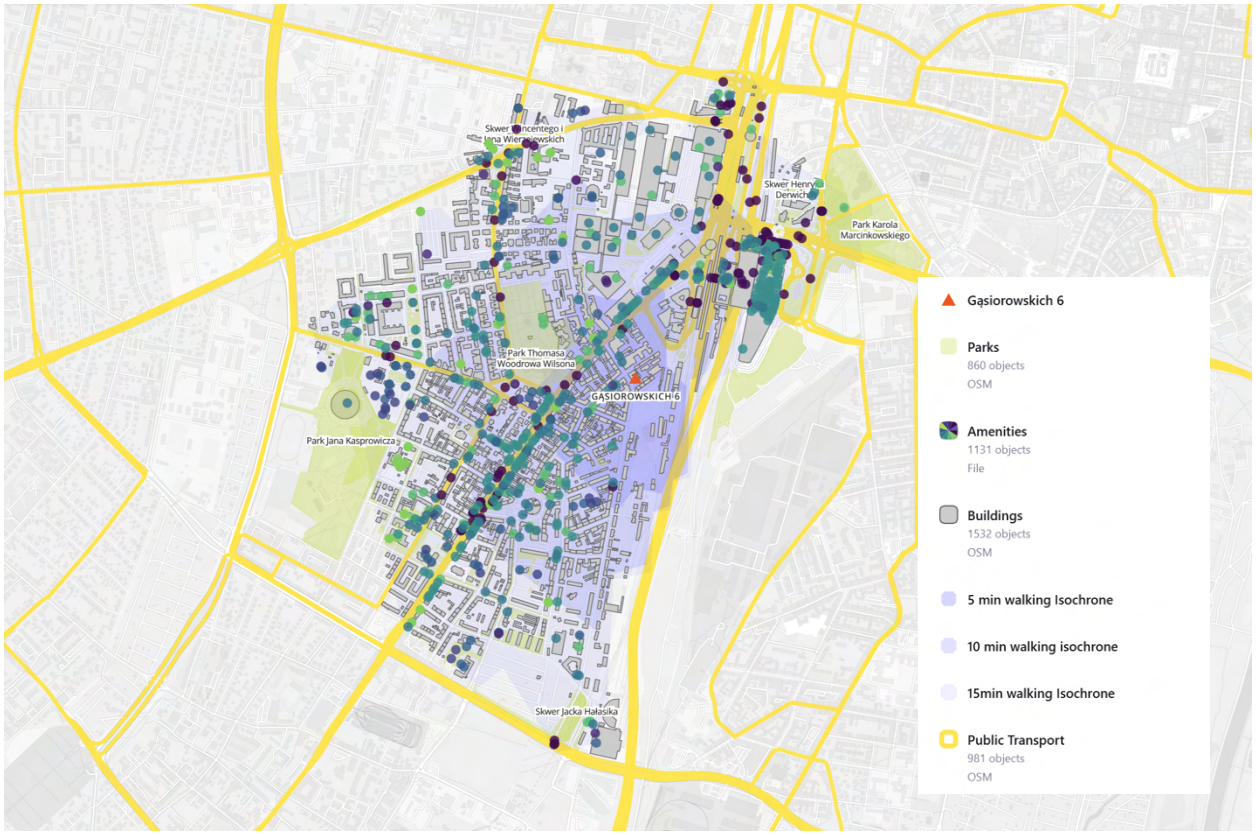

Figure 6 Analysis of the area within 15 min walk from the site. Data source: Open Street Map Contributors, basemap: Maptiler

The site comprises a 548 sqm rectangular urban infill plot, currently used as a parking lot. It directly fronts Gąsiorowskich street to the southwest, abuts a six-story residential building to the northwest, faces a backyard currently occupied by warehouses to the northeast, and adjoins a single-story store to the southeast.

Furthermore, the site occupies an internal corner position relative to the street grid, with a two-story residential building (Kolejowa 1) situated approximately 2 meters diagonally from the site's southern corner. This proximity presents a specific regulatory challenge, as Polish fire regulations mandate minimum separation distances between buildings or the use of fire separation walls. Consequently, the

development potential of Gąsiorowskich 6 is contingent upon addressing the fire protection requirements concerning the adjacent, lower building at Kolejowa 1 (Figure 7).

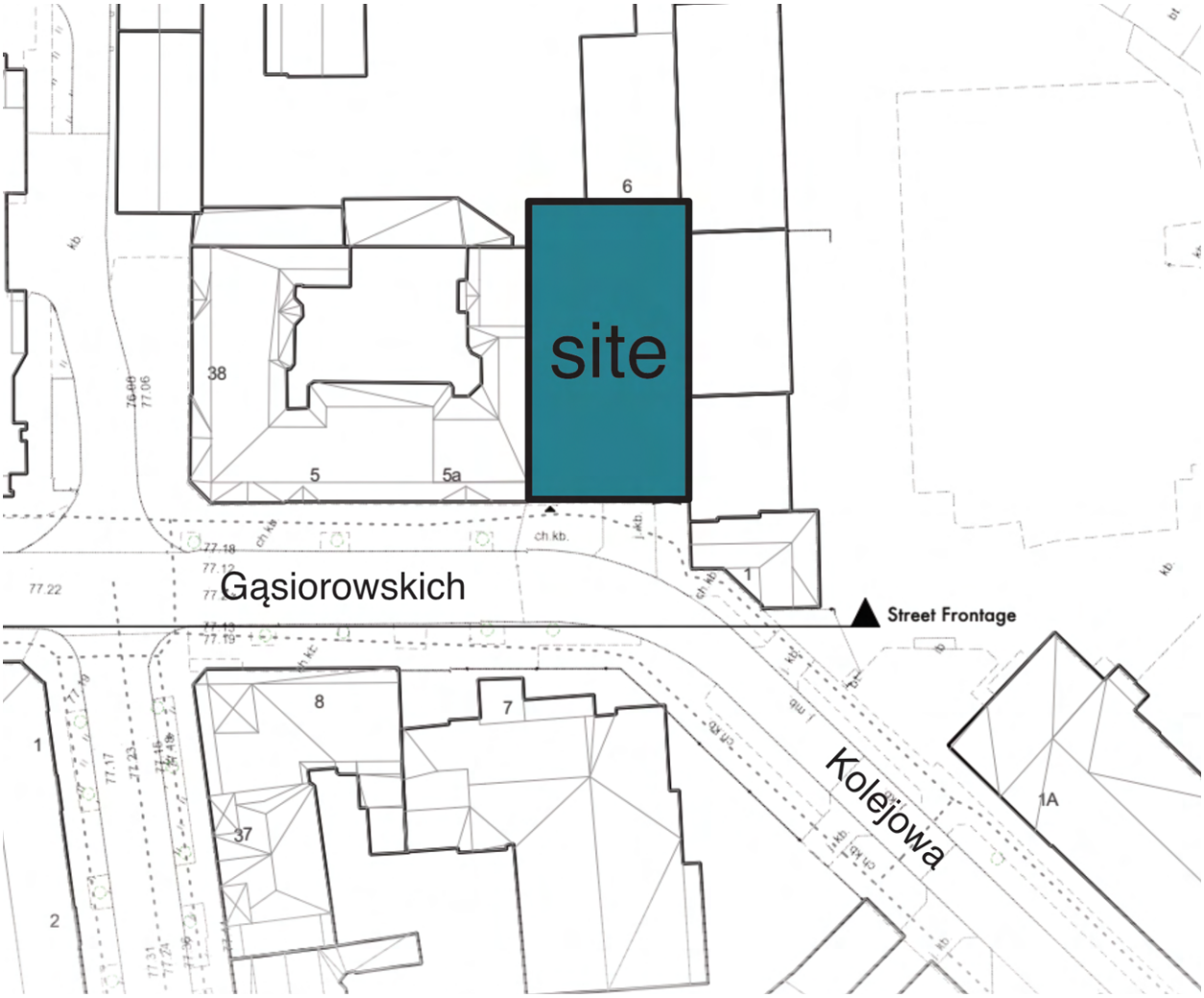

Figure 7 Situation plan

Addressing this complexity necessitates cooperation with the owner of the Kolejowa 1 building—in this instance, the municipality. While this requirement might dissuade standard real-estate developers seeking straightforward projects, it represents a strategic opportunity for a collective self-development scenario. Specifically, the renovation of the municipally owned Kolejowa 1 building, including necessary fire protection upgrades, could potentially be integrated into a development agreement, leveraging provisions within the Act on Housing Cooperatives.

The Act stipulates possible alternative forms of settlement when acquiring property from a municipality, including crediting the property purchase price with the value of renovated or newly constructed units intended for municipal ownership (Wojdył, 2024). Therefore, a proposal involving the concurrent acquisition and development of the Gąsiorowskich 6 plot alongside the renovation and fire-protection upgrade of Kolejowa 1 could be formulated. This approach enables the development of a challenging urban infill site, aligns with municipal priorities for upgrading housing stock, and offers the cooperative potential benefits such as reduced upfront land costs and valuable municipal backing, the importance of which was highlighted in the state-of-the-art review.

Moreover, an adjacent large plot (Kolejowa 1A-C) is currently undergoing redevelopment by a commercial developer. This concurrent project provides a valuable, real-world benchmark against which the proposed collective self-development model can be compared in the subsequent analysis.

Feasibility Analysis

As of March 2025, a local spatial development plan for the site has not yet been enacted, although one is in development by the municipality. Consequently, development eligibility relies on obtaining a Decision on Development Conditions, a process governed by national regulations and based on analysis of the surrounding area.

The site falls within an 'infill development zone' ('obszar uzupełnień zabudowy') according to the General Plan. This designation confirms its eligibility for development via the Decision on Development Conditions process. The General Plan

specifies multi-family residential use and establishes the following guiding urban form metrics for the relevant planning zone:

- Maximum Floor Area Ratio (FAR): 7.6

- Maximum Building Site Coverage (BSC): 0.95

- Maximum building height: 27m

- Minimum Green Area Coverage: 0.3

Furthermore, the site is located within the designated 'inner city zone' ('obszar zabudowy śródmiejskiej'). This classification allows for a reduction in the minimum biologically active area requirement to 0.2 and lowers certain technical building requirements.

Following the methodology outlined by the Ministry of Development and Technology specific development parameters are calculated based on the average values observed within a defined analysis area surrounding the site. These parameters include the setback line, building height, floor area ratio, and building site coverage.

Setback line and building height

The required setback line and maximum building height are determined by analyzing the existing development patterns of properties accessed from the same public road (Gąsiorowskich street). As the only direct neighbor accessed via Gąsiorowskich street has its primary building situated directly on the property line (zero setback), no setback line is mandated for the project site. The maximum permissible building height is consequently set by extending the height of this neighboring structure, resulting in a limit of 20 meters.

Floor Area Ratio and Building Site Coverage

The permissible FAR and BSC are derived from the calculated average of these metrics across existing residential buildings within the analysis area (defined by a radius equal to three times the site's frontage width), incorporating a 20% tolerance factor. This analysis yields a maximum allowable FAR of 3.9 (well within the General Plan's upper limit of 7.6) and an initial average BSC of 0.96, which is subsequently capped at 0.95 by the stricter General Plan requirement (Figure 8).

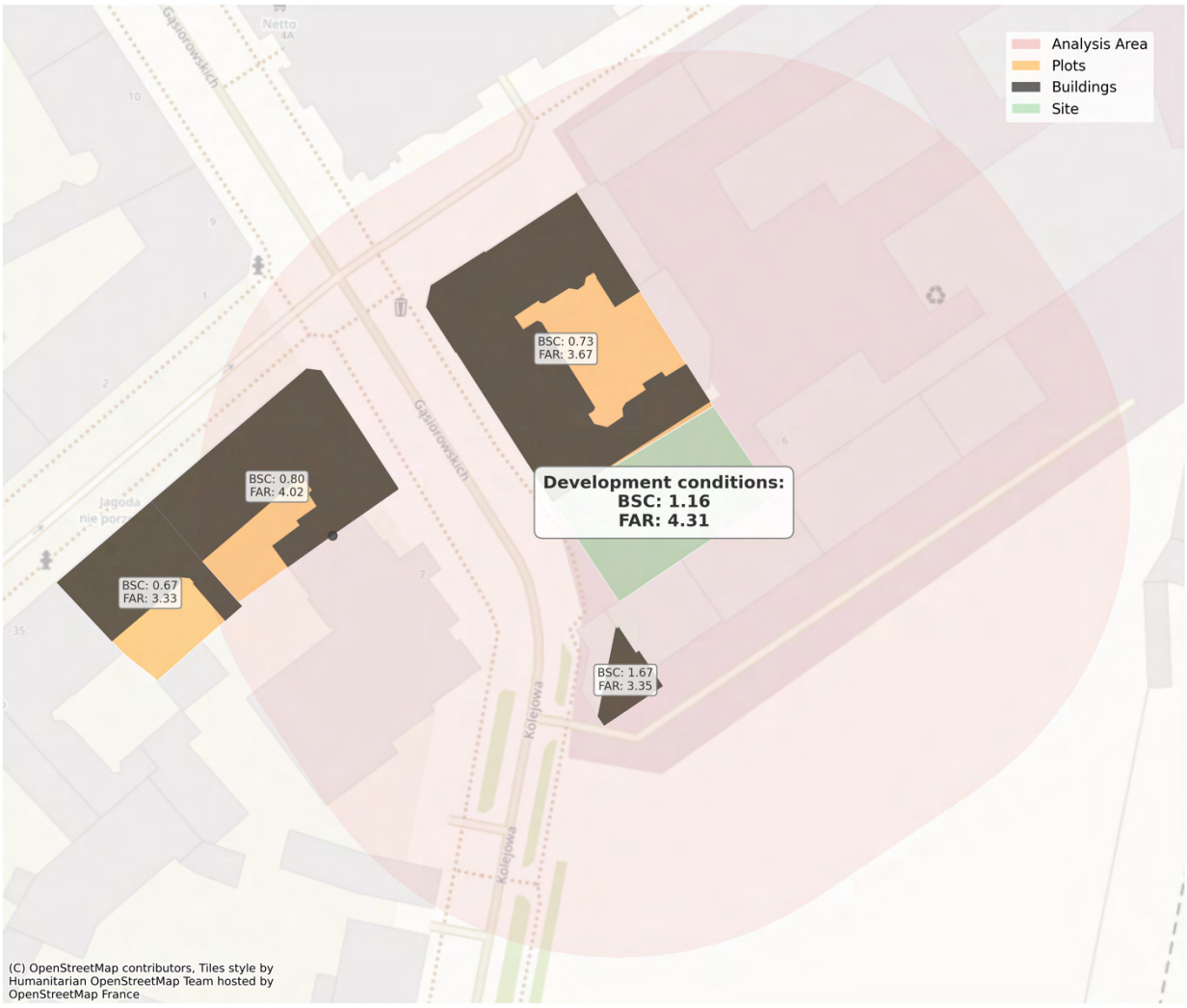

Figure 8 Development conditions analysis. Data: EGIB, BDOT10k, basemap: OpenStreetMap contributors, Humanitarian OpenStreetMap

Development Potential

Based on these established development conditions—primarily the maximum height of 20m (allowing approximately 5-6 stories), a maximum FAR of 3.9, and BSC of 0.95—the site is deemed feasible for the proposed project. The maximum allowable Gross Floor Area (GFA) can be estimated as 548 sqm × 3.9 FAR ≈ 2137 sqm. This capacity is sufficient to accommodate the envisioned 9-15 household cooperative development, confirming the site's suitability for the subsequent architectural design phase.

Architectural proposal

Following the confirmation of site feasibility, the next stage involved developing an architectural proposal. A key procedural objective, derived from the analysis of Polish CSD implementations and the K20 model, was to conceptualize the project as if initiated by a core group, presenting a tangible design to potential Building Community members while retaining inherent flexibility. This approach aims to reduce perceived uncertainty for participants joining later in the process. Consequently, the primary architectural challenge was to design a building framework capable of accommodating a diverse range of unit sizes and layouts (from 9 to 15 households) within the established site constraints and regulatory envelope, ensuring the core CSD benefit of customization remains achievable without necessitating fundamental changes to the pre-designed structure.

Structural system

To achieve the required flexibility, the building utilizes a cross-wall structural system. Load-bearing walls are oriented perpendicular to the main street facade, dividing the

typical floor plate into three primary structural bays. This configuration offers several advantages for the residential floors:

- It enables a relatively open floor plan within each bay, supporting various apartment mix arrangements – potentially ranging from five smaller units up to two large family apartments per floor.

- The absence of load-bearing walls parallel to the main facade allows daylight to penetrate deeper into the floor plate, enhancing spatial quality and maximizing layout flexibility for residents, both initially and for future adaptations or potential changes in use.

- As the street-facing facade is non-load bearing, its design can be modified to suit resident preferences or aesthetic considerations without impacting the primary structural system.

The roof structure comprises three distinct parts: a pitched section constructed from autoclaved aerated concrete panels supported by the cross walls; a non-accessible extensive green roof on a reinforced concrete slab; and an accessible intensive green roof terrace, also on a reinforced concrete slab, available to residents. The remainder of the load-bearing structure employs reinforced concrete, with vertical loads transferred through walls or columns and beams where required by the architectural design.

The foundation design incorporates a raft foundation with perimeter retaining walls. Given the building's location on the property line and its immediate proximity to an existing historic tenement house, specific measures are included to protect the neighboring structure. The shallow foundations of the adjacent building are proposed to be underpinned with mass concrete to create a consistent footing level for the new basement construction.

Massing

The building's massing is conceived as three distinct but related volumes, responding to the urban context and site geometry. The primary volume establishes a direct continuation of the street frontage line, rising to the height of the neighboring building's eaves. A second, larger and taller volume, maintaining similar proportions, is stepped back from the street line; this articulation breaks down the perceived bulk of the building, creates space for a top-level terrace, and subtly indicates the main entrance. The upper part of this volume incorporates a pitched roof, referencing the roofscapes of surrounding buildings. The third key element is a vertical assembly of three oriel windows, which provides vertical emphasis to the facade composition and further signals the entrance sequence when approached along the sidewalk.

Finishes

The material palette and detailing aim to respect the surrounding context of nineteenth-century tenement buildings while appealing to the target demographic through a combination of traditional references and contemporary elegance. The facade employs a muted cream color scheme, drawing from the local palette, but differentiates the massing elements through texture: cream long-format brick clads the primary street-facing volume, while cream stucco finishes the stepped-back volume. This monochromatic base is contrasted with the warmth of oak window frames and the projecting oriel windows. Modern touches are introduced through frameless glass railings on balconies and terraces, and grey titanium-zinc sheet cladding for the pitched roof.

The brick facade incorporates traditional detailing around window openings, including masonry arches and brick sills, along with a projecting brick course between

stories. These details add visual interest, help harmonize the facade's proportions and create subtle shadow lines that emphasize the building's volumes.

Spaces

The proposal outlines a five-story building plus an underground parking level. Both pedestrian and vehicular entrances are located on the Gąsiorowskich street side. The basement provides a single level of parking with 9 spaces and associated storage units.

On the ground floor, addressing the street, a retail unit is proposed. This element directly supports the institutional objective of providing community benefit, enhancing street life, and potentially generating rental income to offset the building's operating costs for the cooperative members.

Facing the courtyard on the ground floor, a communal lounge area opens onto a small private garden. Featuring 4.5m ceiling heights and a southeast-facing curtain wall, this space is designed to receive ample natural light despite the dense urban setting. It offers potential as a social hub for residents, fostering the community aspect often sought in collaborative housing, like the Nowe Żerniki precedent. Importantly, designed with the potential for separate access, this space could alternatively be converted into an additional commercial rental unit, providing flexibility to meet the cooperative's evolving economic or social priorities – directly addressing the objective of mediating between these considerations.

The three upper residential floors (Levels 1-3) are designed for maximum customization by future cooperative members, directly serving the procedural objective of allowing later participants to shape their living spaces without requiring fundamental structural changes. Each floor plate can be flexibly subdivided to accommodate between two and five apartments. The inherent flexibility allows for

numerous configurations (potentially over 200 variations across the three floors, see Figure 9), ensuring the final apartment mix can be tailored to the specific needs and preferences of the building group as it forms. This approach reduces perceived uncertainty for members joining during the Building Community phase, as they can visualize concrete options while still exercising meaningful choice. A reference design illustrates one possible configuration, featuring a diverse mix of 10 apartments ranging from a 57 sqm two-room flat to a large 185 sqm six-room family apartment on the top floor. All proposed apartments include private outdoor space in the form of balconies, loggias, or terraces. Additionally, a common roof terrace on the accessible green roof portion of the fourth floor offers panoramic views towards the main train station, city center, and Wilda district.

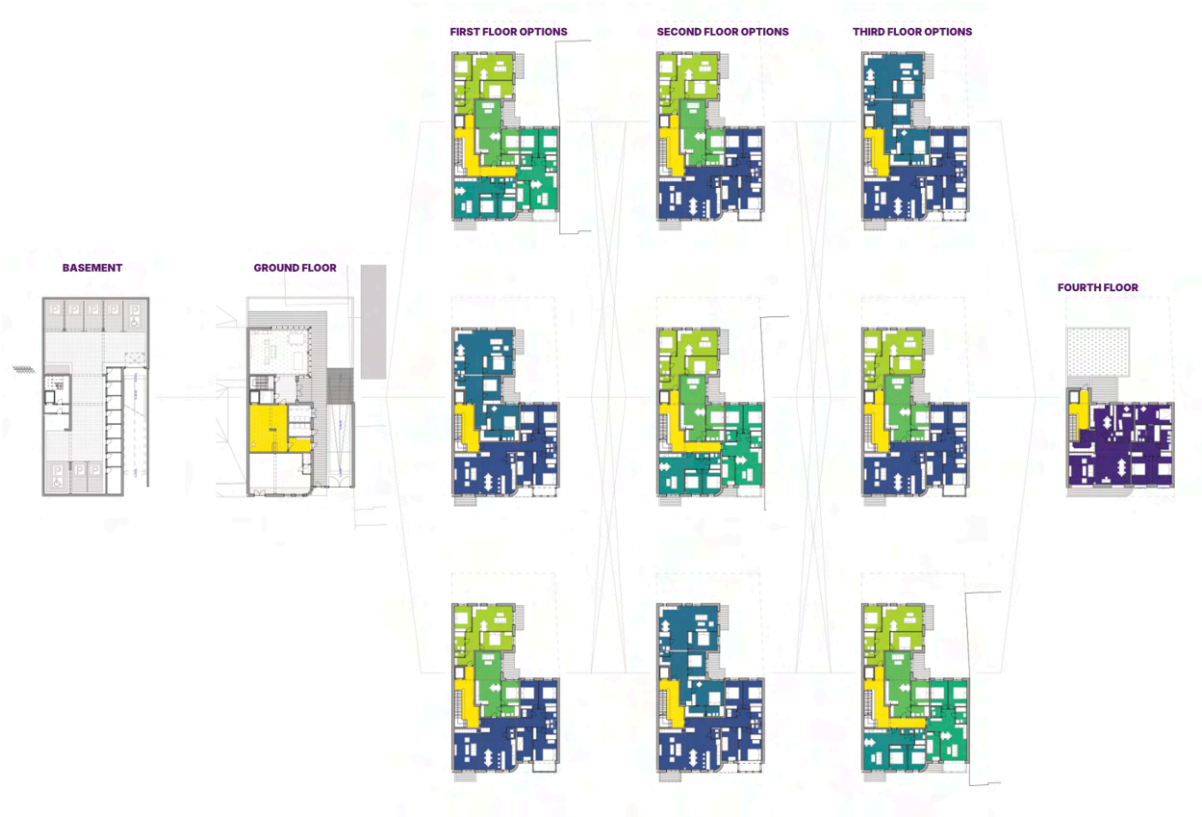

Figure 9 Floor plan configurations

Facilitating Customization: Web Configurator

To streamline the apartment selection and customization process for members joining the Building Community phase and simultaneously address the perception objective by offering a modern, transparent alternative to traditional cooperative allocation methods, a concept for an interactive web-based configurator was developed. This digital tool is envisioned as the primary interface for prospective residents to explore available options, understand spatial possibilities, and configure their desired living space within the flexible architectural framework established previously.

The configurator is conceptualized as a three-step process guiding users through visualization and selection:

Step 1: Building Context and Orientation

An initial axonometric view presents the proposed building within its urban context. Users can select their preferred orientation (street-side or courtyard-side) and floor level. Interactive elements would allow rotation of the view and display summary information upon hovering over building sections, such as general apartment types available, floor level, ceiling height, and aspect (e.g., southwest). A selection confirms the general location preference and proceeds to the next step.

Step 2: Floor Plate Exploration and Unit Selection.

The view transitions to a sectional axonometric, cutting through the chosen floor. This allows users to visualize the potential apartment layouts available on that level, corresponding to the flexible partitioning enabled by the cross-wall structure. Users can select a specific apartment footprint. Upon selection, key information is displayed, including floor area, level, ceiling height, aspect, and an estimated cost based on the reference design parameters (Figure 10).

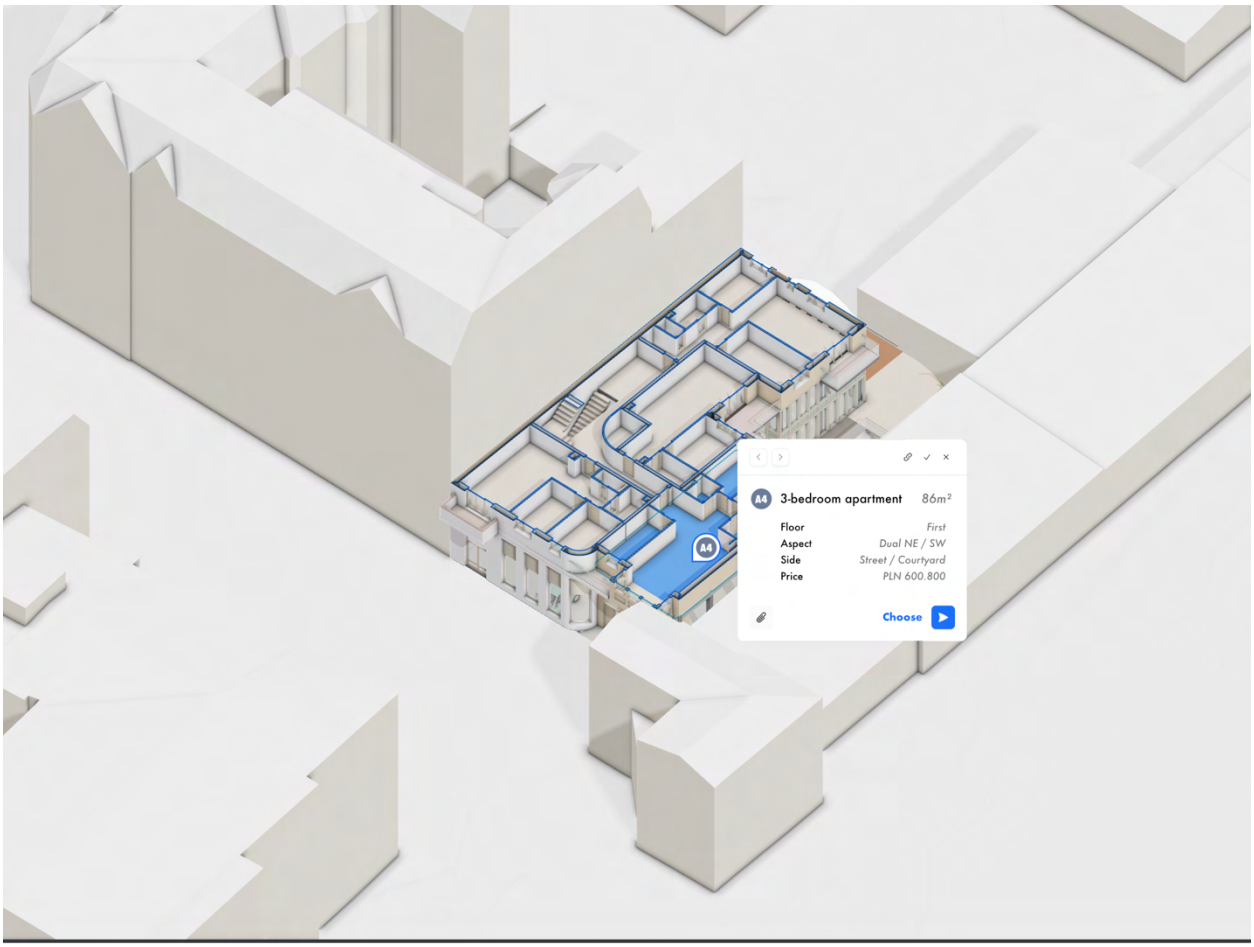

Figure 10. User interface of the web configurator

Step 3: Internal Layout Customization.

The view shifts to a top-down plan of the selected apartment. Within this view, users can modify the internal layout based on pre-defined 'slots' or zones for specific functions. This allows choices between options like creating one larger room versus two smaller ones, or designating flexible spaces as bedrooms, studies, or other uses, reflecting the customization potential inherent in the CSD model.

This web configurator concept aims to translate the architectural flexibility into a user-friendly experience, empowering future residents and making the process of joining and shaping the collective development more accessible and engaging. Beyond its practical utility, the configurator serves a crucial role in reshaping public perception

of housing cooperatives in Poland. By presenting a sleek, digital interface with transparent pricing and clear visualization tools, it deliberately contrasts with the opaque, bureaucratic image often associated with traditional housing cooperatives from the socialist era (Coudroy De Lille, 2015).

Results

This section presents the outcomes of the case study simulation, evaluating the proposed collective self-development project against its core objectives, particularly concerning feasibility, cost-effectiveness, and market positioning.

Case Study Outcomes: Feasibility and Cost

The architectural proposal demonstrates the project's physical feasibility within the established regulatory constraints. The design achieves a Gross Floor Area (GFA) of 2050 sqm, effectively utilizing the site's potential (allowable GFA ≈ 2137 sqm based on FAR 3.9) and confirming sufficient capacity for the target range of 9-15 households. The reference design specifically accommodates 10 households with a diverse mix of apartment sizes ranging from 57 sqm to 185 sqm, directly addressing the objective of providing larger, family-oriented units often absent in the conventional market.

A primary economic objective was to demonstrate significant cost savings compared to developer-built alternatives. To estimate the project's cost, a bottom-up approach was employed, starting with benchmark data for conventional development and adjusting for the CSD model. Data from the National Bank of Poland (NBP, 2025) indicates a typical Poznań developer cost structure, including land, design, construction, financing, management, and a substantial gross profit margin (cited as 25.8% or 3100 PLN/sqm in the report).

For the CSD cost estimation, the developer's profit margin and associated costs were excluded. Specific assumptions were made for key cost components:

- Land: Estimated at 2250 PLN/sqm, based on analysis of comparable nearby sites, reflecting the need to acquire land at market or near-market rates in the absence of assumed municipal subsidies for this baseline calculation.
- Construction: Base construction costs from the NBP report (5200 PLN/sqm) were increased by a 30% contingency factor (resulting in 6240 PLN/sqm). This conservative adjustment accounts for unknown factors and potential CSD inefficiencies, such as lack of economies of scale of large developers and higher upfront investment in long-term quality.
- Professional Services: A higher architect fee of 500 PLN/sqm was allocated for professional design, management, and facilitation services, acknowledging the critical role of expert support identified in successful German Building groups.
- Communal Space Costs: The cost of constructing the non-sellable communal areas (estimated at 100 sqm in the reference design) was distributed proportionally across the private residential units. With a total private apartment area of approximately 1026 sqm in the 10-unit reference design, the communal space represents roughly 9.8% of the private area (100 / 1026 ≈ 0.098). This proportion was added as an uplift to the base cost per square meter of the private apartments to account for the shared investment.

Based on these assumptions, the estimated final cost for the CSD project is PLN 9870 per square meter of private apartment area. This figure represents a potential saving of over 25% compared to the estimated developer price derived from the NBP data (approx. 12000 PLN/sqm), aligning with previous CSD experience. Crucially, this estimate does not factor in potential further savings through specific municipal land deals enabled by the Act on Housing Cooperatives, representing a baseline scenario.

The resulting estimated prices for the reference apartment types demonstrate the potential affordability (Table 2).

Table 2 Reference design apartment types, areas, and price estimates

Apartment type	Rooms	Area [sqm]	Price estimate
A	2	57	PLN 562,590
B	3	63	PLN 621,810
C	3	71	PLN 700,770
D	4	82	PLN 809,340
E	4+	132	PLN 1,302,840
F	5+	148	PLN 1,460,760
G	5+	185	PLN 1,825,950

Market Comparison

To evaluate the project's alignment with the strategic market positioning objective, its characteristics were compared against both the general Poznań housing market and the specific offerings of the adjacent commercial development, Kolejova 1.

General Poznań Market

The analysis confirmed the initial hypothesis regarding the scarcity of family-sized apartments. Using the ESPON study's 100 sqm benchmark for family units and analyzing an open dataset of developer offerings (Okna Bej, 2025; 6627 data points for Poznań), a clear gap was identified. As illustrated in Figure 11, units exceeding 100 sqm are rare in the standard developer market. Furthermore, analysis of pricing data for the few larger apartments available (n=331) revealed that a significant majority (68.9%) were priced above the city's average cost per square meter, indicating a potential market penalty for larger units. This finding underscores the relevance of the CSD project's focus on providing such spaces affordably.

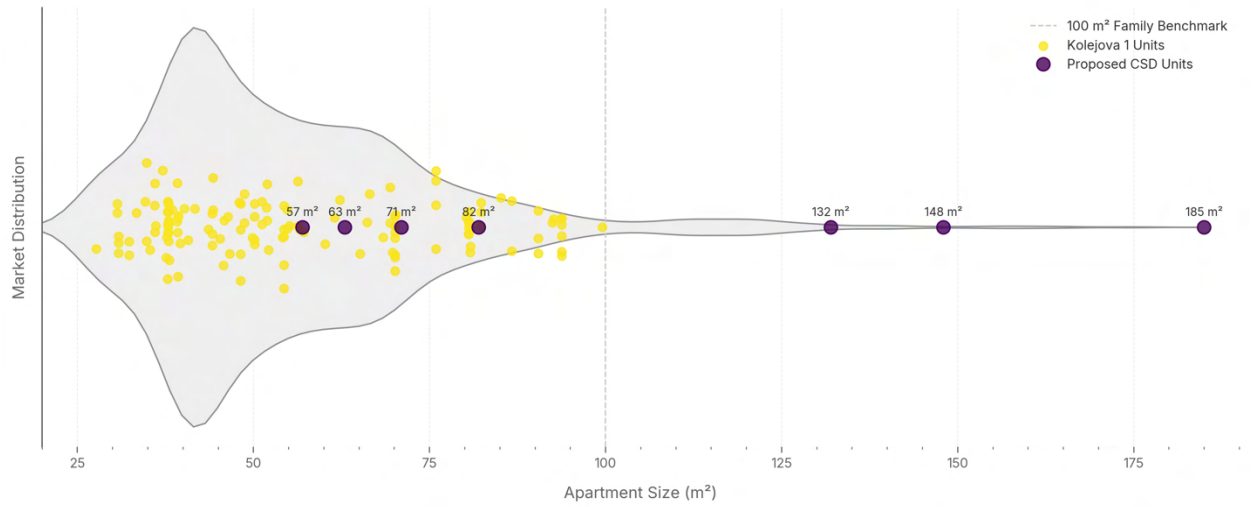

Figure 11 Poznań developer market distribution and proposed units. Data: Okna Bej repository on GitHub based on historical data from rynekpierwotny.pl/

Detailed Comparison with Kolejova 1

The adjacent development by Novaform Polska serves as a direct competitor benchmark. This large, 188-unit complex features apartments ranging from 27 sqm up to a maximum of 99 sqm (excluding penthouses not on public offer), along with extensive commercial units and amenities like a gym and multi-level parking. Notably, Kolejova 1 offers no standard apartments exceeding the 100 sqm family benchmark.

This absence necessitates a comparison focused on the largest units Kolejova 1 does offer (in the 80-99 sqm range, n=28) against the broad range provided by the CSD proposal (reference units from 57 sqm up to 185 sqm). The comparison yields two key findings supporting the CSD model's advantages:

1. Target Demographic Fulfillment: The CSD project directly offers the large, family-sized apartments (>100 sqm) that the target demographic seeks, and which are absent in the standard offerings of the immediate commercial competitor.

2. Pricing Structure: While achieving overall price competitiveness (estimated CSD cost/sqm is below the reported Poznań average), the CSD model exhibits a linear relationship between apartment area and total price (Figure 12). This contrasts sharply

with the trend observed in the broader market, where larger units often carry a per-square-meter price premium. The CSD approach, therefore, avoids penalizing buyers seeking larger family homes.

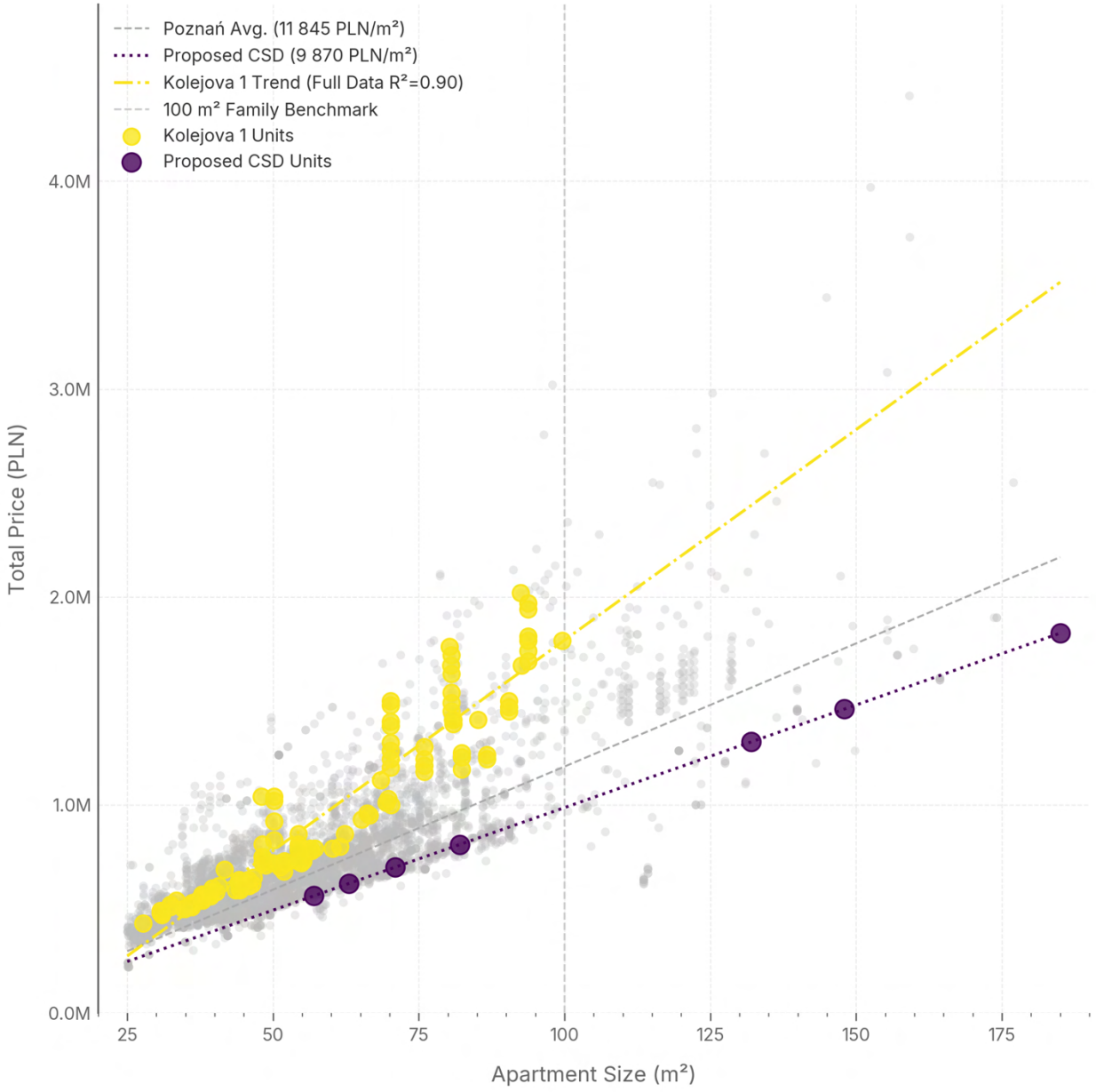

Figure 12 Apartment size vs. price for market, CSD and commercial reference project. Data: Okna Bej repository on GitHub based on historical data from rynekpierwotny.pl

Summary of Results

The case study simulation demonstrates that the proposed collective self-development model can be a viable and compelling alternative within the Poznań context. Perhaps most significantly, the project directly addresses a clear gap in the Polish housing market. It offers the possibility of creating larger, family-oriented apartments inside urban centers—a type rarely provided by commercial developers, as shown by market data and the adjacent commercial offerings. Furthermore, the CSD model allows for a fairer pricing structure where larger homes do not automatically incur a disproportionate cost penalty per square meter, directly benefiting families needing more space. Overall, the results indicate that this CSD approach can deliver affordable, customizable, and appropriately sized urban housing for its target demographic.

Discussion

The results generated through the case study simulation provide compelling evidence for the potential of a strategically implemented collective self-development model to address specific challenges within the Polish housing market, particularly for urban families. The findings suggest that the proposed approach successfully navigates several key objectives set out at the beginning of this research, offering a tangible pathway towards establishing CSD as a viable "third way" housing option. However, a critical discussion must also acknowledge the limitations of the simulation and contextualize the findings accordingly.

Addressing Research Objectives and Gaps

The case study directly confronts the objectives derived from the identified gaps in the current state of the art. The market positioning objective is perhaps most clearly met. By targeting an urban infill site deemed less attractive to large developers due to its size and regulatory complexity (the fire code issue with Kolejowa 1), the project demonstrates a strategy for finding viable land without direct, costly competition. More importantly, the resulting architectural proposal delivers a range of larger apartment sizes specifically tailored to the underserved urban family demographic, a stark contrast to both the general Poznań market trends and the adjacent commercial development's offerings. The linear pricing structure further reinforces this, eliminating the market penalty often associated with larger units and enhancing affordability for families.

The procedural objectives were addressed through the simulation of an initiator-led process combined with a flexible architectural design and the conceptual web configurator. This combination directly tackles the "Everything Community" problem

identified in early Polish CSDs by reducing complexity for later participants while still enabling customization – a core CSD benefit. The architectural flexibility ensures adaptability to the final group's needs, while the configurator concept offers a modern, transparent mechanism for managing this process, countering negative perceptions associated with traditional cooperatism.

The economic and social objectives are addressed through the demonstrated cost savings achieved even while incorporating communal amenities (lounge, garden, roof terrace) and a potentially income-generating retail space. The estimated >25% saving aligns with figures reported in both German and Polish precedents (Krings-Heckemaier et al., 2009; Lis et al., 2022), validating the core economic premise of CSD. The inclusion of shared spaces, funded via a proportional uplift on private unit costs, shows a pathway to balancing affordability with the potential for enhanced community interaction and quality of life – a direct response to the tension observed between the purely cost-focused Kooperatywa Pomorze and the more community-oriented Nowe Żerniki. The flexible design of the communal lounge (potential conversion to retail) further embodies this balance.

Finally, the institutional and perception objectives are supported by the strategic site choice (municipal land list), the inclusion of a street-activating retail unit, and the proposed integrated solution for the adjacent municipal property (Kolejowa 1). These elements demonstrate potential community benefit, providing leverage points for negotiating with municipal stakeholders and potentially accessing support mechanisms under the 2022 Act on Housing Cooperatives.

Limitations of the Case Study

Despite these positive indicators, the limitations inherent in a simulation-based case study must be carefully considered.

Simulation vs. Reality

This study remains a theoretical exercise. It does not account for the myriad unpredictable challenges of real-world construction, such as unforeseen site conditions, material shortages, contractor issues, or neighborly disputes beyond the specific fire code issue analyzed. The smooth progression simulated here contrasts with the potential for delays and conflicts common in complex building projects (Seeman, 2019).

Cost Estimation Uncertainty

While based on the best available data (NBP, 2025) and conservative assumptions (e.g., 30% construction contingency), the cost estimate remains predictive. Actual construction costs can fluctuate significantly based on market conditions, specific material choices, and contractor bidding. Furthermore, the crucial aspect of project financing – identified as a major hurdle for Polish CSDs (Lis et al., 2022; Sobolak, 2023) – was not modeled. Securing favorable financing for a CSD remains a significant real-world challenge not captured here.

Absence of Group Dynamics

The simulation focuses on the physical, procedural, and economic aspects but inherently cannot model the complex social dynamics of forming and managing a building group. Decision-making processes, conflict resolution, member commitment, and potential turnover are critical factors influencing CSD success (Droste, 2015), yet they fall outside the scope of this architectural and procedural framework simulation. While the proposed structure and web tool aim to facilitate these processes, they do not eliminate the inherent social challenges.

Assumption of Professional Support

The model incorporates costs for professional facilitation, recognizing its importance based on German experience (Krings-Heckemaier et al., 2009). However, as identified in the earlier, such specialized services are currently underdeveloped in Poland. The successful implementation of this model relies heavily on the availability and

competence of architects, project managers, and potentially social facilitators skilled in CSD processes – a resource not yet readily available.

Site Specificity and Transferability

The findings are intrinsically linked to the specific characteristics of the Gąsiorowskich 6 site and the Poznań context. The unique opportunity presented by the adjacent municipal building (Kolejowa 1) and the site's presence on the investment map might not be replicable elsewhere. While the principles of strategic site selection and flexible design are transferable, the specific outcomes may vary significantly depending on the chosen location, local regulations, and municipal disposition.

Insights and Implications

The case study's strength lies not in providing a definitive, universally applicable blueprint, but in demonstrating the potential of a specific, strategically tailored CSD approach within the Polish context. It strongly suggests that by adopting an initiator-led model, focusing on procedural clarity, incorporating design flexibility, strategically selecting sites, and consciously balancing economic goals with social and community benefits, CSD projects can indeed offer a compelling value proposition.

The simulation highlights that achieving significant cost savings is theoretically possible, even with added costs for professional support and communal spaces, primarily through eliminating the developer margin. It confirms that CSD can directly address the market failure in providing larger urban apartments. The favorable pricing structure result is particularly potent, suggesting CSD can offer not just cheaper housing, but fairer priced housing for families needing space.

Crucially, the study implicitly underscores the areas requiring further development for CSD to thrive in Poland. While the proposed framework offers structural and

procedural solutions, the "softer" aspects – fostering group cohesion, securing financing, and building a network of skilled professional facilitators – remain critical challenges that need parallel attention from practitioners, policymakers, and supporting institutions. The reliance on the Act on Housing Cooperatives, particularly regarding potential municipal partnerships, also highlights the need for municipalities to actively engage with and support such initiatives to unlock their full potential.

Ultimately, this research contributes to positioning CSD as a viable alternative in the Polish housing landscape, moving beyond the binary choice of developer housing or individual self-build. By demonstrating how specific strategies can address identified gaps – offering affordability, customization, and community potential in a package distinct from conventional options – the case study provides a tangible model and encourages further exploration and real-world testing of such approaches.

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