Analyzing the future of housing provision in a high-demographic growth region

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Abstract. This scientific article aims to determine the level of security of Kyrgyzstan citizens with regard to housing until 2030. The study takes into account the historical period from 1990 to present, analyzing the development of the housing stock and demographic population. The objective of this research is to solve the problem of housing provision for the population of the republic through effective management of the state's housing and demographic strategy. The study focuses on the interdependence of population growth factors and the dynamics of the housing stock in the village-city context, using a general scientific methodology for analysis. The article presents a correlation analysis and a predictive review of demographic and housing aspects, accounting for the interdependent dynamics of population and housing. The main results include a mutual influence analysis between demographic and housing dynamics, as well as a comparative forecast of demographic and housing parameters until 2030. The study provides recommendations for the Republican housing program "My Home" for 2021-2026. This research is important for the practical applicability and relevance of regional policy on housing and demographic issues.

1 Introduction

The Kyrgyz Republic is currently experiencing a significant increase in its demographic indicators, which according to international data, will undergo a demographic transition by 2030. This demographic trend aligns with the academic theory of demographic transition developed by Frank W. Notestein. However, a country with growing demographics often faces the problem of rapid urbanization, as is the case in the Kyrgyz Republic where rural residents make up two-thirds of the total population, while the urban population constitutes only 34%. The current provision of housing in urban areas, at 14 square meters per citizen,

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is far from the state-planned target of 18 square meters per citizen. The situation is not much different in rural areas.

Despite the growth in population, construction companies are more focused on building up urban and adjacent territories due to the higher solvency of urban residents, which translates to higher profits for these companies. As a result, issues of providing housing for both rural and urban citizens, as well as the interdependence of the demographic picture and housing construction have emerged.

Therefore, this article aims to address the problem of providing housing for the population of the Kyrgyz Republic by managing and aligning the volume of housing construction with the existing demographic picture. This study is of practical significance, considering the significant growth of the population and its importance in the Kyrgyz Republic's housing industry. In this article, we examine the relationship between demographic growth and housing construction, analyze the reasons for their disproportionate development, and offer possible solutions to this issue.

2 Literature review

The interdependence of housing and demographic trends has been the subject of extensive discussion in both foreign and domestic scientific publications. A number of prominent authors, including C.H. Mulder [1-4], G.V. Evans [5], M. Braubach [6], and Yu Zhang et al. [7], have contributed interesting perspectives and solutions regarding the relationship between the housing sector and demographic behavior, with topics ranging from health care to migration and family household development. In Russia and Kyrgyzstan, scientific opinions indicate that the development of the housing sector is significantly influenced by demographic trends [8-12], and studies have been conducted on the development of housing construction according to demographic indicators [13, 14]. Additionally, the works of Grabovoi P.G. and Kapustkina A.V. [15, 16] have focused on the development of the urban environment, taking into account environmental and energy issues, as well as signs of rapid development in the social and economic spheres of the city.

3 Materials and Methods

The methodology used in this scientific article is based on standard scientific research methods, including statistical review, comparative correlation analysis, and synthesis of theoretical and practical material. An array of statistical data from 1990 to 2021 on the dynamics of the population and housing stock was processed using the Correl program. To forecast indicators up to 2030, a long-term forecasting program called "trend and growth" was employed. Systematization, classification, and grouping of information were also utilized in analyzing the data array. Additionally, the study took into account the experience of studying the convergence of disproportionate data [17].

4 Results

4.1 Demographic situation

According to the latest census conducted in the Kyrgyz Republic in 2022, the total population of the country was reported to be 6,936,156 individuals. Out of this, the rural population accounted for 4,527,973 individuals, while the urban population comprised 2,408,183 individuals. It is noteworthy that the population of the country has shown a significant increase of 29.3% compared to the 2009 census, representing an absolute growth of 1573.4

thousand individuals. However, it is important to mention that the growth rate of the rural population has been slower compared to that of the urban population. Specifically, the 2020 census data revealed that the urban population grew by 31.8% in comparison to the 2009 census, whereas the rural population grew by 28.1% (Table 1). These findings underscore the need for further investigation and analysis of the demographic trends in the Kyrgyz Republic and their implications for the housing industry.

Table 1. Dynamics of population growth rates by territory

	1979 in % of 1970	**1989 in % of 1979**	**1999 in % of 1989**	**2009 in % of 1999**	**2020 in % of 2009**
Kyrgyz Republic	120.1	120.9	113.3	111.2	129.3
urban population	123.1	120.4	103.3	108.8	131.8
rural population	118.2	121.1	119.4	112.4	128.1

Source: the table was built by the author according to the data of the NSC KR [18].

The process of urbanization in the population is consistent with the global indications of Frank W. Notestein's demographic transition, which will inevitably impact the demographic development dynamics in the wake of housing construction. Nevertheless, the rural population is twice the size of the urban population, and this phenomenon, under certain conditions, can lead to the "Malthus trap." Consequently, the growth of the rural population coupled with insufficient rural housing supply would trigger migration and birth control among the rural population. The modernization of agriculture results in fewer rural jobs and a surplus of the labor force. Furthermore, the urban area's expansion at the expense of rural lands leads to a decrease in field lands, which consequently reduces the demand for labor resources in the countryside.

The internal migration helps in the urbanization process by providing cities with labor resources. However, an excessively active influx of people creates significant challenges for social engineering communications. These arguments are supported by other scholars in the field [19-42].

4.2 Statistical analysis of the relationship between the volume of rural / urban housing stock and the number of rural / urban population of the republic

4.2.1 Dynamic picture of rural housing stock and rural population

The relationship between the growth trends of the rural housing stock and the dynamics of the rural population is an important aspect of demographic development that needs to be studied. The increase in the rural housing stock is a critical component of the overall development of rural areas, as it is directly linked to the quality of life and well-being of the rural population. In addition, the dynamics of the rural population can be influenced by a range of factors, including economic development, migration, and urbanization.

To explore the relationship between the growth trends of the rural housing stock and the dynamics of the rural population in the Kyrgyz Republic, this study employed graphical functions that depict trends in the increase of rural housing stock and the growth of the rural population from 1990 to 2021. The data used in this study were collected from the National Statistical Committee of the Kyrgyz Republic, and the results are displayed in Figure 1.

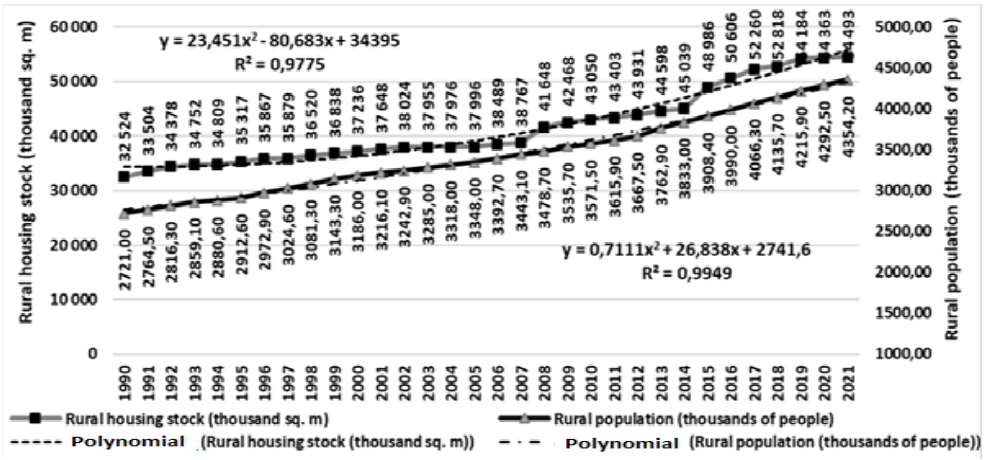

Fig. 1. Dynamics of rural housing stock (thousand sq.m.) and rural population (thousand people) for the period from 1990 to 2021 with polynomial functions of rural housing stock and rural population Source: the diagram was built by the author according to the NSC KR data for the period from 1990-2021 [18].

The graphical functions provide a visual representation of the trends over time and allow for a comprehensive analysis of the relationship between rural housing stock and the rural population. The trends displayed in Figure 1 show that the increase in the rural housing stock has been slower than the growth of the rural population in recent years. This suggests that there may be a need for more investment in the construction of rural housing to meet the needs of the growing population.

In addition, the graphical functions reveal a slight decline in the growth rate of the rural population in recent years, which may be attributed to factors such as migration to urban areas and declining birth rates. This decline in population growth may have implications for rural development policies and investment priorities.

In the analyzed period, the charts of the rural housing stock and the number of rural populations exhibit a steady upward trend. Although a linear function could be used to describe these trends, a quadratic function provides a more accurate approximation. The dynamics of the rural population display stable growth and can be described by a quadratic function $y = 0.7111x^2 + 26.838x + 2741.6$. The reliability coefficient R^2 for this function is 0.9949, indicating a high level of accuracy of more than 99%. In contrast, the development of rural housing stock appears more spasmodic, with a period of recession and growth. The trend line for rural housing stock has a slightly lower reliability coefficient of $R^2 = 0.9775$, which is 4% lower than that of the rural population graph. The trend line for rural housing stock can be described by the following quadratic function: $y = 23.451x^2 - 80.683x + 34395$.

Through a comprehensive examination of the graphs depicted in Figure 1, a strong positive correlation between the rural housing stock volume and the rural population number is evident. To further demonstrate the relationship between these variables for the analyzed period, a table of statistical data for these indicators from 1990 to 2021 will be compiled (refer to Table 2).

Table 2. Statistics of rural housing stock and rural population from 1990 to 2021

Years	Rural housing stock (thousand sq. m)	Rural population (thousands of people)	Annual increase in rural housing stock (thousand sq. m)	Annual growth of the rural population (thousands of people)	Total living area per person in the village sq.m.
1990	32 524	2721,00			11.9
1991	33 504	2764,50	980	43.50	12.0
1992	34 378	2816,30	874	51.80	12.1
1993	34 752	2859,10	374	42.80	12.1
1994	34 809	2880,60	57	21.50	12.0
1995	35 317	2912,60	508	32.00	11.9
1996	35 867	2972,90	550	60.30	11.9
1997	35 879	3024,60	12	51.70	11.6
1998	36 520	3081,30	641	56.70	11.7
1999	36 838	3143,30	318	62.00	11.6
2000	37 236	3186,00	398	42.70	11.6
2001	37 648	3216,10	412	30.10	11.7
2002	38 024	3242,90	376	26.80	11.7
2003	37 955	3285,00	-69	42.10	11.6
2004	37 976	3318,00	21	33.00	11.5
2005	37 996	3348,00	20	30.00	11.4
2006	38 489	3392,70	493	44.70	11.4
2007	38 767	3443,10	278	50.40	11.4
2008	41 648	3478,70	2 881	35.60	12.1
2009	42 468	3535,70	820	57.00	11.9
2010	43 050	3571,50	582	35.80	11.9
2011	43 403	3615,90	353	44.40	11.8
2012	43 931	3667,50	528	51.60	11.7
2013	44 598	3762,90	667	95.40	11.6
2014	45 039	3833,00	441	70.10	11.5
2015	48 986	3908,40	3 946	75.40	12.3
2016	50 606	3990,00	1 621	81.60	12.4
2017	52 260	4066,30	1 653	76.30	12.6
2018	52 818	4135,70	558	69.40	12.5
2019	54 184	4215,90	1 366	80.20	12.6
2020	54 363	4292,50	179	76.60	12.4
2021	54 493	4354,20	130	61.70	12.5

Source: prepared by the author according to the NSC KR data [18]

Based on the statistical data presented in Table 2, it can be observed that the minimum levels of rural housing stock and rural population were registered in 1990. The volume of rural housing stock in that year amounted to 32,524 thousand square meters, while the rural population was 2721.0 thousand people. In contrast, the maximum levels of rural housing stock and rural population were recorded in 2021, with the registered volume of housing stock amounting to 54,493 thousand square meters and 4,354.20 thousand people of the rural population.

However, the dynamics of the annual increase in the rural housing stock are not uniform and follow a fluctuating trend. It exhibits periods of active growth and sharp decline. For instance, in 2003, the increase in the rural housing stock was negative, amounting to -69 thousand square meters relative to 2002. On the other hand, in 2015, the increase in rural housing stock amounted to +3,946 thousand square meters, indicating a substantial increase

compared to previous years. These findings suggest that the growth of rural housing stock is subject to various factors that may affect its development over time.

4.2.2 The result of the correlation analysis for the studied factors of the relationship

A comprehensive analysis of the correlation between the increase in rural housing stock and the rural population was carried out utilizing the Pearson formula in the Correl program. The calculated correlation coefficient R(correl) was found to be 0.980033477, indicating a strong positive correlation between the two variables. However, the dependence on increments was found to be less indicative with R(correl) = 0.34, corresponding to a small dependence. Nevertheless, the causality method revealed a strong positive relationship between the growth of the rural housing stock and the rural population, indicating a close association between these two factors. Adequate and decent housing in rural areas can significantly contribute to the development of the rural population, which is in contrast to the dynamics observed in urban areas with respect to population and housing stock.

Therefore, it can be argued that favorable trends in the rural housing stock will lead to a significant increase in the country's demographic potential in the future. As a result, it is important to prioritize the development of the rural housing sector to ensure a positive impact on the country's demographic growth. Overall, the results of this study demonstrate the importance of understanding the relationship between the growth trends of the rural housing stock and the dynamics of the rural population. The graphical functions provide a useful tool for policymakers and researchers to gain insights into these trends and make informed decisions about future investments in rural development.

4.2.3 Dynamic picture of the development of urban housing stock and urban population

During the disintegration of the Soviet Union and the first years of Kyrgyzstan's independence, the pace of housing construction was high. However, due to the collapse and subsequent decay of the construction industry, the volume of housing construction decreased. The development of the land fund for housing construction is closely related to the housing stock. The jump in the volume of urban housing stock observed from 2006 to 2012, as depicted in Figure 1, is attributed to the political events of 2005. The lifting of the moratorium on transforming agricultural land around large cities into housing construction after the 2005 revolution resulted in a peak value in the volume of urban housing stock in 2010. The dynamics of the urban population, on the other hand, exhibit a constant and stable growth pattern, as shown in Figure 2.

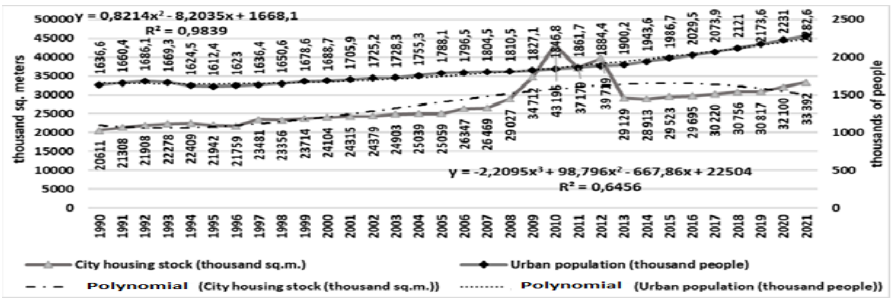

Fig. 2. Dynamic picture of urban housing stock (thousand sq. m.) and urban population (thousand people) for the period from 1990 to 2021
Source: chart constructed by the author based on data from the NSC KR for the period from 1990 to 2021 [18].

An examination of the historical dynamics of the urban housing stock in Kyrgyzstan reveals a stochastic process, with a complex description function characterized by a low coefficient of approximation. Specifically, the polynomial function is represented as $y = -2.2095x^3 + 98.796x^2 - 667.86x + 22504$, with a confidence factor of 64% ($R^2 = 0.6456$). Notably, a sharp increase in the volume of urban housing stock is expected from the end of 2022 to the end of 2023, owing to the housing construction amnesty announced by the President of the Republic. However, the resulting dynamic pattern highlights the chaotic nature of the development of the housing stock, with uncertain future prospects. We propose that the positive and stable dynamics of the urban population, in the context of unstable growth in the housing stock, is the only factor suitable for explaining this picture. In contrast, the urban population factor exhibits steady growth throughout the period of Kyrgyzstan's independence, with a clear and calm pattern. The quadratic function $y = 0.8214x^2 - 8.2035x + 1668.1$ provides a high degree of approximation ($R^2 = 0.9839$), allowing for reliable forecasting of future trends with 98% accuracy.

To investigate the relationship between the urban housing stock and the urban population, we performed a correlation analysis spanning the entire period of Kyrgyzstan's independence. The results indicated an average dependence of the two factors, with R(corel) = 0.63. However, when assessing the correlation based on the first difference or increase in indicators, the analysis yielded a value of R(corel) = 0.05523, indicating the absence of a relationship between the two factors (Table 1).

Table 3. Urban housing stock and urban population development rates from 1990 to 2021

Years	City housing stock (thousand sq.m.)	Urban population (thousand people)	Annual increase in urban housing stock	Annual urban population growth	Total living area per person in the city
1990	20611	1636.6			12.2
1991	21308	1660.4	697	23.8	12.5
1992	21908	1686.1	600	25.7	13
1993	22278	1669.3	370	-16.8	13.7
1994	22409	1624.5	131	-44.8	13.9
1995	21942	1612.4	-467	-12.1	13.5
1996	21759	1623	-183	10.6	13.3
1997	23481	1636.4	1722	13.4	14.2
1998	23356	1650.6	-125	14.2	13.9
1999	23714	1678.6	358	28	14
2000	24104	1688.7	390	10.1	14.1
2001	24315	1705.9	211	17.2	14.1
2002	24379	1725.2	64	19.3	14.1
2003	24903	1728.3	524	3.1	14.2
2004	25039	1755.3	136	27	14
2005	25059	1788.1	20	32.8	13.9
2006	26347	1796.5	1288	8.4	14.6
2007	26 469	1804.5	122	8	14.6
2008	29 027	1810.5	2558	6	15.9
2009	34 712	1827.1	5685	16.6	18.8
2010	43 196	1846.8	8484	19.7	23.2
2011	37 179	1861.7	-6017	14.9	19.7
2012	39 719	1884.4	2540	22.7	20.9
2013	29 129	1900.2	-10590	15.8	15
2014	28 913	1943.6	-216	43.4	14.6
2015	29 523	1986.7	609	43.1	14.5
2016	29 695	2029.5	172	42.8	14.3

2017	30 220	2073.9	526	44.4	14.2
2018	30 756	2121	536	47.1	14.1
2019	30 817	2173.6	61	52.6	13.8
2020	32 100	2231	1283	57.4	14
2021	33 392	2282.6	1292	51.6	14

Source: prepared by the author according to the NSC KR data [18]

4.2.4 The result of the correlation analysis for the studied factors of the relationship

According to the results of the correlation analysis, there is no strong relationship between the growth of the urban population and the increase in the volume of urban housing stock. This suggests that the active demand in the housing market is not primarily driven by urban citizens, but rather by migrants or rural residents. In fact, over the past decade, the territory of cities has expanded by 2,500 hectares due to the construction of 24 new residential areas specifically designed for migrants, as reported by the National Statistics Committee [19; 20]. This finding supports the claim that the demand for housing in cities is largely driven by migrants, since urban families have a relatively low birth rate compared to rural families, and a high proportion of the wealthier urban population tends to emigrate. As a result, a significant number of urban dwellings become available for future urban residents.

4.3 Dynamics of provision of rural/urban citizens with housing space and services

Between 1990 and 2021, the rural housing stock in the Kyrgyz Republic increased by almost 22 million sq.m. However, the provision of housing per rural citizen only increased by one sq.m. In 1990, the housing provision was 12 sq.m. per person, whereas in 2021, it was 13 sq.m. per person. It is worth noting that both rural and urban housing stocks are growing. In 1990, the difference between the rural and urban housing stocks was 11,913 thousand sq.m. in favor of rural. By 2019, this difference had grown to more than 22,061 thousand sq.m. This indicates that the rural housing stock is growing twice as fast as the urban housing stock, which is a unique feature of the Kyrgyz Republic among the EAEU countries. In general, the EAEU countries have witnessed active growth in urban housing stock and urban population. However, in Kyrgyzstan, the growth of the rural population lags behind the growth of the urban population, even with the higher birth rate of the former. This situation is mainly due to the high rate of migration of rural citizens to the cities of Kyrgyzstan, particularly to the Chui region and the city of Bishkek.

During the period of independence, the provision of housing and communal services to the rural housing stock has consistently fallen behind that of the urban housing stock. As of 2021, the coverage of water supply and sanitation services in rural housing stock was only one-fifth of that in urban housing stock (Figure 3).

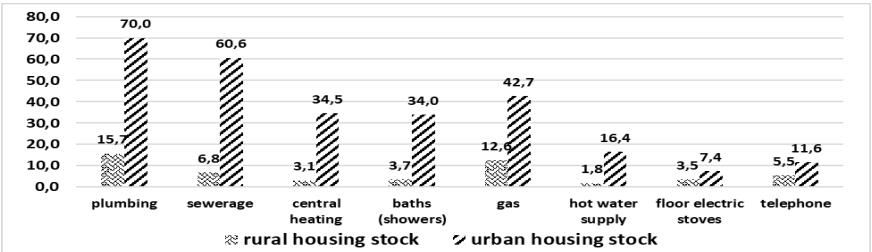

Fig. 3. Equipment of the housing stock by village / city in % for 2021
Source: prepared by the author according to the NSC KR data [18].

The present study aims to investigate the distribution of total living space per inhabitant in a country over a period of 31 years, from 1990 to 2021. To achieve this objective, statistical data presented in Figure 3 were analyzed, revealing a noticeable upward trend in the level of housing per capita in the republic from 2007 onwards. In particular, the peak of 15.7 sq. km. was reached in 2010. This period was marked by a more significant increase in the total living space per person in the cities of the country, where this figure rose to 23.2 square meters. m. in 2010. Conversely, in the rural areas, the level of housing per capita remained almost unchanged for 29 years, fluctuating between 11.9 and 12.6 sq.m. per person (Figure 4). These findings shed light on the different patterns of housing development in urban and rural areas, and highlight the need for further research to understand the underlying drivers of these trends.

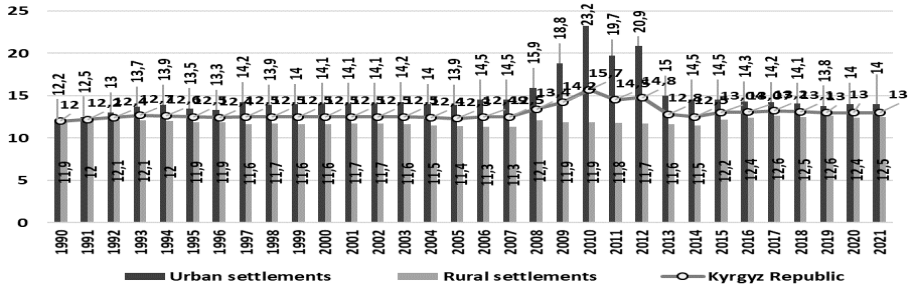

Fig. 4. Total living area per person in the whole country and in urban and rural areas from 1990 to 2021 (sq.m.)

Source: prepared by the author according to the NSC KR data [18].

The Government of the Republic has set the goal of increasing the level of housing provision to 18 square meters per person in policy documents, with the ultimate aim of eliminating the current housing shortage. However, current trends in housing construction indicate that it will take over two decades to achieve this goal, with one to one and a half million square meters of living space commissioned annually. Furthermore, the country's positive population growth rate of 1.1 necessitates the construction of at least six million square meters of new housing per year to meet global standards of providing one square meter of housing per citizen. However, the assessment of housing provision cannot be based solely on this indicator, as the dynamics of the entire housing stock also play a significant role. The housing stock is reduced through the demolition of obsolete and dilapidated housing, as well as through the conversion of residential premises into non-residential premises, such as shops, cafes, and offices. This trend also applies to the rural housing stock and the rural population. Based on the analysis conducted, a villager will achieve 18 square meters per person only by 2050, assuming that the rural population remains constant, and the rural housing stock grows at the same rate as today.

5 Discussion

The significance of the findings from the conducted research can be demonstrated by their ability to predict long-term levels of housing provision for the entire population. The predictions were made using the "trend and growth" program and were based on the interdependent dynamics of the housing stock and the population of the Republic. The predicted indicators are presented in Table 4 and are valid for the period from 2020 to 2030.

Table 4. Dynamics of the population (million people), housing stock of the republic (million sq.m.) and living space per person (sq.m.) for the forecast period from 2020 to 2030

	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Population, mln.	6.24	6.32	6.40	6.48	6.56	6.64	6.73	6.81	6.90	6.99	7.08
Housing stock, million sq.m.	86.579	88.022	89.489	90.981	92.498	94.040	95.608	97.201	98.822	100.469	102.144
Living area per person (sq.m.)	13.86	13.92	13.98	14.03	14.09	14.15	14.20	14.26	14.32	14.38	14.44

Source: prepared by the author according to the NSC KR data [18].

The results of the forecast study demonstrate a growth trend in the population and housing stock of the Kyrgyz Republic during the forecast period. However, the growth rate of the housing stock cannot be considered satisfactory, as the growth of living space per person will only be 4% in the 10-year period from 2020 to 2030. The current housing program of the Kyrgyz Republic, "My House" for 2021-2026 [25], aims to achieve a level of housing provision of 18 sq. m per person. Based on the achieved growth rates of housing commissioning and the volume of its disposal for various reasons, it will not be possible to achieve this goal even by 2030. To achieve this, significant investments are needed to increase the commissioning of housing to 127,365.7 thousand square meters per year. This requires the development of drastic measures at the financial-republican and construction-industry levels to ensure a breakthrough in the construction of new and preservation of the existing housing stock within the framework of the My Home housing program and its future extensions. These measures will help to achieve international standards for housing, which is 30 sq. m per person.

Similarly, a forecast was made for the dynamics of the rural population and the volume of rural housing stock for the period 2020-2030, which confirmed the insufficient growth rate of the provision of housing stock for the growing rural population according to the criteria of the republic's housing program (Table 5). The provision of residents in rural areas is currently 14.01 sq.m. per person, which is lower than the targeted 18.0 sq.m. per person.

Table 5. Forecast of the dynamics of the rural housing stock (l / f) (million sq.m.), the number of rural population and living space per 1 person (sq.m.) from 2020 to 2030.

Years	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Rural railway, million sq.m	55.17	56.62	58.1	59.63	61.19	62.80	64.44	66.14	67.87	69.66	71.48
Rural population, million people	4.30	4.37	4.45	4.53	4.60	4.68	4.76	4.85	4.93	5.02	5.1
Living area per person in the village (sq.m.)	12,84	12,95	13,06	13,18	13,29	13,41	13,53	13,65	13,77	13,89	14,01

Source: prepared by the author according to the NSC KR data [18]

By analogy, on the basis of the studies carried out, a forecast was made of the dynamics of the urban population and the volume of urban housing stock for the period 2020-2030 (Table 6).

Table 6. Forecast of the dynamics of the housing stock (million sq.m.), population and living space per 1 person (sq.m.) for 2030

Years	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
City railway, million sq m	31.76	31.78	31.81	31.84	31.86	31.89	31.92	31.94	31.97	31.99	32.02
Urban population, million people	2.16	2.20	2.23	2.27	2.30	2.33	2.37	2.40	2.44	2.48	2.51
Residential area per person of the city (sq.m.)	14.66	14.46	14.25	14.06	13.86	13.67	13.48	13.29	13.11	12.92	12.74

Source: prepared by the author according to the NSC KR data [18]

The present study affirms that a close relationship between housing policy and the practical demographic situation in the country is essential. Hence, housing policy must be supplemented with a demographic strategy to form a comprehensive housing and demographic policy of the state. The findings of this study show that the growth rate of the housing stock of the growing urban population is insufficient according to the criteria of the republic's housing program. Quantitatively, the provision of urban residents in 2030 will be only 12.7 sq.m. per person, which falls short of the program's target of 18.0 sq.m. per person. Therefore, regular implementation of the proposed methodology for such forecasts can enable city authorities, as well as the republic, industries, and enterprises involved, to carry out effective monitoring in time and space of programs and strategies, processes, and results of the implementation of housing and demographic policy. This can facilitate the development of necessary measures of a housing and demographic nature in the medium and long term. The leadership of regions and rural settlements, as well as the industries and enterprises involved, can also use these forecasts to effectively monitor the implementation of housing and demographic policy programs and strategies.

6 Conclusion

In conclusion, the study has developed a methodological approach to address the regional problem of housing provision for the population of the Kyrgyz Republic, considering the interdependent and disproportionate housing and demographic development trends. The study has identified correlations and established trends between various factors such as the dynamics of rural/urban population, housing stock, and commissioning of residential buildings. Based on the results, forecast calculations were made for the future period, and recommendations were formulated to focus on the republican housing program and indicators of housing policy at the republic and rural levels.

The recommendations include: regular monitoring of the housing stock, constant forecasting of the fulfillment of housing program tasks, development of appropriate measures, and informing the population about housing stock insufficiency or redundancy.

The study provides valuable insights into the housing and demographic situation in the Kyrgyz Republic and can guide policymakers and practitioners to make informed decisions for sustainable housing provision.

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