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ADAPTATION OF SPATIAL STRATEGIES OF THE LARGEST DEVELOPERS OF RESIDENTIAL REAL ESTATE IN ST. PETERSBURG TO ANTI-RUSSIAN SANCTIONS

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Anti-Russian sanctions have had varied and multidirectional impacts across multiple sectors of the national economy, including the housing construction sector — most notably, the development of multi-apartment residential buildings. As a consequence of these sanctions, foreign developers employing advanced management and marketing practices withdrew from the Russian market, while domestic developers were forced to rapidly adapt to both new and intensifying pre-existing factors shaping the primary housing market. This study seeks to identify the adaptation trajectories of major residential developers operating within the St. Petersburg agglomeration under the constraints imposed by anti-Russian economic sanctions. To this end, several research objectives were pursued: compiling and analyzing data on residential projects from the Unified Housing Construction Information System (UHCIS); mapping the territorial distribution of completed and ongoing residential developments; examining changes in the intensity of land development across different territorial zones; and evaluating developers' spatial strategies using the Herfindahl–Hirschman Index (HHI) and other analytical tools. The empirical foundation of the study is drawn primarily from UHCIS data provided by DOM.RF (including the map of new construction), complemented by information from media sources. Through cartographic analysis, territorial clusters of residential construction were delineated, and the share of housing commissioned in each cluster was assessed for three time periods: 2016—2020, 2020—2024, and 2025—2028. Developer concentration within these clusters was further evaluated using the HHI. The study identifies five major crisis factors induced by sanctions and outlines nine distinct adaptation trajectories among various groups of developers. The most immediate response was the withdrawal of

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foreign developers from the market. The research further proposes four strategic models adopted by domestic developers, each characterized by specific strengths, limitations, and implications for urban development. Among the most influential factors was the sharp increase in the Central Bank's key interest rate, which led to a significant decline in suburban development due to reduced mortgage affordability. Conversely, development activity intensified in parts of the so-called 'grey belt', targeting segments of higher-income demand. This reorientation has contributed to greater spatial integration within the agglomeration and the ongoing expansion of the urban core.

Keywords:
adaptation trajectories, strategies, developers, anti-Russian sanctions, housing market, St. Petersburg agglomeration, Unified Housing Construction Information System (UHCIS)

Introduction and problem setting

A new round of geopolitical and geo-economic tensions, beginning in 2022, resulted in the imposition of severe anti-Russian sanctions that significantly impacted not only the financial sector but also the real sector of the Russian economy — its regions, urban agglomerations, and individual economic actors. However, these sanctions did not originate in 2022; they have been in effect since 2014, which reflects the broader temporal scope of the study. Moreover, external negative influences are closely intertwined with internal factors, including those triggered or exacerbated by external pressures.

A substantial body of empirical data, analytical materials, and research has been accumulated to assess the impact of anti-Russian sanctions on the Russian economy as a whole, along with studies examining the adaptation strategies employed by Russian companies.

Given the multi-vector and diverse impact of anti-Russian sanctions on the Russian economy, it is worth focusing on several key vectors that directly affect the real economy both at the national, regional and urban levels.

Firstly, transaction costs have increased — particularly in terms of logistics and the final cost of imported goods — while opportunities for importing related products have diminished. Simultaneously, the demographic crisis and the growing role of the military-industrial complex have led to a decline in the number of foreign migrants and a transformation of the labour market, resulting in rising wages [3]. As a consequence, unmet demand is growing across the economy, partly due to supply shortages, which is contributing to rising inflation.

In response, the Central Bank of Russia has sought to curb inflation by adjusting the national key interest rate. After a relatively rapid stabilization of the rate in 2022, returning to pre-February levels and remaining below 10 % for over a year (from June 14, 2022, to August 15, 2023), the rate began to rise steadily from August 2023 onward. As of late October 2024, it reached 21 %.[1]

[1] Discount rate of the Bank of Russia. 2025, *Bank of Russia*, URL: https://cbr.ru/hd_base/KeyRate/ (accessed 08.01.2025).

Accordingly, the imposition of severe anti-Russian sanctions and the increase in the key interest rate have had a significant impact on many sectors of the real economy, including the residential real estate market. The COVID-19 pandemic caused labour shortages in the construction industry and disruptions in the supply of building materials — challenges that further intensified in 2022. At the same time, the financial importance of the housing market has been growing both globally and within Russia.

In 2018—2019, Russia underwent a transition to project financing in the construction sector, accompanied by a substantial increase in the role of the banking sector. As a result of the rising key interest rate, the cost of development projects increased due to higher project financing expenses. Moreover, the discontinuation of extended preferential mortgage programs triggered a crisis in the real estate market, particularly affecting apartment construction in 2020.

By the end of 2024, demand in the primary residential real estate market declined as expected. The decrease was 22 %, with the number of transactions under equity participation agreements falling to 565,000 apartments. Taking into account transactions in already completed buildings, the total volume of the primary housing market in Russia in 2024 is estimated at approximately 700,000 apartments.[1]

In market conditions, the key role in the development of housing construction and the real estate market is played by the largest developers, whose positions are only strengthening in the context of the development of project financing [5]. Major developers in the market pursue various spatial development strategies by implementing projects in specific types of locations. These may include similar urban zones — for instance, Setl Group's projects in the 'rust belt' of St. Petersburg; particular segments of urban agglomerations — such as A101 Group's projects in the middle suburbs; or 'core' or 'anchor' territories — for example, the investment and construction group Mavis's developments in the Murino area.[2] Simultaneously, developers pursue diverse strategies in the construction of apartment complexes, encompassing building design, landscaping, and infrastructure, driven not so much by governmental directives as by their marketing considerations,[3] i.e. they make different contributions to the development of the urban

[1] "Macon Real Estate Consulant" report: the state of the primary residential apartment real estate market in the Russian Federation in early 2025 (January 2025). 2025, URL: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://macon-realty.ru/files/uploaded/bc1330c8-3445-494e-9f70-46a844befddd.pdf (accessed 08.01.2025).

[2] Map of new apartment complexes. 2025, *Unified Housing Construction Information System, DOM.RF*, URL: https://наш.дом.рф/сервисы/каталог-новостроек/список-объектов/карта (accessed 08.01.2025).

[3] Pole shift: how the approach of developers is changing in the new realities, the urban development complex of Moscow, 2025, *Stroi.Mos*, URL: https://stroi.mos.ru/articles/smiena-poliusov-kak-mieniaietsia-podkhod-zastroishchikov-v-novykh-riealiiakh?ysclid=m5o90mafes113845673&from=cl (accessed 08.01.2025).

environment [6]. On the scale of agglomeration, housing construction in cities affects the development of the settlement system, the distribution of places of employment, traffic flows and ensures the migration attractiveness of territories [7].

Ultimately, the stringent anti-Russian sanctions and the economic crisis of 2022 — which they have exacerbated — are affecting major developers and influencing the spatial dynamics of housing construction in the country's largest urban agglomerations. The 2022 crisis also threatens the attainment of Russia's national development goals, including: "increasing housing construction to at least 120 million square meters per year"[1], and "ensuring that by 2030 each citizen has access to housing with a total area of at least 33 square meters, and at least 38 square meters by 2036"[2]. To meet these targets, approximately 6—7 million square meters of residential space must be constructed annually in St. Petersburg and the Leningrad region between 2024 and 2030[3], necessitating the development of extensive suburban areas within the St. Petersburg agglomeration [8].

Accordingly, this study analyses how the recent economic crises (the COVID-19 pandemic in 2020 and the anti-Russian sanctions of 2022) have affected the spatial expansion strategies of the largest property developers in the St. Petersburg agglomeration, which has accounted for around 7—8 % of Russia's housing completion volume over the past 5 years. This is a timely and relevant line of research, given the complex impact of housing construction on the development of both urban agglomerations and the country as a whole.

The identification of crisis factors stemming from the stringent anti-Russian sanctions of 2022 — which have amplified certain structural trends in the industry — serves as a basis for tracing the adaptive strategies adopted by major housing developers. These strategies may subsequently inform practices in other major agglomerations. Furthermore, the study will assess how these adaptation patterns shape the broader territorial development of the St. Petersburg agglomeration.

Materials and methods

The analysis of housing construction and the real estate market relies on diverse spatial and economic data sources, thereby facilitating an interdisciplinary research approach. This study employs data from the Unified Housing Construc-

[1] On the national development goals of the Russian Federation for the period up to 2030, Presidential Decree №474 of 21.07.2020, 2020, President of Russia, URL: http://www.kremlin.ru/acts/news/63728 (accessed 08.01.2025).

[2] On the National Development Goals of the Russian Federation for the period until 2030 and for the Prospect up to 2036, Presidential Decree №309 of 07.05.2024, 2024, President of Russia, URL: http://www.kremlin.ru/acts/bank/50542 (accessed 08.01.2025).

[3] Unified Plan for Achieving the National Development Goals of the Russian Federation for the period until 2024 and for the planning period until 2030, 2024, Ministry of Economic Development of the Russian Federation, URL: https://www.economy.gov.ru/material/file/ffccd6ed40dbd803eedd11bc8c9f7571/Plan_po_dostizheniyu_nacionalnyh_celey_razvitiya_do_2024g.pdf (accessed 08.01.2025).

tion Information System (UHCIS), maintained by DOM.RF.[1] Within the framework of the Unified Housing Construction Information System, Russian developers publish design declarations and commissioning permits, which serve as the basis for generating data on the spatial location of housing projects (at the level of individual points with geographic coordinates), as well as detailed information on apartment complexes, including total floor area, apartment layouts, and other characteristics. The system also aggregates data on apartment sales by developers — data that is increasingly used not only in the consulting sector [12], but also in academic research [13]. As part of the study, the following types of data were used from the UHCIS:

1) *Localization and basic information about housing projects of developers in St. Petersburg and the Leningrad region*. This information covers the majority of apartment buildings constructed in St. Petersburg and the Leningrad region between 2017 and 2024 and under construction in 2025—2028 (about 3 thousand records). Apartment complexes, which are essentially one large-scale project but have several design declarations for different buildings and were commissioned in one of the three periods studied, are grouped into clusters.

• 2016—2020, i. e. before new crises in the industry and the full transition to project financing. A relatively stable period, with the same duration as the two periods.

• 2020—2024, when the housing construction industry and the housing market were transformed by the transition to project financing and the introduction of preferential mortgages. At the same time, the industry was affected by the crises of 2020 and 2022.

• after 2024, the housing construction industry is entering a new phase shaped by changing conditions, including the termination of preferential mortgage programs and IT-mortgages, as well as the continued high interest rate, which constrains access to financing for both developers and the general public.

To determine the period of housing construction, the parameter of 'key issuance' was employed. This serves as a crucial temporal indicator within the framework of project-based housing finance, signifying the full completion and readiness of an apartment complex. Data on real estate objects from the Unified Housing Construction Information System (UHCIS) were obtained through HTML parsing. For this purpose, the Beautiful Soup library in the Python programming language was utilised, enabling the extraction of information from markup languages (HTML, XML) [14]. The analysis primarily focuses on apartment buildings, as information on the construction of single-family housing (SFH) is rarely published in the UHCIS, given that such homes are often built independently by private individuals.

2) *Analytical information on the housing market*: the number of loans issued, published advertisements and construction volumes.

[1] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

Publications in the media, including specialized ones on the real estate market, became an additional source of information. Information from the media made it possible to clarify the history of the purchase and sale of apartment complexes and the plans of developers, as well as to find out information on land transactions.

The use of apartment complex-level data in this study aligns with the broader trend in geo-urban research toward the application of point-level data, as opposed to aggregated information at the municipal level. This methodological shift has been actively employed by Kurichev and Kuricheva in their studies of the Moscow agglomeration. Notably, it enabled analysis of housing intensity across agglomeration belts and sectors [15], as well as by distance from the urban core [16]. Such an approach allows researchers to operate with flexible territorial units — whether elements of the planning structure or cells of a regular spatial grid — rather than being limited to administrative boundaries. This flexibility facilitates better control over, and mitigation of, the modifiable areal unit problem (MAUP) [17]. It should also be noted that there are emerging risks associated with the potential reduction in the availability of official statistical data, as government agencies may limit data access in response to sanctions-related concerns.[1] Therefore, the introduction of alternative data sources for geographical research, including in geo-urban studies, is necessary [18].

A significant advantage of the data provided by the Unified Housing Construction Information System (UHCIS) is the availability of information linking apartment complexes to specific developers. Earlier studies relied on data from the housing registry of the State Information System of Housing and Communal Services [19], which limited analysis to the territorial level. In contrast, UHCIS data enable the application of corporate geography approaches [20], particularly for examining the spatial strategies of developers operating in the real estate market. The corporate approach to analysing territorial structures within agglomerations is already being employed, for example, in studies on the spatial distribution of logistics facilities developed by retailers pursuing various location strategies [21; 22]. This study pays particular attention to the growing number of land transactions and transfers of apartment complex projects between developers, which signals shifts in the structure and dynamics of the real estate market.

The results of the study

The activity of companies in the housing construction market during the crisis of 2020 and 2022 was characterized by seasonality, as well as reactions to institutional factors, primarily preferential lending programs and the level of the discount rate (Fig. 1).

[1] Parliament allowed the Government not to disclose statistics. 2023, *RBC*, URL: https://www.rbc.ru/rbcfreenews/63f5eb2c9a79474bcd973dd8 (accessed 08.01.2025).

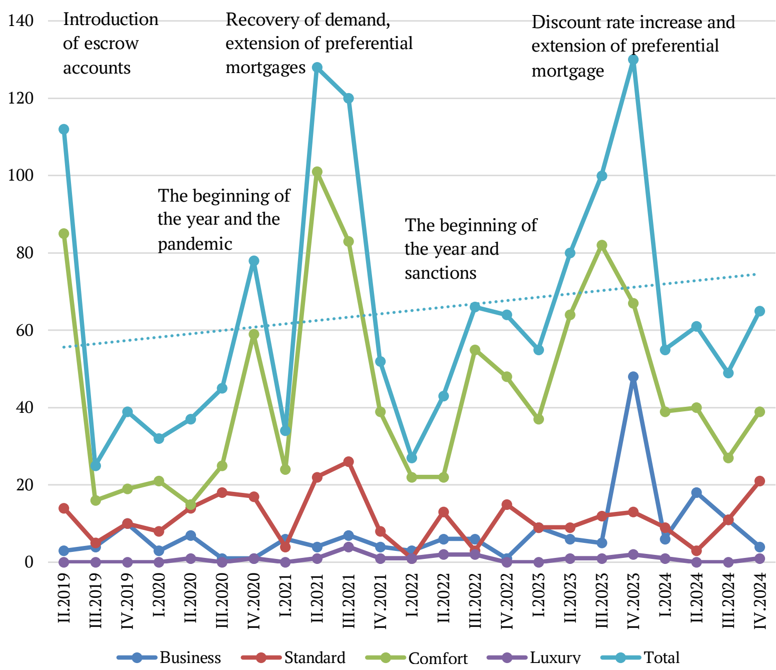

Fig. 1. Dynamics of the number of advertisements by developers about new apartment complexes, in total and by housing class, by quarter for 2019—2024

Based on the data UHCIS.[1]

Figure 1 shows 4 housing classes. These housing classes do not have a regulatory status in the legislation. In the UHCIS, they are determined by the developers themselves. That is, it is possible to consider the structures of housing commissioning, only taking into account the positioning on the part of the developer. An indicative comparison of housing classes can be drawn from the following apartment complexes: *Oktyabrskaya Naberezhnaya* (standard), *Aeronavt* (comfort), *Lermontovsky 54* (business), and *Neva Residence* (luxury). This sequence reflects the gradation of residential quality, amenities, and market positioning across different segments of the housing market.

Even before the crises of 2020 and 2022, the transition to escrow accounts and, consequently, project financing in the industry had a significant impact on the industry. Developers massively published project declarations of projects and ensured the availability of 10 % of the concluded equity construction contracts to reduce the volume of transactions on escrow accounts.[2] Citizens, in turn, showed increased demand, trying to buy cheaper apartments under equity participation agreements rather than more expensive escrow accounts [23]. Project financing

[1] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

[2] From escrow in theory to nuances in practice. 2019, *Forbes*, URL: https://blogs.forbes.ru/2019/12/09/ot-jeskrou-v-teorii-k-njuansam-na-praktike/ (accessed 08.01.2025).

has led to an increase in the cost of projects for developers and an increase in the cost of housing for buyers, but has increased the sustainability of the housing construction sector [24]. The decline in the industry intensified during the COVID-19 pandemic, when restrictions led to problems not only with hiring employees (including immigrants) and the supply of building materials [25], but also with the shutdown of construction projects in general [26]. Since the end of 2020, developers have become more active, because the demand in the housing market began to recover due to government support for the construction industry, including through preferential mortgages.

After a relative recovery from the crisis in 2020 (removal of most restrictions in Russia and the world), from the second quarter of 2021, the discount rate level began to rise: apartment prices began to rise further, and demand for real estate began to fall.[1] By the onset of the crisis in 2022, the volume of advertisements published by developers had declined. Although the industry subsequently experienced a recovery, the market activity of developers intensified markedly in 2023. As the gap between the preferential mortgage interest rate and the key discount rate widened, announcements regarding the planned termination of the long-standing preferential mortgage emerged, prompting developers to respond by rapidly launching new projects. By the first quarter of 2024, when the decision not to extend the preferential mortgage was confirmed, the number of developer advertisements decreased significantly. A modest increase observed in the fourth quarter of 2024 can be attributed to seasonal factors — specifically, the strategic launch of projects at year-end to capitalize on peak demand — as well as developers' efforts to adjust to prevailing market conditions.

The territorial distribution of housing commissioning by developers within the St. Petersburg agglomeration has undergone notable changes over the period under study. Several territorial clusters, representing areas with the highest volumes of commissioned housing, were identified within the agglomeration. These clusters were delineated using the DBSCAN density-based clustering algorithm, which enables the identification of spatial groupings of point-based objects [27; 28], while also considering building morphology. In most cases, these clusters do not correspond to municipal boundaries, which are often arbitrary [29] but remain the units for which official statistics are typically collected [18]. Furthermore, not all identified territorial clusters possess official names or clearly defined borders.

As part of the study, it was decided to name the territories based on their well-established names in the media. Accordingly, these are either names of localities (for example, Novosele), near which they are located, or hydrographic objects (for example, the Slavyanka River) or transport objects (for example, Pulkovskoe Highway), or historically formed names ("Grey belt" for a typical rust belt in cities). These clusters are shown in Figure 2.

[1] Apartment prices in Russia have started to decline. 2021, *Lenta.ru*, URL: https://lenta.ru/news/2021/09/01/price_to_rise/?ysclid=m5pto0qoy4499520041 (accessed 08.01.2025).

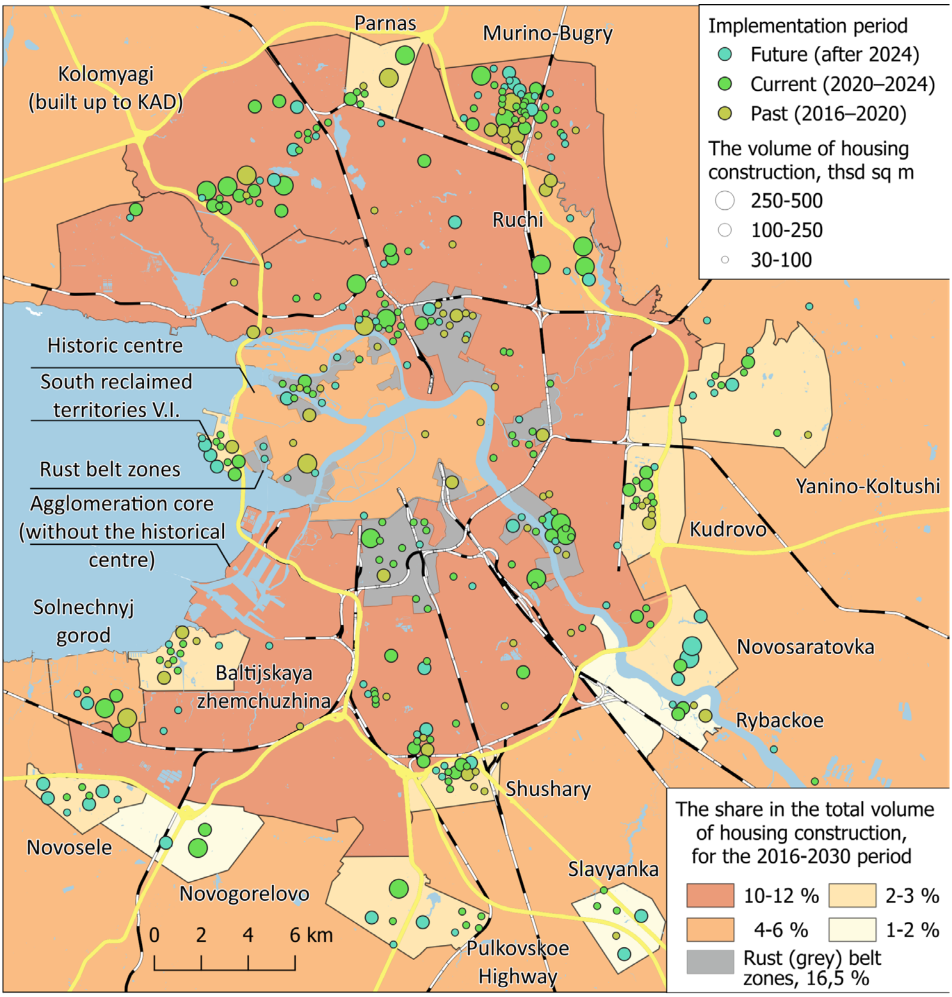

Fig. 2. The territorial structure of apartment complexes built and under construction by developers in the St. Petersburg agglomeration, for 2016—2030

Based on the data UHCIS.[1]

The intensity of construction within the clusters varied. This is due both to the priority of developing these clusters for developers and to the availability of free space for development, which in some areas has already been practically exhausted. The intensity of development in the main territorial clusters is shown in Figure 3.

A key factor influencing housing commissioning is the territorial proximity to the agglomeration core, alongside the availability of land reserves and the presence of other developers in the area. Land reserves have been largely depleted in prominent mass residential development zones such as Kudrovo and Parnas,

[1] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

which were developed before the construction of the Ring Road. Similarly, the *Baltiyskaya Zhemchuzhina* microdistrict is nearing exhaustion of available land for further development. Additionally, land parcels adjacent to the Solnechniy gorod microdistrict are less attractive to developers due to their designation within St. Petersburg's general plan as a functional zone for low-rise residential buildings,[1] which is not so profitable for developers.

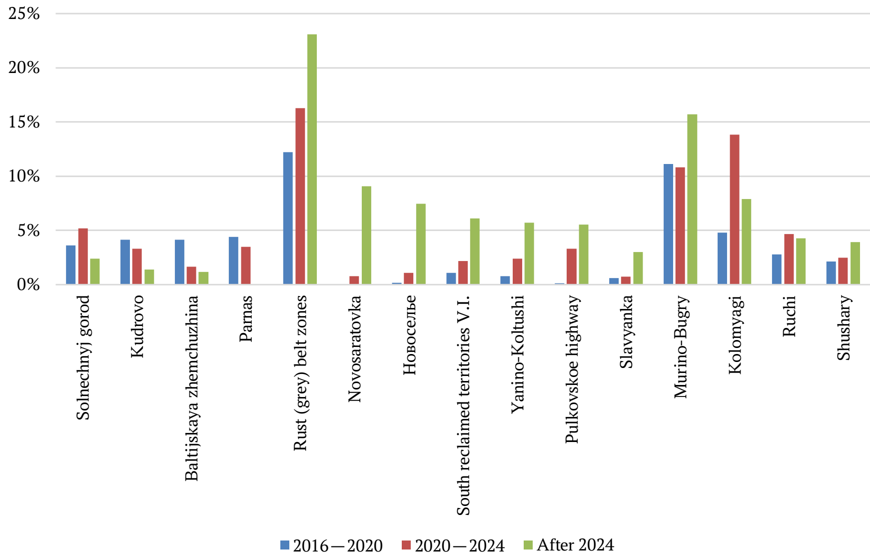

Fig. 3. Change in the intensity of development of territorial zones by developers (share of total housing commissioning by developers), for 2016—2030

Based on the data UHCIS.[2]

In turn, the development of the Murino-Bugry and Kolomyagi territorial zones has been most intensive throughout the period under study. The interest of developers in these territories is related to their proximity to St. Petersburg and the opportunity for the implementation of major projects. Despite the remoteness of the metro station and the Devyatkino railway station, the initial proximity to St. Petersburg of the cities of Murino and Bugry allows developers to continue building relatively successfully to the north, even merging them in the form of a semicircle. The territory of Kolomyagi is one of the most valuable in the agglomeration, because it is located within the St. Petersburg ring road.[3]

[1] Map. 2025, *Urban planning portal of Saint Petersburg*, URL: https://portal.kgainfo.spb.ru/KGAMap/Map (accessed 08.01.2025).

[2] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

[3] It will be completed almost to the St. Petersburg ring road: more than 2 million square meters of housing will be built in the north of St. Petersburg. 2023, *Business Petersburg*, URL: https://www.dp.ru/a/2023/09/20/dostroit-pochti-do-kada-na?ysclid=m5r7b6mfs3117736273 (accessed 08.01.2025).

In general, there are six territories where developers have increased the number of new projects. The reasons for their development are different. In the territory of Novosele, the proximity to highways and the success of the first high-quality apartment projects[1] led to an increase in the number of residential projects and developers on the territory. The situation is similar for buildings along Pulkovskoe Highway, and registration in St. Petersburg is an additional incentive for buyers. The incentive for developers on the territory of Slavyanka was the start of work on the construction of a tram line to the neighbourhood of the same name.[2] Development in the vicinity is still difficult. Novosaratovka is similar to Murino and Kudrovo in the early stages: buildings above 20 floors (will accommodate up to 158 thousand people),[3] allowing developers to maximize profits. In general, the attractiveness of the territories discussed above for developers and buyers is influenced by the price, which is often lower in the suburbs than in the core of the agglomeration [30].

A distinctive case involves the alluvial territories, where development intensified after the transfer of rights for alluvium creation and subsequent development from Terra Nova JSC to the LSR Group in 2020[4] and the decision to create a street and road network by 2024—2025 in 2022.[5] In 2022, developers shifted their focus to the development of the most attractive sites along the first coastline. In addition to the change in the intensity of development, the ratio of developers implementing projects in the territorial zones has changed.

To evaluate changes in the spatial behaviour of developers across different territorial zones, the Herfindahl—Hirschman Index (HHI) was employed. This index is commonly used to measure the degree of market concentration or monopolization within a particular economic sector, including the residential real estate market [31].

The following index formula was used:

$$HHI_k = \sum_{i=1}^{n} S_{ik}^2,$$

where *HHI* is the Herfindahl—Hirschman index, *k* is one of the zones of active development by developers, *i* is one of the 20 largest developers in St. Petersburg

[1] Novosele for new residents. 2022, *Kommersant*, URL: https://www.kommersant.ru/doc/5316865 (accessed 08.01.2025).

[2] Completion of the Slavyanka tram line has been postponed to 2026. 2023, *Vedomosti*, URL: https://www.kommersant.ru/doc/5316865 (accessed 08.01.2025).

[3] Leningrad Region urban planning council approves changes to the general plan of the Sverdlovsk settlement. 2023, *Kommersant*, URL: https://www.kommersant.ru/doc/5785943 (accessed 08.01.2025).

[4] St. Petersburg is preparing a road network for new territories. 2023, *RBC*, URL: https://www.rbc.ru/spb_sz/28/03/2023/64228c9b9a794738586b0469?ysclid=m5r90006eg995279048 (accessed 08.01.2025).

[5] Roads will be built in St. Petersburg on reclaimed territories by November 2025. 2022, *Fontanka.ru*, URL: https://www.fontanka.ru/2022/09/16/71660528/?ysclid=m5r90os287408991409 (accessed 08.01.2025).

and the Leningrad region during the study period, *n* is the number of analyzed developers, S_{ik} is the share of company *i* in the volume of housing built and under construction in the territory K. The higher the index value, the lower the diversity of developers in the territorial area. A value of 1 means that there is no diversity of developers. Accordingly, the change in the Herfindahl-Hirschman index is shown in Figure 4.

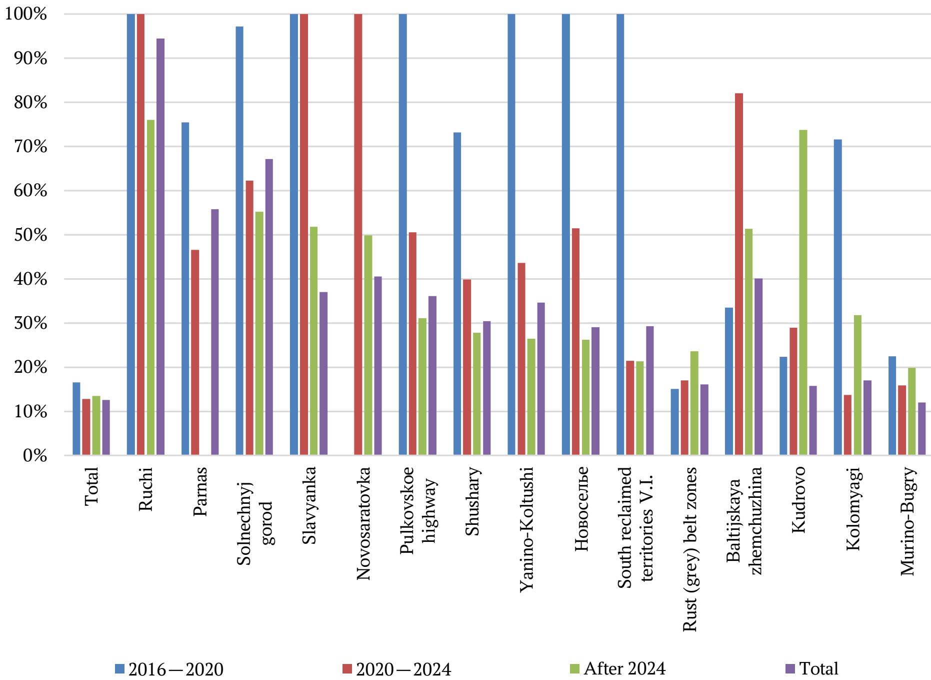

Fig. 4. Changes in the Herfindahl—Hirschman index for the diversity of developers in territorial zones for 2016—2030

Based on the data UHCIS.[1]

In most of the territories under consideration, the diversity of developers implementing projects has increased. This was influenced by two factors.

Firstly, the emergence of new players in new territories (through the purchase of land), after the success of the 'pioneers' (Novosele, Pulkovskoe Highway, Novosaratovka).

Secondly, it is the activation of transactions on the resale of projects between developers (the 'South reclaimed territories' of Vasilyevsky Island, Rust Belt, Kolomyagi). At the same time, there are precedents when developers practically do not change projects: stage 1 of the 'Novaya Zemlya' project from the Legend holding has the same architectural and planning solutions as previously in the

[1] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

LSR Group project.[1] These actions by developers are partly attributable to changes in the tax legislation of St. Petersburg enacted in 2024 and effective from 2025, whereby taxes on land designated for residential development increased thirtyfold, significantly raising the costs associated with maintaining large land banks.[2]

In general, the values of the Herfindahl—Hirschman index remain consistently low in the city and the largest development zones (Murino-Bugry, Kolomyagi). At the same time, it is worth noting the situation in Parnas and Kudrovo: due to the exhaustion of territorial reserves, there are either no projects there (Parnas) or individual projects are being completed on the remaining sites (Kudrovo).

From a corporate perspective, the intensity of suburban development is largely linked to the greater accessibility of these areas for developers, primarily due to lower land and construction costs. Consequently, the number of projects undertaken by business-class developers in suburban zones has increased. Notable examples include Glorax, with projects in Novosele and Mikhaylovka village, and the Etalon Group, with developments near Pulkovskoe Highway and in Shushary. Simultaneously, new market entrants are also targeting suburban locations, such as the Arkhangelsk-based Aquilon Group (Kudrovo, Yanino-Koltushi, Shushary), the federal developer Brusnika (Novosele), and the PIK Group of Companies (Yanino-Koltushi, Novosele).

Particular attention is given to the largest developers in the St. Petersburg market, whose spatial strategies are of primary interest. These include the three largest local housing developers — Setl Group Holding, LSR Group, and CDS Group — as well as two of the country's largest developers that have recently entered the agglomeration market — Samolet Group and PIK Group. The analysis focuses primarily on the territorial distribution of their completed projects during the crisis period (2020—2024) and their immediate post-2024 development plans (Fig. 5).

Overall, the territorial structure of projects implemented by the major development companies shows relatively little variation between the crisis period and the subsequent period, as they continue to build out a number of established areas within the agglomeration — such as the Streams project by LSR Group, developments in Kamenka by CDS Group, and ongoing projects by Setl Group Holding. Some areas within the so-called 'rust belt' remain relatively new to developers, as does the development of territories in the village of Novosaratovka. Nevertheless, it is possible to discern certain patterns in the formulation of spatial expansion strategies among these developers. The Setl Group holding has a fairly wide geography of projects. Until 2020, the company mainly focused on large-scale housing construction projects, mainly of comfort and standard class (terms within the framework of the UHCIS). Examples of such large-scale projects include the

[1] Legenda bought a plot from LSR on the southern alluvium of Vasilyevsky Island. 2024, *Business Petersburg*, URL: https://www.dp.ru/a/2024/12/16/legenda-kupila-u-lsr-uchastok?ysclid=m5rcbf2vc0202398225 (accessed 08.01.2025).

[2] Landlords in St. Petersburg are faced with an unprecedented increase in taxes on land for housing. 2025, *Business Petersburg*, URL: https://www.dp.ru/a/2025/05/07/lendlordi-v-peterburge-stolknulis (accessed 23.05.2025).

Grinlandiya-1 and *Grinlandiya-2* apartment complexes in Murino, comprising approximately 430,000 square meters of residential space, according to UHCIS data. Other notable developments are multiple phases of the *Chistoe Nebo* apartment complex in the Kolomyagi area, totalling around 1,200,000 square meters, and several phases of the *Solnechnyj Gorod* complex, also amounting to approximately 1,200,000 square meters of residential space.

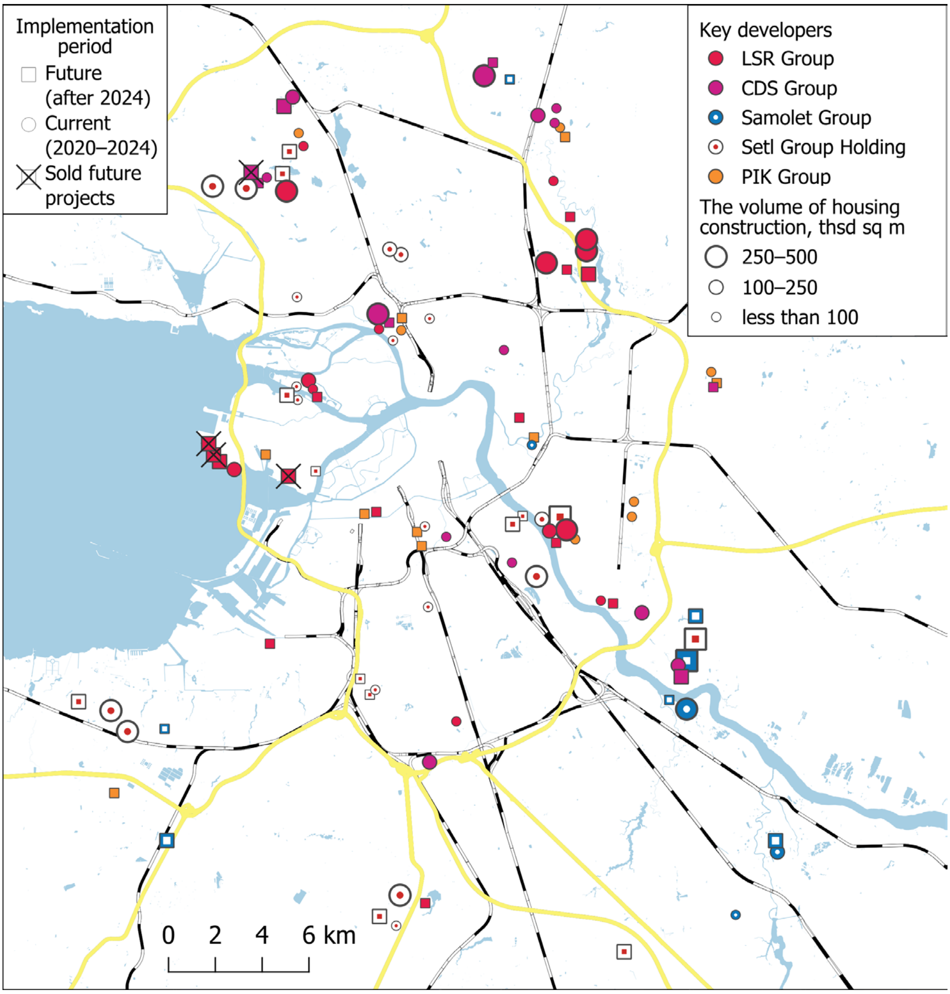

Fig. 5. Territorial structure of apartment complexes of the largest developers in the St. Petersburg agglomeration market

Based on the data UHCIS.[1]

After 2024, the company continues the implementation of the *Gorod Pervykh* apartment complex in the village of Novosaratovka, with plans to construct

[1] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

approximately 360,000 square meters of residential space. Soon, another large-scale project is expected on land acquired in the village of Kolomyagi. The impact of the crisis in this context is evident in the company's decision to postpone the development of apartment complexes on this Kolomyagi site. During the crisis period, the company expanded the geographical scope of its projects, increasingly focusing on business-class developments within the so-called 'rust belt,' an area previously targeted by other developers. Examples include the *Svetlana Park* complex on the former site of the Svetlana plant and the *Strizhi v Nevskom* complex on the site of the former Trubostal plant.

Additionally, the company began implementing elite-class residential projects in some of the most commercially attractive locations within the rust belt. These include *The One* and *Petrovsky Kvartal na Vode* on Petrovsky Island, as well as the *Imperial Club* complex on the Lieutenant Schmidt Embankment.

The 'grey' or 'rust' belt is a set of industrial zones that formed in the city on the Neva River by the beginning of the 20th century. At that time, these were the industrial outskirts of the city, but now they are closely adjacent to the historical centre of the territory, near waterways (Obvodny canal, Neva, Smolenka, etc.). This belt is of interest to buyers due to its proximity to the centre and the water factor (proximity to waterways), therefore, it is being built up with increasing intensity since the 2010s. A stimulating factor for the development of this area was the adoption of a new general plan of the city, in which more territories in the rust belt were transferred to a business and residential area.[1] It is important to note that this area is of particular interest to the developer due to its high level of infrastructural and social development. The presence of well-established transport and social infrastructure contributes to the objectively higher value of these territories. Expanding into the rust belt enables the company to reduce its dependence on the key interest rate, as projects in this area are targeted at a more solvent segment of demand [32; 33], thereby decreasing reliance on mortgage-based financing. In the long term, this strategic shift is expected to enhance the company's financial stability through diversification.

The LSR Group has been characterized by a broader geographical diversification of its projects. These include areas of mass residential construction, such as developments in the Ruchi district; business-class projects within the rust belt, such as the *Civilizatsiya* apartment complex located on the site of the former Reagent plant; elite-class developments, including *Neva Haus* on Petrovsky Island; and projects in the historical centre of St. Petersburg, such as the *Russkiy Dom* complex.

Since 2020, the company has also been actively engaged in the development of alluvial territories on Vasilyevsky Island, creating new land plots in the north-

[1] The Law of St. Petersburg-Dated December 21, 2023, № 785-169 "On Amendments to the Law of St. Petersburg "On the Master Plan of St. Petersburg". 2023, *Administration of St. Petersburg*, URL: https://www.gov.spb.ru/gov/otrasl/ingen/generalnyj-plan-sankt-peterburga/ (accessed 08.01.2025).

ern section and completing construction on remaining parcels in the southern section. Beginning in 2023, LSR Group initiated a notable restructuring of its project portfolio, which included the sale of two major land plots in alluvial areas, one site within the rust belt (the former Sevkabel plant), and another on Petrovsky Island. This strategic adjustment appears to reflect the company's response to a decline in financial performance during 2023 and 2024.[1] Most likely, the company cannot cope with the workload within the framework of the development of alluvial territories,[2] and also has one of the lowest housing sales rates among the developers under consideration (taking into account non-open sales of about 73 %) (Fig. 6).

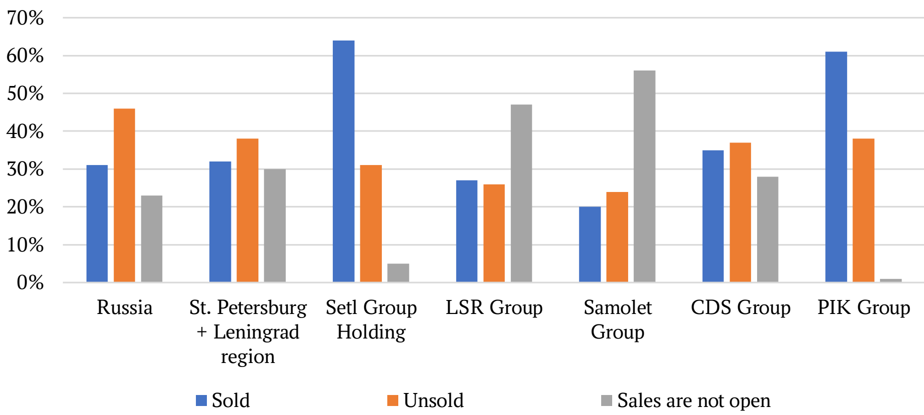

Fig. 6. Implementation of residential areas in apartment complexes of the largest developers, for December 2024

Based on the data UHCIS.[3]

The projects of the CDS Group are largely comparable to those of the Setl Group Holding in the segment of mass suburban residential construction. The company undertakes both large-scale developments in suburban areas — such as the *Novye Gorizonty* complex in Bugry, comprising 270,000 square meters of residential space, and the *Gorod Pervykh* complex in Novosaratovka, comprising 275,000 square meters — as well as medium-scale projects within the framework of joint development initiatives involving multiple developers. An example of the latter is the CDS *Dreamline* project in the Kolomyagi district. During the crisis period, CDS also began introducing projects within the rust belt; however, this

[1] Sales of St. Petersburg's largest developer have plummeted. 2024, *RBC*, URL: https://www.rbc.ru/spb_sz/18/10/2024/6712662c9a794763b27893e2 (accessed 08.01.2025).

[2] St. Petersburg is preparing a road network for new territories. 2023, *RBC*, URL: https://www.rbc.ru/spb_sz/28/03/2023/64228c9b9a794738586b0469?ysclid=m5r90006eg995279048 (accessed 08.01.2025).

[3] Unified Housing Construction Information System. 2025, *DOM.RF*, URL: https://наш.дом.рф (accessed 08.01.2025).

expansion occurred at a lower intensity compared to that of Setl Group Holding. Although on a significantly smaller scale compared to the LSR Group, there have nonetheless been instances of land plot sales with completed project documentation, in particular on the territory of Kolomyagi to Glorax[1] and the RBI Group.[2] The company is one of the largest companies developing land plots in the territory of Novosaratovka village. As a result, LSR Group has been selling off portions of its land portfolio (see Fig. 6).

In terms of the volume of ongoing construction in 2023—2024, Samolet Group of Companies (GC) outpaced the traditional market leader, PIK GC. Samolet GC is a relatively new entrant to the real estate market of the St. Petersburg agglomeration. The company primarily develops comfort- and standard-class residential projects in suburban areas and is currently the only developer engaged in urban renovation projects within St. Petersburg.[3]

Revitalisation projects account for approximately 60 % of the housing commissioned by Samolet Group; however, the majority of these projects are located in suburban or peripheral areas. Examples include the *Zhivi! v Rybatskom* complex in the Rybatskoye district, the *Novoe Kolpino* complex in Kolpino, and *Zhivi! v Kurortnom* in Pesochny. Samolet GC suburban projects within the St. Petersburg agglomeration are distributed across a wide range of territories, with the largest concentration situated near the village of Novosaratovka. Similar to LSR Group, Samolet is currently experiencing financial challenges. However, its land divestment activities have thus far been primarily concentrated in the Moscow agglomeration.[4] A gradual decline in the company's activity, including within the St. Petersburg agglomeration, can also be anticipated.

Until recently, PIK Group of Companies (GC) was the largest developer in the country in terms of housing under construction. Within the St. Petersburg agglomeration, the company is a relatively new market participant. Initially, PIK acquired land plots in the Kolomyagi district and within the rust belt. However, starting in 2020, the company expanded its activities by purchasing land and launching residential construction projects in the suburban areas of Yanino, Kudrovo, and

[1] "CDS" Group sold 5.76 hectares to Glorax in the Parkolovo project in Pargolovo. 2023, *Real Estate and construction of St. Petersburg*, URL: https://nsp.ru/36577-gloraks-kupila-576-ga-pod-zile-v-pargolovo-s-gotovym-razreseniem-na-stroitelstvo?ysclid=m5tzbzffss460775264 (accessed 08.01.2025).

[2] "CDS" group sold "RBI" group the second part of the apartment complex project in the north of St. Petersburg. 2024, *Business Petersburg*, URL: https://www.dp.ru/a/2024/10/23/cds-prodal-rbi-vtoruju-ochered?ysclid=m5tze4uqf0773635982 (accessed 08.01.2025).

[3] "Samolet" GC buys "SPb Renovation". 2025, *A single resource of developers*, URL: https://erzrf.ru/news/gk-samolet-pokupayet-spb-renovatsiya?utm=&tag=%D0%A0%D0%A%D0%9D-2023&ysclid=m5tzssv0p580945914 (accessed 08.01.2025).

[4] The developer "Samolet" GC put up for sale a part of assets for 8 billion rubles. 2025, *Forbes*, URL: https://www.forbes.ru/biznes/514829-developer-samolet-vystavil-na-prodazu-cast-aktivov-za-8-mlrd-rublej?ysclid=m5u0x701u099244980 (accessed 08.01.2025).

Novosele.[1] Further, in 2023—2024, the company acquired land plots in the rust belt zone, switching to its classic redevelopment strategy, which the company implements in the Moscow agglomeration. Compared to LSR Group, the company was less active in selling land plots with finalized documentation. Nevertheless, selected divestments occurred, including a site near the Borovaya railway station in the rust belt (2023) and a plot in the suburban area of Yanino (2024).[2]

A general trend observed among the largest developers — excluding Setl Group Holding — over the past one to two years has been the sale of land plots, including several with finalized project documentation. These plots have been primarily acquired by developers specializing in business-class residential construction, such as the RBI Group and Legend Holding. This trend is most pronounced in the case of LSR Group. Concurrently, during the pandemic period, developers expanded the geographical scope of their business- and elite-class projects within the rust belt, a practice that continues to this day — most notably in the case of Setl Group Holding.

Results and discussion

Based on the review of data from the UHCIS and information received from mass media, several factors of the current crisis in the housing construction industry caused by hard anti-Russian sanctions can be identified (Table 1).

Based on the systematized responses of developers (Table 2), the principal effects of the hard anti-Russian sanctions — shaping the adjustment trajectories of spatial strategies among key market players — can be summarized as follows:

• The most pronounced effect of the sanctions has been the withdrawal of foreign companies from the residential real estate market of the St. Petersburg agglomeration. Their assets, including ongoing and planned projects, were acquired by major domestic developers. A notable example is the acquisition of the Finnish YIT Corporation's assets by the Etalon Group.[3]

• Changes in the financial sector indirectly related to anti-Russian sanctions have a broader effect on the market. The rise in the cost of loans leads to a decrease in the interest of large developers in projects in the suburbs, with large volumes of residential space for sale, but a greater role of mortgage lending (according to the UHCIS). The aim of these reactions is primarily to optimize the pools of projects and land plots from such major developers as the LSR Group and the CDS Group.

[1] GC "PIK" hour has arrived in the Leningrad region, Kommersant St. Petersburg. 2020, *Kommersant*, URL: https://www.kommersant.ru/doc/4557375?ysclid=m5u440o6dl308644775 (accessed 08.01.2025).

[2] Land under construction near St. Petersburg has changed its owner. 2024, *RBC*, URL: https://www.rbc.ru/spb_sz/03/04/2024/660d42849a79472e865aa620?ysclid=m5u4hptm1r565207763 (accessed 08.01.2025).

[3] Major St. Petersburg developer buys Russian assets of YIT. 2022, *RBC*, URL: https://www.rbc.ru/spb_sz/01/04/2022/6246adfc9a794741723e1678 (accessed 08.01.2025).

Table 1

Adaptation strategies of residential real estate developers in response to the post-2022 sanctions-induced crisis

Crisis factors	Reaction to the factor	Group of developers 1	Group of developers 2	Additional factors	Impact on agglomeration
Increase in the discount rate, cancellation of preferential mortgages, and increase in the cost of project financing	Increased activity in the business and elite class housing sector	Expansion of the geography of construction and land bank in the rust (grey) belt for the largest developers	Activation of developers in the business and elite class segment, and purchase of land from the largest developers	A new master plan with new residential areas in the rust (grey) belt, and the release of money from escrow accounts from developers	Accelerating the redevelopment of the rust (grey) belt and expanding the diversity of apartment projects
	Abandoning projects in the suburbs that are most dependent on mortgage loans	Sale of land plots with ready documentation by large developers	Purchase of land plots by companies specializing in suburban areas	Less and less transport accessibility of new apartment complexes in the suburbs, and the growing popularity of residential housing	A decrease in the pace of suburban development by apartments and the development of single-family housing in the suburbs
Changes in income levels between Russian regions	Expansion of the geography of projects outside the agglomeration, and the entry of developers into new markets	Large-scale entry into new markets: “Etalon” group, to a lesser extent the Glorax company	The arrival of large developers from other regions to the market: business and luxury class *Brusnika*, comfort class with the development of suburbs A101 GC	Striving to diversify companies’ projects to increase stability	Increasing the stability of local developers, increasing diversity through new and possibly new standards in the housing market
Complication of the activities of foreign companies (primarily from unfriendly countries)					
	Withdrawal of foreign developers from the St. Petersburg agglomeration market	De facto withdrawal of business and luxury class housing companies from the market: Bonava and YIT	Acquisition of foreign companies: YIT by Etalon Group, Bonava by FSK Group	The decrease in the attractiveness of the RF market due to the unstable exchange rate of the national currency, and low growth in real incomes	Reducing the influx of innovations and the formation of new standards from foreign companies
Difficulties with supply chains and labour recruitment	Support for developers by changing the regulatory framework	The warranty period for an apartment in a new building is reduced to 3 years (instead of 5), the penalty for failure to correct defects is 5 % of the amount of the lawsuit for the developer (previously — 50 %), etc.		Reduced labour availability due to structural changes in the labour market	Possible reduction in the quality of projects by some developers (while maintaining their stability)

• Developers are showing growing interest in the rust (grey) belt, which is increasingly positioned as a zone of high investment potential. However, this area typically requires substantial capital expenditures to remediate the consequences of former industrial use. This trend is evident both among the largest market players (e. g., the Setl Group holding) and among smaller developers specializing in business- and elite-class residential projects.

• In addition to the change in the geography of projects in the St. Petersburg agglomeration, it is typical for local developers to enter other markets, primarily million-plus cities, as well as the agglomeration market. They are also trying to support the industry institutionally by changing the regulatory framework towards developers.

Table 2

Adaptation strategies of developers in St. Petersburg and the agglomeration zone

Adaptation strategy	Strengths	Weaknessess
A spatial expansion strategy (for local developers) involving the most "expensive" and infrastructurally attractive urban areas, including the rust (grey) belt zones, with a focus on the new middle class ("military–industrial complex", military families, IT specialists, young families)	Consolidation of urban space / Increasing returns from urban land Increasing returns on land acquired in the central districts of the city / increasing tax deductions	High costs for the developer to "clean up" land plots / Load on transport networks and social infrastructure High customer requirements / Increased social activity High cost of projects / Risks of completion and connection to utility networks
The strategy of "developing the Northern Capital" for federal and regional developers from other regions: business and elite class in the development of the suburban area (the coastal part of the Gulf of Finland and the "palace suburbs")	Increased competition in the market with higher quality and lower price, expectation of innovative solutions / Selective selection of business partners	Increased social segregation in the most attractive suburban areas/ High risk of long-term return on investment
The strategy of expansion of local developers into the suburban area through the purchase of land for further development through low-rise projects and "niche projects"	Targeting solvent groups of the population (government support) / Releasing resources	Increased spending on infrastructure development and branding / Withdrawal of major projects to the Leningrad region
The strategy of phasing out the largest economy class neighborhoods in "commuter towns" (Bugry, Kudrovo, Murino, etc.)	Higher cost of projects and facilities with higher profitability / Reduction of social, transport and other tensions	Customization and more visible investments in branding projects in the city / Increasing shortage of labor and decrease in daily migration (decrease in income of the transport sector)

The difficulties in developing the suburbs in the current crisis are vividly demonstrated by the situation with the A101 Group of Companies. This is a Moscow-based company specializing in construction in the middle suburbs of Moscow (further than the Moscow ring road), initially announced three major projects in the St. Petersburg agglomeration: in Vsevolozhsk, Lagolovo village (the border of Krasnoe Selo and the Leningrad region) and Korpikulya village, near the town of Kommunar).[1]

As a result, the project in Krasnoe Selo is being implemented together with the Samolet GC, but there is no new information on the project in Korpikulya village.

It is important to note that, for the most part, the crisis factors act in conjunction with other factors that have been forming and developing in the market in recent decades. The problem with the decrease in transport accessibility of marginal territories in the agglomeration has been gradually growing over the past decade, which is associated with the slow pace of development of non-residential public transport [34]. Off-street transport is just an important factor in the development of multi-storey residential buildings in suburban agglomerations, providing quick access for pendulum migrants to the core of the agglomeration [35], and with proper planning allows the formation of areas with not only residential, but also business functions (within the framework of the transit-oriented development (TOD) [36]. At the same time, the volume of residential housing construction is growing in the country as a whole and in the St. Petersburg agglomeration in particular, including due to support from the government.

The desire to diversify projects is a common trend among economic actors in general. Low growth in real incomes of the population and fluctuations in the exchange rate in general have affected foreign companies since the crisis of 2014 [37], but it was the hard anti-Russian sanctions that led to their withdrawal from the market of the St. Petersburg agglomeration. The situation in the labour market is similar: a small generation born in the 1990s and early 2000s has been entering the workforce since the mid-2010s, and the migration growth seen since 2017—2018 has not compensated for the natural population decline [38]. In the context of the 2022 crisis, when the influx of immigrants has decreased and the number of the working-age population is decreasing, the shortage of labour in the labour market is growing [3]. This, in turn, increases costs in the construction sector [4].

At the same time as the crisis, housing construction began to be influenced only by the new general plan of the city, adopted *de jure* on 21 December 2023,[2] but *de facto* interested parties knew its main outlines earlier, through public hearings, etc. The incentive to publish new projects for developers was the result of

[1] Federal company begins large-scale construction in Leningrad region. 2022, *RBC*, URL: https://www.rbc.ru/spb_sz/21/09/2022/632b0f509a7947aa43cea11a?ysclid=m6i4tqqo6b139762415 (accessed 08.01.2025).

[2] The Law of St. Petersburg-Dated December 21, 2023 № 785-169 “On Amendments to the Law of St. Petersburg “On the General Plan of St. Petersburg”. 2023, *Administration of St. Petersburg,* URL: https://www.gov.spb.ru/gov/otrasl/ingen/generalnyj-plan-sankt-peterburga/ (accessed 08.01.2025).

the project financing mechanism, namely, the return of funds from escrow accounts to developers (transfer of funds from banks from escrow accounts due to obtaining permission to commission an apartment building).

An additional feature of the crisis factors is their manifestation at different times. Factors such as the complication of the activities of foreign companies (primarily from unfriendly countries) and difficulties with supply chains and labour recruitment began to manifest themselves on the market as early as 2022 [4]. In turn, the change in income levels between the regions of Russia in the context of the growing role of the military-industrial complex, as well as the high salaries of contract soldiers and those mobilized, is gradually beginning to manifest itself in the regions from 2023 [3]. At the same time, the impact of an increase in the discount rate, the abolition of preferential mortgages and an increase in the cost of project financing began to manifest itself in 2024, but it would not have had such a serious effect in the absence of such drastic sanctions.

The trajectories of developers' adaptation to the housing market will ultimately affect the territorial development of the agglomeration as a whole. If we focus on the changes in the structure of developers' projects, then we can clearly identify the growing role of construction in the rust (grey) belt. This process is also actively taking place in the Moscow agglomeration and ensures, in general, greater involvement of territories in the urban fabric of the agglomeration core [39]. This process carries several risks for the development of the agglomeration.

Firstly, in redevelopment zones, residential projects are often located in close proximity to operating industrial facilities, albeit with consideration for established sanitary buffer zones. This spatial arrangement may pose certain risks to residents [40]. At the same time, it remains difficult to assess the number of people currently residing in these areas — and, by extension, the potential number of individuals who may require assistance — without access to large-scale datasets, such as those derived from mobile network data [41].

Secondly, in redevelopment zones, focusing on more solvent demand can lead to an increase in the number of apartments associated with investments by citizens and, ultimately, the exclusion of part of the new square meters from circulation, which also leads to a decrease in housing affordability [42] and an increase in urban inequality [43; 44]. The growth of the investment component in the housing market is one of the elements of the financialization of the sector as a whole, and the intensity of the process is related in particular to the difference in the benefits and risks of different investment areas in the country. For example, in China, investments in securities are considered riskier by investors than investments in residential real estate due to government regulation [45]. This phenomenon is also evident in the largest agglomerations of Russia, as evidenced by the dominance of Moscow residents in the structure of purchases in the primary housing market [7] and most likely the same in St. Petersburg.

In turn, a decrease in the volume of construction in the suburbs and the exit of large developers from them may reduce the pace of development of the suburban area as a whole.

The exit of large developers can lead to a decrease in quality standards between developers, as well as a decrease in diversity. An important deterrent to suburban development can be considered the increasing transport distance of new projects from off-street transport, as well as the increasing load on highways [34]. For the further development of medium-rise construction in the suburbs, developers need to develop agglomeration-level public transport. In such a situation, the source of funding is an important issue. The exception to this is Novosaratovka village, where high-rise buildings are acceptable for developers, and 158 thousand future residents are far from the St. Petersburg ring road and are unlikely to be provided with the necessary public transport in the future.[1]

It is important to note that the ambitious targets of commissioning 120 million square meters of housing annually by 2030 and increasing housing provision to 38 square meters per person by the same year are, under crisis conditions, likely to be achieved primarily through the efforts of housing and communal services. The development of residential housing in the territories adjacent to urban agglomerations is declared in the new spatial development strategy until 2030.[2] In the agglomeration, the volume of residential housing input by the population has been growing (from 1.14 million square meters in 2019 up to 2.70 million square meters only in January—November 2024). This has led to an increase in its share in total housing commissioning from 19.3 % in 2019 to 49.6 % by January—December 2024. The demand for residential housing among the population is also increasing, and success in meeting this demand depends on the policies of the authorities. This is evident in the example of the SFH suburbs of Belgorod. So far, in the agglomeration, the commissioning of residential housing is primarily associated with the middle and far suburbs in the format of 'second' housing, as evidenced by a more detailed examination of housing construction in the agglomeration (Fig. 7).

In Figure 7, the built-up consolidation means that new residential buildings have appeared inside the existing residential areas or on their borders. Built-up expansion means that these territories are relatively remote from the existing development zones as a whole (about 1—2 km), and residential housing complexes have appeared on them for the first time. The main increase in residential housing, based on the housing registry of the state information system of housing and communal services and remote sensing data from GHSL, falls on the middle and far suburbs. Accordingly, the potential of suburbanization has not yet been exploited in the agglomeration.

[1] Leningrad region urban planning council approves changes to the general plan of the Sverdlovsk settlement. 2023, *Kommersant*, URL: https://www.kommersant.ru/doc/5785943 (accessed 08.01.2025).

[2] Decree of the Government of the Russian Federation dated December 28, 2024 № 4146-r "On Approval of the Spatial Development Strategy of the Russian Federation for the period up to 2030 with a forecast up to 2036. 2024, *Electronic Fund of Legal and Regulatory Documents*, URL: https://docs.cntd.ru/document/1310767692?ysclid=m6ia3cblfn866343914 (accessed 08.01.2025).

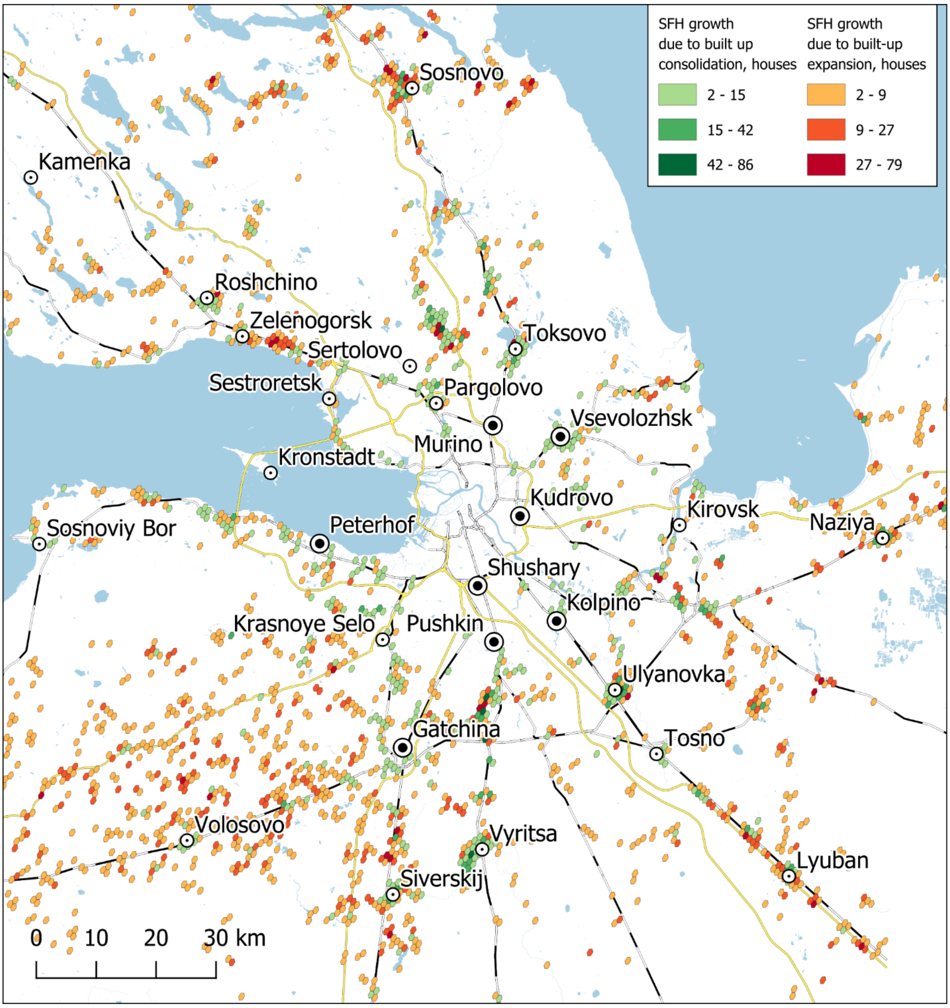

Fig. 7. Spatial structure of single-family houses (SFH) housing construction in the St. Petersburg agglomeration, for 2019—2024

Source: compiled by the authors based on the data housing registry of the state information system of housing and communal services.[1]

In order to sustain the growth in residential housing commissioning while simultaneously promoting construction in the near suburbs, it is essential to attract large-scale developers capable of ensuring the requisite level of infrastructure de-

[1] Register of housing stock objects. 2025, *Housing registry of state information system of housing and communal services*, URL: https://dom.gosuslugi.ru/#!/houses (accessed 08.01.2025) ; GHS built-up surface (R2023). 2023, *Global Human Settlement Layer*, URL: https://human-settlement.emergency.copernicus.eu/download.php (accessed 08.01.2025).

velopment in newly urbanized areas.[1] Consequently, the 2022 crisis, triggered by the imposition of severe anti-Russian sanctions, may catalyze the development of classical suburbanization in the suburbs of the St. Petersburg agglomeration and result in significant transformations in both the settlement system and traffic flows within the agglomeration.

Conclusions

Anti-Russian sanctions have significantly impacted the housing construction sector, particularly apartment buildings. The adaptation strategies adopted by developers in response to these new conditions will ultimately shape the development trajectories of the country's largest agglomerations, notably the St. Petersburg agglomeration under consideration.

The most profound influence on market dynamics has been the alteration of the discount rate, which, although indirectly, was substantially affected by the sanctions and the ensuing economic transformations. During a period marked by a pronounced divergence between the official discount rate and the preferential mortgage program rates, developers intensified their activities; however, the spatial patterns of development shifted.

Developers increasingly focused on exploring the grey belt zones located within the agglomeration's core, as this strategy reduced their reliance on mortgage lending. Projects in the rust belt areas were predominantly business-class, with elite-class developments occurring less frequently. Among the largest developers, only the Setl Group Holding successfully secured a dominant position within this niche. Concurrently, business-class developers — such as the RBI group and the Legend Holding—markedly expanded their activities. Collectively, these trends contribute to the deeper integration of grey belt territories into the urban fabric, albeit accompanied by inherent risks related to speculative apartment market growth.

In contrast to the rust belt, the share of construction in the suburbs decreased. Mortgage lending allowed developers to actively implement large-scale projects in suburban areas such as Murino, Kudrovo, etc. In the context of declining mortgage availability (against the background of rising discount rates), developers began to change their approaches to suburban areas. The largest developers have increasingly engaged in the sale of land plots, including those with ready-made documentation. Meanwhile, the overall number of actively developed zones remains largely unchanged. In practice, Novosaratovka village stands out as the sole new development area, offering developers opportunities to implement profitable mass housing construction projects. Transport accessibility in the territory remains extremely low, which simultaneously sustains high demand and, given the persistently slow development of off-street public transport in St. Petersburg

[1] Trends in Individual Housing Construction 2.0. 2024, Strategy Partners, 46 p. (in Russ.), URL: https://strategy.ru/research/research/trendyindividualnogozhilischnoigostroitelstva57/ (accessed 11.11.2024).

and the Leningrad region, is likely to cause significant transportation challenges in the southeastern part of the agglomeration. Concurrently, the creation of new suburban areas has become nearly impossible, as evidenced by the slow pace of development by the A101 GC in Lagolovo and the apparent indefinite suspension of the project in the village of Korpikulya. Nevertheless, the diversity of developers in suburban areas has increased; although to a lesser extent, business-class developers and new market entrants have begun to expand their presence. This trend reflects their strategic efforts to enhance diversification.

Although not a prevailing factor, the direct impact of sanctions — manifested in restrictions on the operations of foreign companies — has nonetheless influenced the residential real estate market. As a result, foreign companies such as YIT and Bonava exited the market, transferring their assets to domestic developers. Ultimately, the role of residential development in the grey belt has grown within the agglomeration, while the importance of suburban territories has diminished. At the same time, operational statistics already indicate a decline in the commissioning of multi-family housing in both St. Petersburg and the Leningrad region. This reflects a response to weakening demand, particularly associated with the decreasing affordability of mortgage loans. From the perspective of agglomeration core development, this trend may be viewed as favourable for St. Petersburg. However, it simultaneously constrains the prospects for achieving national housing provision targets within the agglomeration as a whole. Furthermore, individual housing construction remains largely absent in the near suburbs, preventing the emergence of classical suburbanization processes. Given the strong link between housing affordability and the migration attractiveness of the agglomeration, a further slowdown in population growth is likely. This trend is unfolding in parallel with structural changes in the transport, logistics, and manufacturing sectors, also triggered by the imposition of hard anti-Russian sanctions.

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