European Commission

Joint Research Centre

# Housing investment needs in the EU

Balouktsi, D., Joossens, E., Le Blanc, J., Pagano, A., Zeugner, S.

2026

This document is a publication by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The contents of this publication do not necessarily reflect the position or opinion of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

**Contact information**
Email: JRC-MAPADOMO@ec.europa.eu

**Joint Research Centre**
https://joint-research-centre.ec.europa.eu

JRC144419
EUR 40738

PDF ISBN 978-92-68-40050-0 ISSN 1831-9424 doi:10.2760/5830106 KJ-01-26-239-EN-N

Luxembourg: Publications Office of the European Union, 2026

© European Union, 2026

The reuse policy of the European Commission documents is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Unless otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (https://creativecommons.org/licenses/by/4.0/). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

For any use or reproduction of photos or other material that is not owned by the European Union permission must be sought directly from the copyright holders.
Cover page illustration, © THUA / stock.adobe.com

How to cite this report: Balouktsi, D., Joossens, E., Le Blanc, J. and Pagano, A., Zeugner, S. *Housing investment needs in the EU,* Publications Office of the European Union, Luxembourg, 2026, https://data.europa.eu/doi/10.2760/5830106, JRC144419.

# Contents


Abstract ..... 2

Acknowledgements ..... 3

Authors ..... 3

1. Introduction ..... 4

2. Scope of the analysis ..... 5

3. Measuring investment needs ..... 6

3.1. Data sources for measuring demand ..... 6

3.1.1. Census household data (Eurostat) ..... 7

3.1.2. Population data (ARDECO) ..... 7

3.1.3. Population projections (Eurostat) ..... 8

3.2. Data sources for measuring supply ..... 8

3.2.1. ECFIN–JRC mapadomo database ..... 9

3.2.2. Census dwelling data (Eurostat) ..... 10

3.2.3. Eurostat data on land area ..... 10

3.2.4. ECFIN Housing Market Database ..... 10

4. Methodology ..... 11

4.1. Construction of time series on demand ..... 11

4.2. Construction of time series for supply ..... 13

4.3. Prices ..... 17

5. Results ..... 21

5.1. Combining the parts ..... 22

5.2. Identification of regions of need ..... 26

5.3. European level investment needs ..... 27

6. Conclusions ..... 29

References ..... 31

List of abbreviations and definitions ..... 33

List of figures ..... 34

List of tables ..... 35

Annexes ..... 36

## Abstract

Housing affordability has become a pressing policy concern across the European Union, driven by rising costs and persistent demographic change. This report provides harmonised estimates of housing investment needs for all EU Member States using a common, bottom-up analytical framework that captures demand and supply dynamics at the NUTS 3 level. It identifies where gaps between household numbers and dwelling stock have emerged and quantifies the additional investment required to close them across the EU until 2035. The analysis demonstrates that housing needs are concentrated in a limited number of high-demand metropolitan and urban regions, with approximately two-thirds of total EU investment needs originating in Germany, France, Italy, and Spain. The findings are directly relevant to the European Affordable Housing Plan and support evidence-based targeting of housing investment across the Union.

## Acknowledgements

This report summarises the methodology employed for the estimation of Housing investment needs (Balouktsi *et al., 2025*). The authors want to thank for their precious support Jessica Cariboni and Michela Nardo (JRC.B1) and colleagues from DG Economic and Financial Affairs (DG ECFIN.B1): Vitor Martins, Borek Vasicek and Francesca Colombo.

***Authors***

Balouktsi D., Joossens E., Le Blanc J., Pagano A, Zeugner, S.

# 1. Introduction

Housing is a basic need and a central component of economic and social well-being. Access to stable housing shapes people's ability to participate in the labour market, pursue education, support family life and engage in their communities. In recent years, affordable housing has become an increasingly important policy concern across the European Union, amid rising housing costs and broader demographic change (Eurostat, 2024; European Commission, 2023).

A key consideration for the European Affordable Housing Plan (European Commission, 2025) is to improve housing affordability across the EU. Assessing investment needs forms part of that objective. However, estimating those needs requires more than a broad national assessment of housing shortages. It requires an understanding of how housing demand and housing supply evolve across territories, since imbalances often emerge at highly localised level and cannot be adequately captured through aggregate national indicators alone (Balouktsi et al., 2025).

The issue of housing investment needs is not new on the political agenda. Several countries including the Netherlands (ABF Research, 2025), Ireland (The housing commission, 2024) and Germany (Müther and Waltersbacher, 2025) have already produced national estimates of housing requirements, while European institutions such as the European Investment Bank have provided related analyses (European Investment Bank, 2025) for a more limited set of EU countries. Existing estimates often differ in scope, concepts, territorial coverage and methodology, making cross-country comparisons difficult. This report advances the analysis of investment needs in Europe by providing harmonised estimates of housing investment needs for all EU Member States using a common analytical framework.

The broader literature also helps explain why such an approach is needed. Housing demand is influenced not only by population growth, but also by demographic change like aging, household formation and migration patterns (Mankiw and Weil, 1989; Mulder, 2006). At the same time, the responsiveness of housing supply differs across locations, reflecting differences in local constraints and market conditions (Saiz, 2010). As a result, housing pressures may develop unevenly across regions, and national aggregates may not fully capture local imbalances. Building on these insights, the present report adopts a bottom-up regional methodology designed to capture the territorial dimension of housing demand and supply across the EU.

The report provides harmonised estimates of housing investment needs for all EU Member States and offers a consistent basis for cross-country comparison. The following sections describe the conceptual scope of the exercise, the methodology used to estimate the demand and supply sides that underpin the identification of investment needs, the underlying data sources, the identification and definition of regions in need, and the main results.

## 2. Scope of the analysis

This analysis is built to deliver a transparent, evidence-based estimate of the volume of new dwellings required across the European Union over the medium- to long-term horizon. By analysing the balance between housing demand and supply at the regional level, it identifies where gaps between household numbers and dwelling stock have emerged and where new gaps are expected to appear, and from those gaps calculates the concrete investment needed to close them on an EU-wide scale.

In order to keep the analysis focused and reliable, several aspects of the housing challenge that fall beyond the reach of a pure demand-supply gap model are deliberately set aside. Affordability is shaped by a complex mix of income distribution, mortgage-financing conditions, rent-price dynamics, and local cost-of-living factors that vary widely from one region to another. Quantifying the amount of housing required to meet specific affordability targets would therefore demand a separate, income-driven simulation framework. Similarly, housing adequacy is not addressed in this analysis. Standards such as minimum floor area, overcrowding thresholds, or accessibility for people with reduced mobility are largely qualitative, highly context-specific, and not uniformly measurable across Member States.

Finally, the retrofitting of the existing stock to satisfy energy-efficiency requirements — under the EU Energy Performance of Buildings Directive (European Parliament and Council of the European Union, 2024), for instance — entails a distinct set of cost drivers, technical constraints, and policy incentives. In the current approach, the existing housing stock is treated as a static supply element, and no attempt is made to estimate the investment needed to upgrade it.

By concentrating on the core dynamics of demand versus supply, the approach provides a robust baseline for EU-wide housing investment planning while clearly signalling the complementary analyses that will be required to tackle affordability, adequacy, and energy efficiency in future work. The identified regional-level demand-supply gaps can be cross-referenced with the territorial-level objectives set out in the EU Cohesion Policy and the Urban Agenda for the EU. By mapping the quantified investment needs onto the priority axes of each Member State's National Recovery and Resilience Plans, and by feeding them into the eligibility criteria of the European Regional Development Fund, the Cohesion Fund and the Just Transition Fund, policymakers can ensure that the housing-investment figures are directly embedded in national and EU-wide funding programmes. This linkage not only strengthens the evidence base for allocating structural funds, but also facilitates the alignment of future housing-related actions with broader objectives such as inclusive growth, social cohesion and the green transition.

To support the construction industry in stepping up to the challenge of supplying affordable housing, the Commission will, among other measures, in close coordination with industry, promote innovation in construction and renovation materials and methods, and support a shift to more circularity and digital processes, through a new European Strategy for Housing Construction. A first step in this direction will be the EU Affordable Housing Act, a simplification package and mobilising new investments under this and the next Multiannual Financial Framework (MFF). A new European Housing Alliance will enhance cooperation and sharing of good practice between Member States, cities, regions, other EU institutions and stakeholders.

# 3. Measuring investment needs

Housing investment needs arise from the gap between the current and foreseeable demand for homes and the existing and expected change in stock of completed dwellings. Accurately assessing both current and future structural housing demand depends on detailed demographic information about households and their size. Because household members are employed, attend school and take part in community activities, they are often unable to relocate to the locations where new (more affordable) housing supply is emerging. Consequently, the mismatch between where people want or need to live and where housing is being built drives prices and, thereby the need for targeted investment. This highlights the importance of analysing housing investment needs following a bottom- up approach starting from a granular regional level.

While housing shortages exist in many high-demand regions and metropolitan areas, many countries also exhibit regions with an oversupply of dwellings which, due to their geographic position, cannot compensate the existing need in other regions. Hence the oversupply in some regions cannot be taken into account for the calculation of housing needs. Country-level housing needs can therefore only be obtained by aggregating identified needs at local level.

The first step is to identify the existing local or regional housing needs or shortfalls. Such shortfalls arise primarily in areas where the number of households is growing faster than the supply of dwellings: when the housing stock does not expand at the same rate as household formation, a gap develops.

The second step is to look ahead and quantify the future demand based on population projections. In addition to needs originating from pure demographic change, replacement needs must be accounted for as dwellings are removed from the stock over time through depreciation. Partially, both sources of need will be compensated by new future construction estimated using current regional construction patterns.

All supply and demand-related data are harmonised to NUTS 2021 boundaries using Eurostat correspondence tables. Observations originally reported under the NUTS 2006, 2010 or 2013 classifications are mapped to their NUTS 2021 equivalents, yielding a consistent NUTS 3 regional panel over time.[1]

All components are then aggregated at the national level to produce a country-wide estimate of investment needs. Regions that have historically experienced or are projected to experience an oversupply are excluded from this aggregation, because that surplus cannot offset the unmet demand in other areas due to geographic constraints.

## 3.1. Data sources for measuring demand

This section describes the data sources used to obtain the number of households at local (NUTS 3) level over time to estimate housing demand starting from 2010 up to 2040.

The number of households can be obtained from census data but coverage over time is limited to 2010 and 2020. Time series data on the number of households at the regional level are not directly available but can be derived by combining data on the number of people, household composition, age categories, and population projections at the regional level.

[1] For more information see: Overview - NUTS - Nomenclature of territorial units for statistics - Eurostat

Details on population are taken from JRC ARDECO. The dataset includes population size by age group and sex at the regional level, and these data are combined with information on the household composition (from Eurostat census 2011 and census 2021).[2] For projections, regional-level population projections from Eurostat are used. These include NUTS 3 results from Eurostat's 2019-based population projections (EUROPO2019).

All demand-side data are harmonised at annual frequency and expressed at NUTS 3 level for the EU. All spatial data are mapped to the NUTS 2021 classification. Together, these sources provide a consistent empirical basis for modelling evolution of the number of households at regional level and projecting future changes. An overview of the main data sources and their role in the demand-side analysis is provided in Table 1.

**Table 1.** Data sources used for the demand-side number of households

| Source | Spatial level | Period | Main variable(s) |
|---|---|---|---|
| **Census** | NUTS3 | 2010 and 2020 | Number of households, Household composition by age |
| **ARDECO** | NUTS3 | 1990 - 2024 | Population composition by sex and age |
| **Eurostat Population Projections 2019**[3] | NUTS3 | Forward up to 2100 | Population projections by age and sex |
| **Eurostat Population projections 2023**[4] | NUTS0 | Forward up to 2100 | Population projections by age and sex |

*Source: own elaboration*

### 3.1.1. Census household data (Eurostat)

Census household data, primarily sourced from Eurostat, provide the benchmark regional information on household structure used in this project for the census years 2011 and 2021. The data are available by NUTS3 level, census year, sex and age, with observations reported for total, male and female population. The age structure is recorded in grouped form, including ages under 5, standard five-year age bands, and the oldest-age groups 85–89, 90–94, 95–99 and 100 years and over, together with total population.

The files additionally include both household counts and person counts classified by household composition and living arrangement. Family status categories identify, among others, couples, lone-parent households, adults not belonging to a family nucleus, and children living with parents, alongside total and unknown categories. Household status categories distinguish private households, family households, non-family households, one-person households, multi-person households, institutional population and other non-private accommodation, again with total and unknown categories where relevant.

### 3.1.2. Population data (ARDECO)

Observed regional population data are taken from the Annual Regional Database of the European Commission (ARDECO)[5]. For this project, ARDECO provides annual population counts at NUTS3 level

[2] For France data has been amplified with national statistics due to some inconsistencies observed.

[3] Eurostat table proj_19rp3

[4] Eurostat table proj_23np

[5] Downloadable from: ARDECO Explorer

by age group and sex for the period 1990–2024. The dataset is used to construct the historical demographic baseline for the household projection model, with population extracted for 18 age groups, ranging from under 5 to 85 years and over, and for total, male and female population.

### 3.1.3. Population projections (Eurostat)

Population projections, drawn from Eurostat, provide the forward-looking demographic input used in the household projection model. The data correspond to the 2019-based Eurostat regional population projections at NUTS3 level, originally published according to the NUTS 2016 classification. The dataset includes projected population counts by geography, year, sex and age and distinguishes between a baseline projection, a no internal migration projection and a no migration projection. Although the projections extend to 2100, only the baseline projection is used in this project, and only the period up to 2040 is retained in the harmonised dataset used in the analysis. As the projections file applies a more detailed age coding than the modelling framework, the projected population data are aggregated to the common 18-group age classification used throughout the analysis, ranging from under 5 years to 85 years and over, with observations reported for total, male and female population.

More recent projections, based on data up to 2023 and available only at national level, already suggest some revisions to the 2019-based projections. As they are available only at a more aggregate level, their rates of change have been used to partially adjust the 2019 projections.

## 3.2. Data sources for measuring supply

This section describes the datasets used to construct and project the regional housing supply and to estimate the key parameters governing housing stock dynamics.

The primary data source used to estimate regional depreciation and construction rates for the supply-side housing projections is the ECFIN–JRC mapadomo regional housing stock database, which provides a rich annual time series of dwelling stock variables at NUTS 3 level. This core dataset is complemented by auxiliary country- and regional-level inputs drawn from the ECFIN B1 Housing Market Database as well as Eurostat census and ancillary datasets.

All supply-side data are harmonised at annual frequency and expressed at NUTS 3 level for the EU. Country-level series are used only where regional information is unavailable or for calibration purposes. All spatial data are mapped to the NUTS 2021 classification. Together, these sources provide a consistent empirical basis for modelling regional housing stock evolution and projecting future housing supply. An overview of the main data sources and their role in the supply-side analysis is provided in Table 2.

**Table 2.** Data sources used for the supply-side housing projections

| Source | Spatial level | Period | Main variable(s) |
|---|---|---|---|
| **ECFIN-JRC mapadomo** | NUTS 3 | 1989-2024[6] | Dwelling stock, population, price per $m^2$, $m^2$ per dwelling, completed dwellings |
| **Housing censuses (Eurostat)** | NUTS 3 | 2010, 2020 | Dwelling types, occupancy |
| **Eurostat land area** | NUTS 3 | 2013–2025 | Land area ($km^2$) |
| **ECFIN Housing Market Database** | National | 2011–2025[7] | Completions, starts, permits, price per $m^2$ |

*Source: own elaboration*

### 3.2.1. ECFIN–JRC mapadomo database

To project future housing supply, the analysis adopts a housing stock accounting framework in which changes in the dwelling stock reflect the balance between new construction and depreciation. Implementing this framework requires regionally consistent annual data that allow housing stock dynamics to be tracked over time.

The empirical backbone of the analysis is the ECFIN-JRC mapadomo database[8], a harmonised cross-country database providing annual regional information on housing stocks, prices and related indicators at NUTS 3 level across the European Union. The database is compiled primarily from official statistical sources and is complemented, where necessary, with information from private web-based sources. Data coverage varies by country, with time series starting in the 1990s and extending into the 2020s for a subset of Member States. Its main advantage for the present analysis is the availability of consistent subnational time series, which makes it possible to follow housing stock developments between census benchmark years and across countries.

For the supply-side projections, the analysis uses two regional inputs from the ECFIN-JRC mapadomo database: (i) the dwelling stock time series and (ii) time series on dwelling completions at NUTS 3 level. While the former are part of the publicly released ECFIN-JRC mapadomo dataset, the latter are underlying inputs used in its construction and are not included in the public release. In addition, ECFIN-JRC mapadomo population data are combined with Eurostat land area data to compute regional population density, as described in Section 4.2.

ECFIN-JRC mapadomo also provides regional housing price information. In this analysis, transaction prices per square metre and average dwelling size (square metres per dwelling) are used in the valuation step to translate projected housing units into values[9]. Where regional price series are incomplete, they are complemented using the ECFIN B1 Housing Market Database (see Section 4.3).

[6] Coverage varies across countries and variables. Upper and lower bounds are reported here.

[7] Depending on the variable (completions, starts, permits). See also Section 3.2.1.

[8] The ECFIN–JRC mapadomo database is currently being revamped. The analysis relies on the updated version available as of February 2026. Data coverage differs by country; at the moment, time series extending into the 2020s were available for Portugal, the Netherlands, Finland, Spain and Luxembourg, while for the remaining covered countries coverage extended into the 2010s, typically up to the 2020 census benchmark.

[9] For the purposes of this analysis, regional housing price series from ECFIN-JRC mapadomo are used up to the 2010s. Although more recent price observations are available for a subset of countries in the current ECFIN-JRC mapadomo release, these extensions are not exploited here. Valuation of housing units beyond the historical period is based on price dynamics derived from the ECFIN Housing Market Database, as described in Section 4.3.

### 3.2.2. Census dwelling data (Eurostat)

National housing censuses, primarily drawn from Eurostat, provide benchmark observations on dwelling stocks at NUTS 3 level for the years 2010 and 2020, which serve as the main reference points used in the regional housing stock projection module. The census data include information on the total number of conventional dwellings, collective living quarters, other dwellings, dwellings of unknown type, and non-occupied conventional dwellings, including vacant, secondary or seasonal-use dwellings.

To ensure comparability over time and across countries, all census data were harmonised to the NUTS 2021 classification using Eurostat correspondence tables. Where inconsistencies or missing values were identified in the source data, limited adjustments were applied. In particular, dwelling counts for France were revised to align with official national statistics, while selected variables for Finland were adjusted in line with the treatment applied to household data.

These harmonised census data are used to construct benchmark estimates of total dwellings, occupied dwellings, and unoccupied dwellings for the reference years, which anchor the housing stock projections and inform the estimation of regional occupancy ratios.

### 3.2.3. Eurostat data on land area

In addition, Eurostat data on land area (Eurostat, 2025, reg_area3__custom_18388147) at NUTS 3 level are used as an auxiliary input. Average land area values, computed over the period 2013-2025, are combined with ECFIN–JRC mapadomo population data to compute regional population density, which is subsequently used in the estimation of regional housing depreciation rates.

### 3.2.4. ECFIN Housing Market Database

Country-level housing market indicators are drawn from the ECFIN Housing Market Database. The indicators used include building permits, housing starts, and housing completions, which provide complementary information on housing supply dynamics at different stages of the construction process.

Building permits capture authorisations granted for new residential construction and are used as a leading indicator of future housing supply. Housing starts measure the initiation of new residential construction projects, signalling near-term additions to the housing stock, while housing completions correspond to the number of dwellings finished and ready for occupancy, reflecting realised additions to the housing stock.

Data on housing completions (covering the periods 2011–2020 and 2021–2024), housing starts (2019–2022 and 2023–2024) and building permits (2023–2025) are used to derive observed country-level construction rates and to scale the model-implied regional construction dynamics so that they remain consistent with recent national housing market developments. In addition, information on housing starts and building permits is used to adjust post-2024 net dwelling stock growth, ensuring that the projections reflect the most recent evidence on housing supply dynamics.

# 4. Methodology

## 4.1. Construction of time series on demand

The household projection methodology combines three inputs: the observed regional population baseline, the forward-looking regional population projections, and census-based information on household structure. Its aim is to project the numbers of private households at NUTS3 level by linking demographic change to observed household formation patterns. In practice, the method first constructs a continuous population series by age and sex, then derives from the census age- and sex-specific rates describing how the population in each cohort is distributed across household types and living arrangements and finally applies these rates to the projected population structure. This is consistent with the established headship rate approach, in which census derived age- and sex-specific household formation or household representative rates are applied to projected population cohorts to derive future household numbers (e.g., Manual, V. I. I., 1973; Statistics Canada, 1990).

The first step consists of building a harmonised demographic baseline. Observed population data provide the historical series, while Eurostat regional population projections provide the future demographic path. Since these two sources are not fully consistent in their original form, they are first aligned to a common framework. This includes harmonising regional identifiers and aggregating the more detailed projection age categories to the common 18-group age classification used throughout the analysis, ranging from under 5 years to 85 years and over. The observed and projected population series are then combined into one continuous demographic dataset. To avoid an artificial break between the historical and projected series, the projection path is adjusted to the observed population level at the end of the overlap period.

The second step is to derive, from the census data, the set of age- and sex-specific rates that determine how population is translated into households. These include the share of people living alone, the share heading a family household, the share heading a multi-person non-family household, and the share living in non-private accommodation. Together, these rates describe how the population in each cohort is distributed across household positions and living arrangements. They are not directly available as ready-made indicators but are calculated from the Eurostat census household and person tables after harmonisation across census waves.

In the final step, the census-derived household formation rates are applied to the harmonised population series. For each region, year, age group, and sex, the projected population is multiplied by the corresponding age- and sex-specific rate, producing cohort-specific estimates of the number of households implied by the projected demographic structure. These cohort-level estimates are then aggregated across all age groups and both sexes to obtain the projected number of private households in each region and year. The methodology is implemented using household formation structures derived from both the 2011 and 2021 census waves, allowing comparison of alternative census benchmarks. In this way, household numbers are allowed to evolve over time in response to changes in the size and composition of the population, while remaining anchored in observed household structure. More specifically, the number of private households ($PHH_{year,n}$), where $n$ denoted the NUTS 3 region, is calculated for each year from 2021 to 2040 as follows: for every age-sex cohort, the 2020 headship rate ($HR^{2020}_{sex,age,n}$) is multiplied by the projected population of the same cohort in the given year ($Pop^{year}_{sex,age,n}$). These products are then summed across all age groups and both sexes:

$$PHH_{year,n} = \sum_{sex,age} HR^{2020}_{sex,age,n} Pop^{year}_{sex,age,n} \quad (4.1.1)$$

The headship rate in census year 2021 (set as 2020) for a given NUTS3 region, sex, and age group, $HR^{2020}_{sex,age,n}$, is calculated by summing the headship rates across the different living arrangements for that category.

Table 3 below illustrates this calculation for the Austrian region AT111 (Mittelburgenland), broken down by sex (male/female), age group (40–44 and 85+) and living arrangement (singles, families, and multi-families). Unsurprisingly, the 40–44 age group shows the highest headship rates for family households. By contrast, the oldest age group (85+) exhibits a sharp rise in single-person households—especially among women—reflecting their greater longevity (e.g., Eurostat, 2024; WHO Regional Office for Europe, 2024; Oksuzyan et al., 2008).

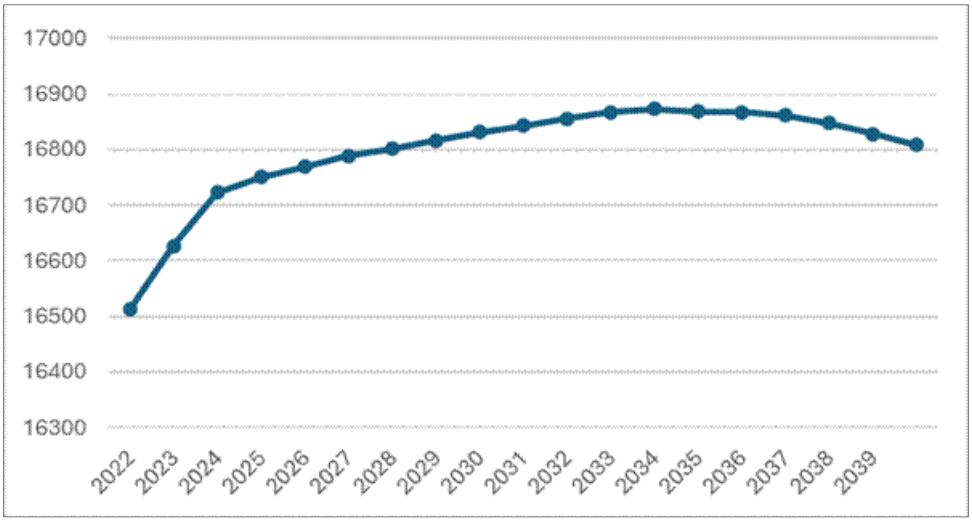
**Table 3.** Example of family composition and headship rate for Austrian region (AT111) broken down by sex and age for 2020

| | **Male** | | **Female** | |
|---|---|---|---|---|
| | **Y40-44** | **Y—GE85** | **Y40-44** | **Y—GE85** |
| Singles | 11.2% | 26.8% | 5.6% | 46.1% |
| Families | 35.6% | 29.9% | 50.5% | 17.5% |
| Multi-families | 0.4% | 1.3% | 0.2% | 1.7% |
| Headship rate | 47.3% | 57.9% | 56.2% | 65.2% |

*Source: own elaboration based on census 2021*

In calculating the household projections this way, although the headship rates are kept fixed at their 2020 levels, changes in the population distribution across age and sex cohorts can still be taken into account, since population projections imply changes in the age-sex composition.[10] Continuing with the example of AT111, the resulting graph is presented in Figure 1. It shows that changes in population projections by sex, age, and total population size give rise to different trends, with both increases and decreases occurring at different slopes.

**Figure 1.** Household projections from 2021 onwards for Mittelburgenland (AT111)




*Source: own elaboration based on census 2021, ARDECO and Eurostat population projections*

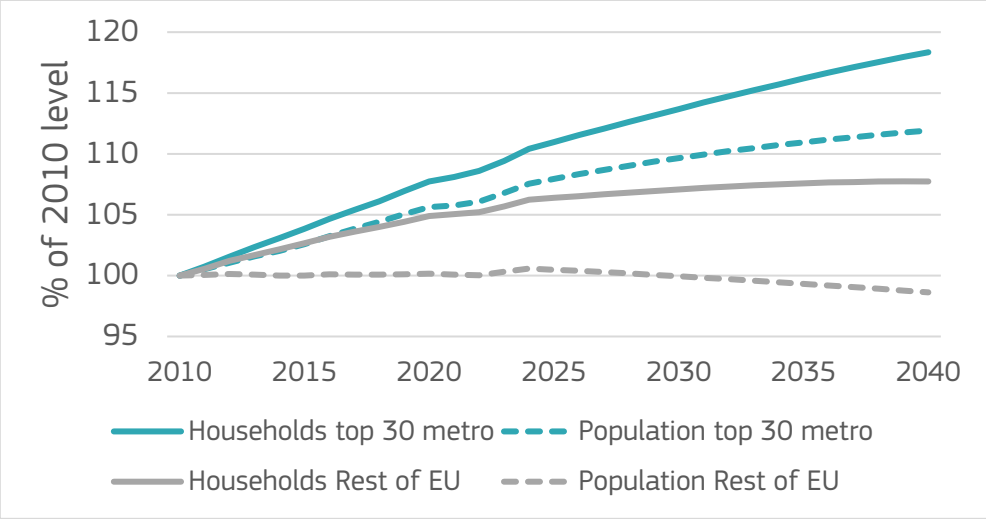
[10] The latest available population projections at NUTS3 level date back to 2019, and some revisions of the figures already appeared in 2023 projections, only available at NUTS0 level. In this exercise, in order to overcome this issue rather than the actual numbers, the rate of change is used.

More generally, Figure 2 compares household and population growth relative to 2010 by aggregating the NUTS3 regions belonging to the 30 largest metropolitan areas within the EU and contrasting them with the aggregate of the remaining EU NUTS3 regions. Data from 2025 onwards are projections.

The figure shows that the 30 largest metropolitan areas have been disproportionately affected, and this trend is anticipated to persist in the coming years. The top 30 metropolitan areas see a much stronger growth in both households and population than the rest of the EU. This suggests that rising housing demand is highly localized rather than evenly distributed across regions. By contrast, the rest of the EU is projected to see a relatively modest household growth, significantly lower than in the top 30 metropolitan areas, while population is expected to decline and may eventually turn negative.

These growth trends imply an increasing upward pressure on housing supply and affordability in major cities if construction fails to keep pace with the demand.

**Figure 2.** Past and projected EU households and population (2010=100).




*Note: "Top 30 metropolitan areas" refers to the largest 30 metropolitan areas in the EU.*
*Source: own elaboration*

## 4.2. Construction of time series for supply

To capture both sides of the housing market, demand-side projections are complemented with supply-side projections, which are constructed using a stock–flow framework linking dwelling stocks, construction flows, and depreciation (see e.g., DiPasquale and Wheaton, 1996). In particular, the housing stock evolves according to:

$$D_{n,t+1} = (1 - \delta_n + \alpha_n) D_{n,t} \quad (4.2.1)$$

Here, $D_{n,t}$ denotes the housing stock in region $n$ at time $t$; $\delta_n$ is the depreciation rate, defined as the share of the existing stock that is removed or becomes obsolete between $t$ and $t+1$; and $\alpha_n$ is the construction rate, defined as new dwellings completed between $t$ and $t+1$ expressed as a share of the stock at time $t$.

As described in Section 3.2, supply-side projections draw on several datasets, with the ECFIN–JRC mapadomo regional housing stock database serving as the cornerstone. ECFIN–JRC mapadomo

provides a long annual time series of dwelling stock at NUTS3 level and, for a subset of countries, information on dwelling completions[11]. The joint availability of stock and completions data makes it possible to infer regional depreciation rates in a consistent manner for these countries, which are then used to calibrate a relationship that can be applied to all regions. Specifically, depreciation rates are inferred using ECFIN–JRC mapadomo data on the total number of dwellings, covering both conventional and non-conventional dwellings, for those countries and regions for which information on dwelling completions is available. For each NUTS3 region, annual depreciation rates are computed using equation (4.2.1) and subsequently averaged over time to obtain a region-specific mean depreciation rate. Only regions with positive average implied depreciation rates are retained for the calibration sample, as negative values are not economically meaningful and typically reflect measurement or timing inconsistencies between stock and flow data.

For each NUTS3 region, the average population density is computed using Eurostat land area data (2013–2025) and population figures from the ECFIN–JRC mapadomo dataset. This density measure is then used in a cross-sectional regression at the NUTS3 level, where inferred housing depreciation rates (available for a subset of countries) are regressed on population density. Specifically, for each country $j$ where depreciation estimates are available, we fit the following model:

$$\ln(\delta_n) = \beta_0 + \beta_1 \ln(density_n) \text{ , for each } j. \qquad (4.2.2)$$

where $\delta_n$ is the depreciation rate for NUTS 3 region $n$ in country $j$, and $density_n$ is its average population density. The estimated intercepts and slope coefficients across countries show strong consistency. We compute their averages, yielding: $\overline{\beta_0}$≈-5.36 and $\overline{\beta_1}$≈-0.26. These estimates are then used to impute depreciation rates for all other NUTS 3 regions without direct estimates, using the formula:

$$\widehat{\delta_n} = e^{\overline{\beta_0} + \overline{\beta_1} \ln(density_n)} \qquad (4.2.3)$$

This is consistent with models and empirical findings suggesting that in economically vital, dense areas-often characterized by high amenities and active reinvestment-housing tends to be better maintained, resulting in lower depreciation rates (Gyourko & Saiz, 2003; Rappaport, 2008).

To complement the depreciation estimates and to anchor the stock dynamics to observed long-run developments, we compute an empirical measure of net housing stock growth using census data. Specifically, using census-based data on total dwellings for 2010 (Census 2011) and 2020 (Census 2021), we compute the observed net housing stock growth rate at the NUTS3 level, denoted by $alphadelta_n$:

$$alphadelta_n = \left(\frac{dwellings_{n,2020}}{dwellings_{n,2010}}\right)^{1/10} - 1 \qquad (4.2.4)$$

This represents the average annual growth rate over the 10-year period. Using the estimated depreciation rates, we derive initial estimates of the construction rate at the NUTS3 level, denoted by $\alpha_n^{(0)}$ :

$$\alpha_n^{(0)} = alphadelta_n + \widehat{\delta_n} \qquad (4.2.5)$$

[11] The ECFIN-JRC mapadomo database is currently undergoing revamping and expansion; coverage of dwelling completions is therefore available for an increasing subset of countries.

To ensure consistency with national-level construction dynamics, we then compute an adjusted construction rate in country $j$:

$$\alpha_{n,j}^{(1)} = \alpha_{n}^{(0)} * adjustment_{j} \qquad (4.2.6)$$

While $\alpha_{n,j}^{(1)}$ captures long-run regional stock dynamics, recent construction activity may deviate from this baseline. To anchor construction rates to observed national-level developments, we therefore rely on data from ECFIN's Housing Market Database on housing completions. For each country $j$, we compute the implied average annual construction rate over the periods 2011–2020 and 2021–2024 using total housing completions and the corresponding housing stock. The first measure[12] serves as a historical benchmark for pre-2020 construction dynamics, while the second, $\alpha_{j,21-24}^{(obs)}$, is used to calibrate the adjustment applied in the projections:

$$\alpha_{j,21-24}^{(obs)} = \left(\frac{Completions_{j,21-24}}{dwellingsj_{,2020}} + 1\right)^{1/4} - 1 \qquad (4.2.7)$$

We then define a country-specific adjustment factor as the ratio between the recent implied construction rate and the baseline construction rate:

$$adjustment\ factor_{j} = \frac{\alpha_{j,21-24}^{(obs)}}{\alpha_{j}^{(1)}} \qquad (4.2.8)$$

where $\alpha_{j}^{(1)}$ is the national construction rate obtained as the housing-stock-weighted average of $\alpha_{n,j}^{(1)}$ across all regions $n$ belonging to country $j$. This adjustment factor is then applied uniformally to all NUTS3 regions within the same country:

$$\alpha_{n,j}^{(2)} = \alpha_{n,j}^{(1)} *\ adjustment\ factor_{j} \qquad (4.2.9)$$

The mean values of the construction rate, depreciation rate, and net housing stock growth rate, together with their standard deviations across NUTS3 regions within each country, are reported in Table 4. Several patterns emerge. First, construction rates exhibit substantial cross-country variation. Average annual construction ranges from very low levels in countries such as Greece and Italy to relatively high levels in Malta, Cyprus, Ireland, and Poland, indicating important differences in housing market dynamism across countries. Second, depreciation rates are considerably more stable, generally lying within a narrow range of around 0.12–0.17 percent per year. As a result, differences in net housing stock growth are largely driven by variations in construction activity rather than depreciation. Third, countries with relatively high construction rates also tend to display stronger net housing stock growth, such as Malta, Cyprus, Ireland, and Poland. By contrast, in countries where construction activity has been subdued, such as Greece[13] and Finland, net housing stock growth is close to zero or slightly negative. Finally, the relatively large standard deviations observed in some countries indicate substantial heterogeneity across NUTS3 regions, reflecting differences in local housing demand, urbanisation patterns, and development constraints.

[12] $\alpha_{j,10-20}^{(obs)} = \left(\frac{Completions_{j,10-20}}{dwellings_{j,2010}} + 1\right)^{1/10} - 1$

[13] Census data for Greece were updated in February 2026, and these updates are reflected in the present report.

Overall, the estimated rates fall within the range reported in earlier European studies. For example, Hartless (2003) reports that the annual rate of new dwelling construction as a share of the existing stock ranged from 0.3% in Sweden to 3.5% in Ireland, with a European average of 1.1%. In our case, all estimates lie within this interval. The average construction rate of approximately 0.71 – 0.79 (see Table 4 and Table A1 in the Annex, where the same calculations are presented, this time with country-level results computed as a dwelling-weighted average of the NUTS 3 regional results) is consistent with the fact that the estimates refer to post-crisis years, when housing-market expansion had become more subdued. More generally, growth in European construction had already begun to weaken by the mid-2000s, falling from +4.4% in 2004 to +0.7% in 2005 (International Construction, 2005). For this reason, our estimates are more appropriately compared with later European benchmarks that reflect a more mature and slower-growing housing-stock environment. In this respect, the European Commission's 2016 staff working document describes European building stocks as characterised by low demolition rates of around 0.1–0.2% per year and limited new construction activity of roughly 0.4–1.1% per year. Relative to these later benchmarks, our estimated construction rates appear plausible. Likewise, our depreciation rates are consistent with a post-crisis, lower-growth housing-stock regime in which annual demolition tends to remain around 0.1–0.2%.

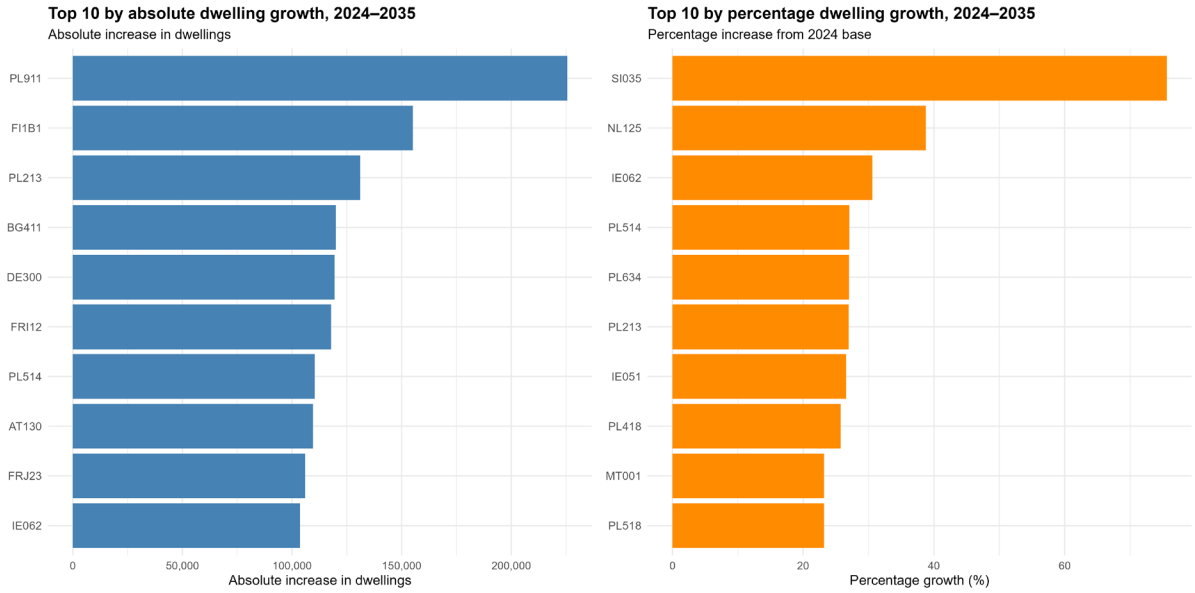
**Table 4.** Estimated housing construction, depreciation, and net stock growth rates by country (NUTS3 averages, % per year)

| **Country** | **Construction Rate (annual)** | | **Depreciation Rate (annual)** | | **Net Growth Rate (annual)** | |
|---|---|---|---|---|---|---|
| | (Mean, %) | (SD, %) | (Mean, %) | (SD, %) | (Mean, %) | (SD, %) |
| AT | 1.09 | 0.27 | 0.15 | 0.03 | 0.93 | 0.27 |
| BE | 0.87 | 0.16 | 0.13 | 0.03 | 0.73 | 0.14 |
| BG | 0.43 | 0.38 | 0.16 | 0.02 | 0.27 | 0.39 |
| CY | 1.56 | NA | 0.14 | NA | 1.42 | NA |
| CZ | 0.59 | 0.15 | 0.14 | 0.02 | 0.44 | 0.16 |
| DE | 0.52 | 0.34 | 0.14 | 0.03 | 0.38 | 0.32 |
| DK | 0.75 | 0.22 | 0.15 | 0.04 | 0.60 | 0.22 |
| EE | 0.64 | 0.08 | 0.15 | 0.04 | 0.49 | 0.12 |
| EL | 0.11 | 0.06 | 0.16 | 0.02 | -0.06 | 0.06 |
| ES | 0.46 | 0.19 | 0.16 | 0.05 | 0.31 | 0.17 |
| FI | 0.23 | 0.79 | 0.27 | 0.14 | -0.04 | 0.66 |
| FR | 0.66 | 0.28 | 0.15 | 0.04 | 0.52 | 0.29 |
| HR | 0.65 | 0.58 | 0.16 | 0.03 | 0.49 | 0.57 |
| HU | 0.33 | 0.22 | 0.14 | 0.02 | 0.19 | 0.23 |
| IE | 1.17 | 0.91 | 0.12 | 0.05 | 1.04 | 0.94 |
| IT | 0.26 | 0.11 | 0.11 | 0.02 | 0.15 | 0.11 |
| LT | 0.51 | 0.59 | 0.16 | 0.04 | 0.35 | 0.62 |
| LU | 1.03 | NA | 0.12 | NA | 0.91 | NA |
| LV | 0.30 | 0.13 | 0.17 | 0.06 | 0.13 | 0.15 |
| MT | 1.56 | 0.57 | 0.05 | 0.00 | 1.51 | 0.57 |
| NL | 0.71 | 0.66 | 0.12 | 0.03 | 0.60 | 0.64 |
| PL | 1.09 | 0.43 | 0.12 | 0.03 | 0.97 | 0.44 |
| PT | 0.42 | 0.09 | 0.12 | 0.03 | 0.31 | 0.10 |
| RO | 0.46 | 0.15 | 0.15 | 0.02 | 0.31 | 0.16 |
| SE | 0.70 | 0.20 | 0.17 | 0.06 | 0.53 | 0.17 |
| SI | 0.98 | 1.43 | 0.15 | 0.02 | 0.83 | 1.44 |
| SK | 0.76 | 0.44 | 0.13 | 0.01 | 0.62 | 0.46 |

*Source: own elaboration*

Note: The table reports the mean and standard deviation of estimated annual construction rates (α), depreciation rates (δ), and net housing stock growth rates (α−δ) across NUTS3 regions within each country. All values are expressed in percent per year.

**Figure 3.** Top 10 NUTS3 in terms of absolute dwelling growth (left) and in terms of percentage dwelling growth (right) during the period 2024-2035.




*Source: own elaboration*

Figure 3 shows the top 10 NUTS3 regions in terms of projected dwelling stock growth between 2024 and 2035. In the left panel, regions are ranked by the absolute increase in dwellings, while in the right panel they are ranked by percentage growth. The first graph therefore highlights the scale of the projected increase in terms of additional dwellings, whereas the second captures the intensity of projected growth in relative terms. The former is more informative about the absolute contribution of each region to the overall projected increase in housing supply. The two rankings need not coincide, since regions with a relatively small initial dwelling stock may record high percentage growth while still contributing only a limited absolute increase in the number of dwellings. For this reason, the two measures are best interpreted jointly, as complementary rather than competing indicators. For example, among these rankings, the two NUTS3 regions that appear in both panels are PL514 and IE062. This suggests that these regions combine strong relative growth with a large absolute increase in dwellings. In other words, they are projected not only to expand rapidly in percentage terms, but also to make a comparatively large contribution to the overall increase in housing supply.

## 4.3. Prices

In order to quantify housing needs and gaps in current monetary terms, reliable information on housing price levels is required. To this end, we construct a panel of housing prices based on two main data sources: ECFIN–JRC mapadomo, which provides regional-level information as described

above, and the ECFIN Housing Market Database, which provides national-level information. A synopsis of both datasets is provided in Section 3.2. ECFIN-JRC mapadomo is the main source of regional variation in price per square metre, dwelling size, and dwelling stock. This source is complemented by the ECFIN dataset, which supplies national time series that are used to extend incomplete regional price series over time, as well as national price levels for countries where regional price-per-square-metre observations are unavailable. ECFIN-JRC mapadomo provides a time series for the dwelling stock and distinguishes between different dwelling types, in particular houses and flats.

Countries are divided into two groups depending on the availability of regional price-per-square-metre data. For the first group, which includes most countries, regional prices are directly observed and can therefore be used as the basis for the analysis. By contrast, for the second group, regional price data are not available (including Cyprus, Czechia, Greece, Ireland, and Slovakia). For these five countries, regional price series are approximated by using national price level information. Accordingly, the first group is treated using directly observed regional prices, complemented where necessary by time extrapolation, while the second group is treated through a fallback procedure based on national prices.

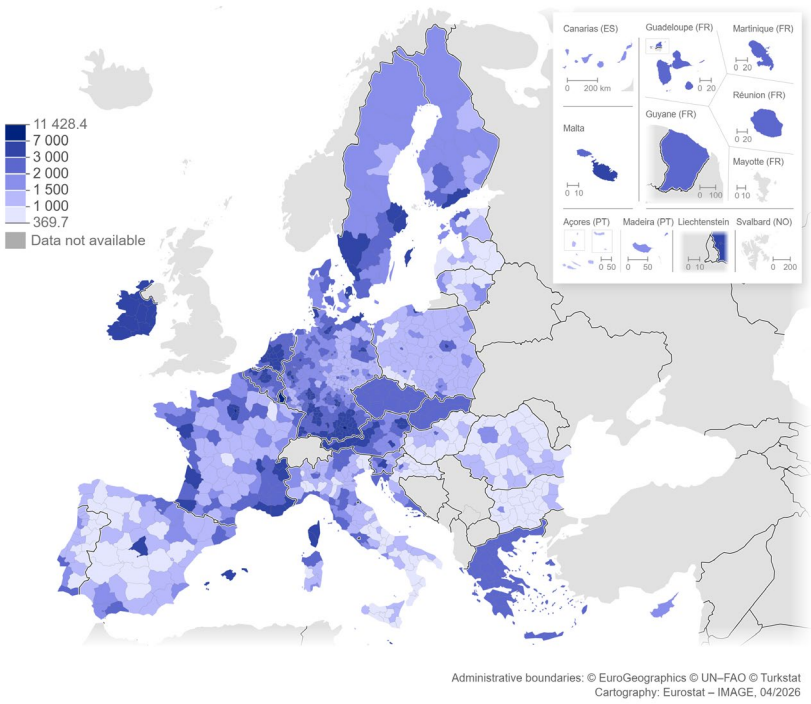
In particular, for the first group of countries, annual regional series are constructed from the observed regional data for price per square metre, average floor area per dwelling, and dwelling stock. Regional price-per-square-metre series are not always available for all years, so missing later observations are extrapolated using a national annual house price series derived from the ECFIN Housing Market Database. This national reference series is built by combining an existing-dwellings price series with a broader nominal house price index, using the latter to extend the former where needed on the basis of growth rates. By contrast, missing later observations for average floor area per dwelling and dwelling stock are completed by carrying forward the last available regional value. Price per dwelling is then derived as the product of price per square metre and average floor area per dwelling.

For countries without regional price-per-square-metre observations, regional price series are approximated using national price levels from the ECFIN database. These annual national price series are assigned uniformly to all regions within a given country. Regional variation is introduced through structural indicators, namely average floor area per dwelling and dwelling stock, which are taken from the 2020 regional data and repeated over time[14]. For Czechia, national prices are converted from Czech koruna into euro using annual exchange rates. As in the first group, price per dwelling is then derived by multiplying price per square metre by average floor area per dwelling.

The resulting average price per square metre for each NUTS3 region in 2024 is shown in Figure 4. Luxembourg, Ireland and Malta exhibit the highest average dwelling prices, while Latvia, Romania, Lithuania and Italy record the lowest on average. Several countries also show large variability in prices across regions such as Spain, Germany and France. This indicates that geographical location plays a significant role in the pricing of dwellings within the dataset.

[14] For Ireland, Slovakia and Cyprus, average floor area per dwelling is proxied by the mean Belgian regional value in 2020.

**Figure 4.** Regional average price-per-square-metre (2024)




*Source: own elaboration based on ECFIN-JRC mapadomo*

The resulting regional panel is subsequently aggregated to the country level. The aim is to recover average country price levels from the regional information rather than simple unweighted averages. Country level price per square metre is therefore computed as a floor-area-weighted average of regional prices:

$$ppm2_{j,t} = \frac{\sum_n dwellings_{n,t}.ppm2_{n,t}.m2perdwl_{n,t}}{\sum_n dwellings_{n,t}.m2perdwl_{n,t}} \qquad (4.3.1)$$

Where ppm2 denotes price per square metre and m2perdwl denotes average floor area per dwelling. Average floor area per dwelling is computed as a dwelling-weighted average,

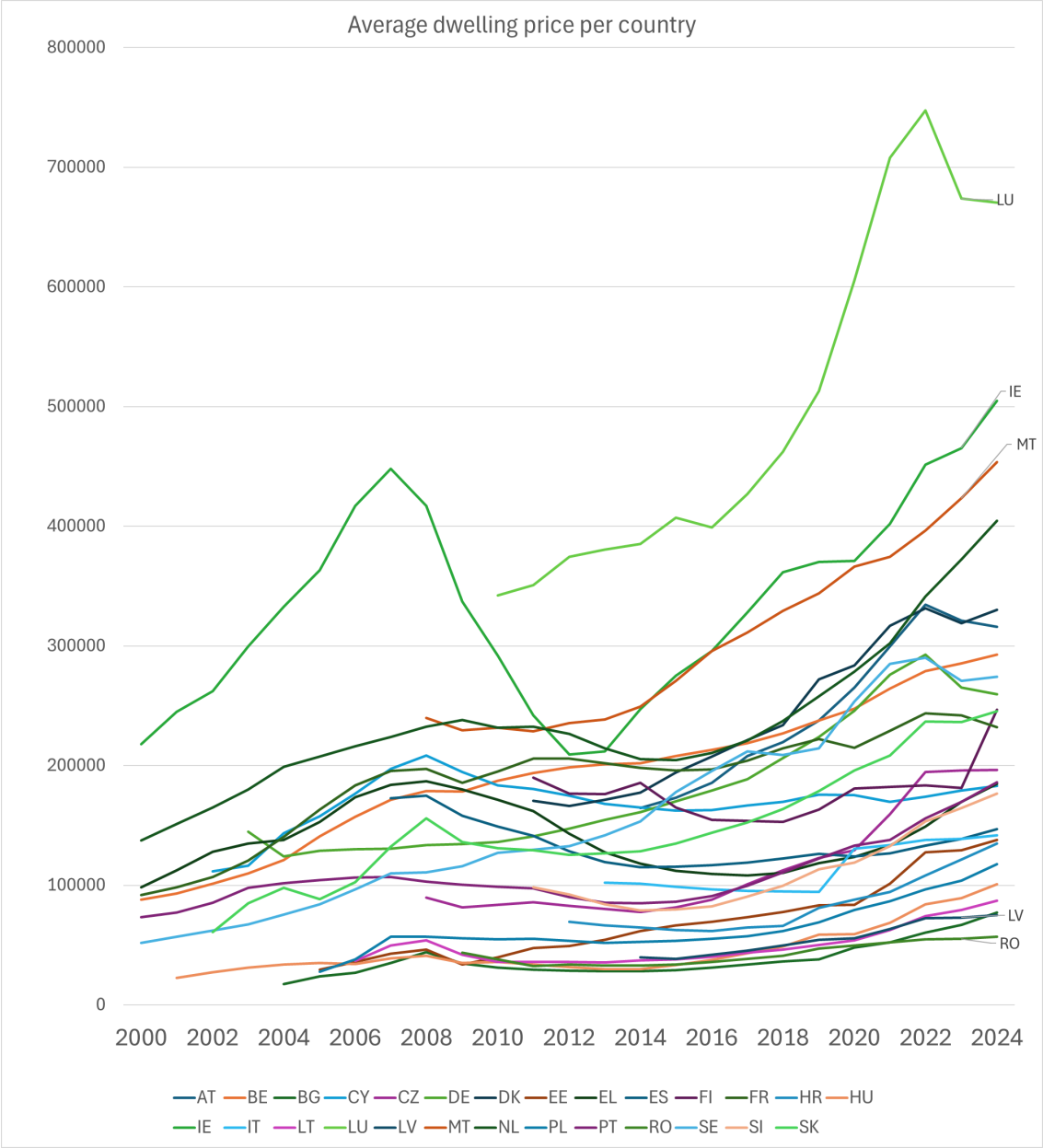
$$m2perdwl_{j,t} = \frac{\sum_n dwellings_{n,t}.m2perdwl_{n,t}}{\sum_n dwellings_{n,t}} \qquad (4.3.2)$$

while the total number of dwellings is obtained as the sum across regions, and price per dwelling is computed as a dwelling-weighted average of regional dwelling prices,

$$ppdwl_{j,t} = \frac{\sum_n dwellings_{n,t}.ppdwl_{n,t}}{\sum_n dwellings_{n,t}} \qquad (4.3.3)$$

This procedure yields a harmonized annual panel of regional and country-level housing indicators as visualized in in Figure 5.

**Figure 5.** Average dwelling price per country




*Source: own elaboration based on ECFIN-JRC mapadomo*

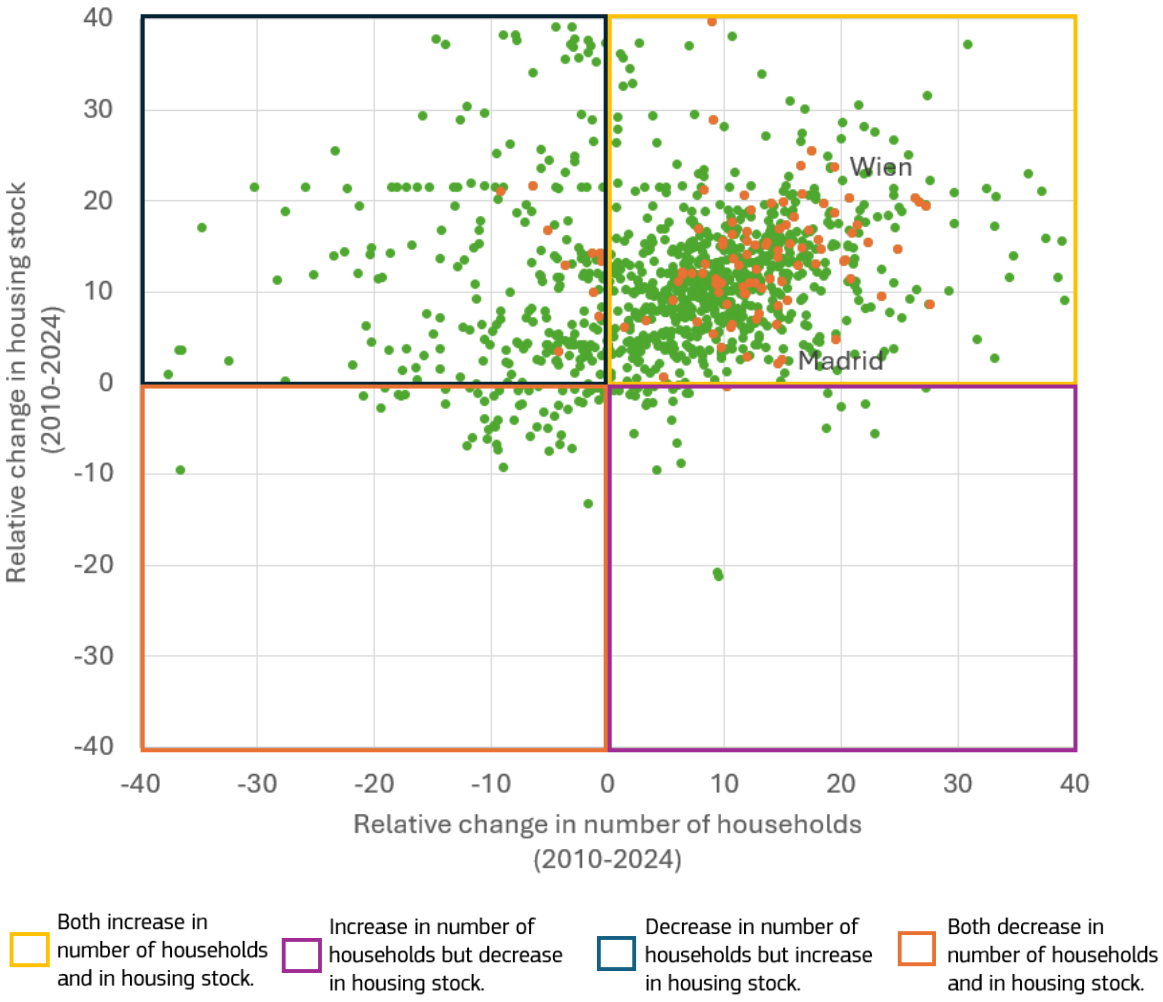
Its empirical basis is strongest for countries with directly observed regional price-per-square-metre data, where regional price differences are preserved and only missing years are extrapolated using national growth dynamics. For Cyprus, Czechia, Greece, Ireland, and Slovakia, the resulting regional prices should instead be interpreted as synthetic estimates combining national price movements with regional structural characteristics.

# 5. Results

The methodology as described in Section 4 provides detailed time series for both the number of households, which determine the demand side of the equation, and the number of available dwellings over the full time period of interest (2010-2035).

Figure 6 provides an integrated visual representation of supply and demand dynamics across all NUTS 3 regions in the EU, illustrating their evolution since 2010 up to 2024. The four quadrants in the figure highlight distinct developmental patterns in these trajectories, offering insights into the diverse trends observed across all regions. The lower-right quadrant (purple) captures regions experiencing rising demand alongside declining supply, while the upper-left quadrant (dark blue) encompasses regions with falling demand despite expanding housing stock. Both quadrants represent clear imbalances between supply and demand dynamics. The remaining two quadrants represent regions in which the development of supply and demand align, either both rising (yellow) or both falling (orange), indicating synchronized movement in market dynamics.

**Figure 6.** Supply versus demand by NUTS 3, 2010–2024

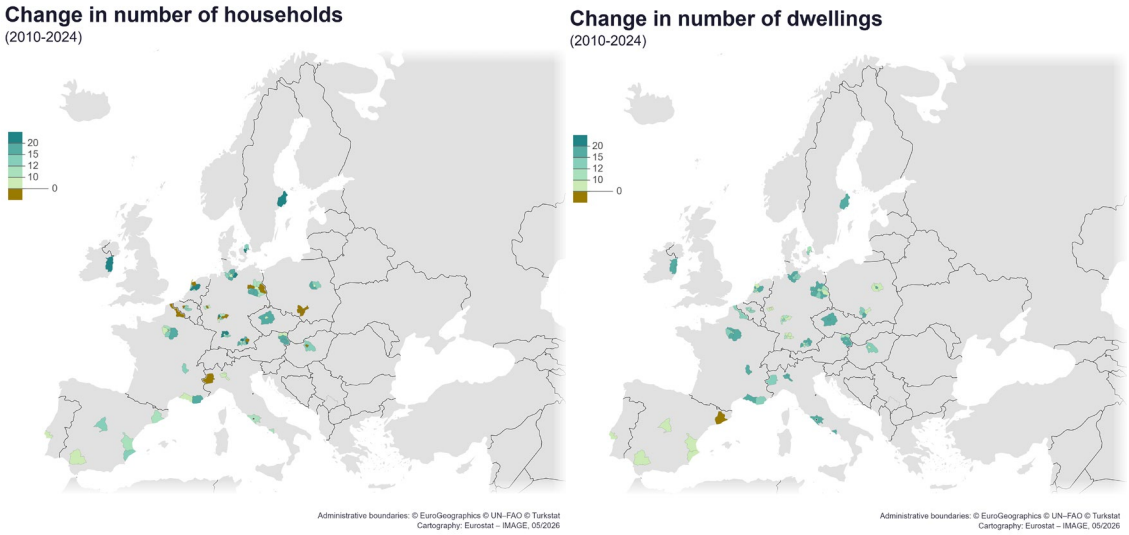



*Source: JRC calculations based on ECFIN-JRC mapadomo*

The upper-right quadrant (yellow), characterized by concurrent growth in supply and demand, also reveals mismatches in NUTS 3 regions where housing stock expansion lags behind household growth.

Among the red points representing the 30 largest European metropolitan areas (see Table A2) , Madrid exemplifies this dynamic: while both supply and demand increased, new housing construction (2.5% growth) failed to match the 15% rise in households, creating a persistent housing need. Figure 7 displays side-by-side maps of the percentage change in households and the percentage change in dwelling stock for the same metropolitan areas, making Madrid's mismatch immediately visible. In contrast, Wien demonstrates a more balanced scenario within the same quadrant. Here, housing stock growth aligns better with the increase in household demand during 2010–2024.

**Figure 7.** Relative change in number of households and number of dwellings by NUTS3 for the 30 largest European metropolitan areas (in %), 2010-2024




*Source: JRC calculations based on ECFIN-JRC mapadomo*

## 5.1. Combining the parts

To quantify the existing needs, we compare the total number of households with the total housing stock for the period 2010-2024, using 2010 as the anchor point. This shortfall is calculated as the difference between the additional dwellings required to accommodate every private household and the net growth in the housing stock. In addition, the estimate incorporates a buffer for vacant units that are intentionally left empty (e.g., holiday homes, properties temporarily off-market, or other legitimate reasons). For this buffer we use the occupancy ratio which is defined as the share of occupied dwellings of the total dwellings. Hence for a region *n*, past insufficient construction is defined as the difference between the changes in demographic needs and the change in housing stock over the period, where the change in demographic needs is the change in absolute change in number of households increased with by the occupancy ratio:

$$Past\ insufficient\ construction_{n,2010-2024} = (HH_{n,2024} - HH_{n,2010})/occupancy\ ratio_n - (dwellings_{n,2024} - dwellings_{n,2010}) \quad (5.1.1)$$

Future demand is then quantified based on population projections. We look in particular at the projected dwellings required to accommodate every private household up to 2035. Due to the lack of information on occupancy ratios for the future it is considered that they remain constant over time.

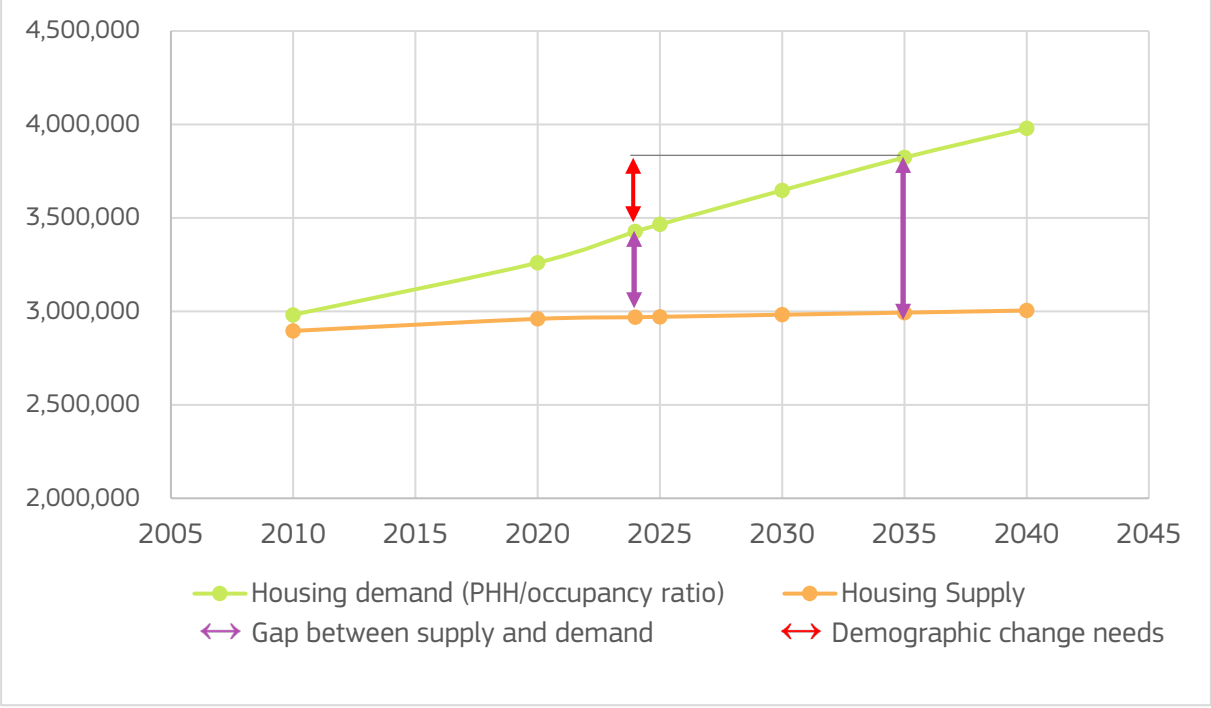
$$Demographic\ change\ needs_{n,2025-2035} = (HH_{n,2035} - HH_{n,2025})/occupancy\ ratio_n \quad (5.1.2)$$

In addition to dwelling requirements arising from demographic change alone, there will also be replacement needs in the future, leading to projected housing needs being the sum of needs arising from demographic changes and replacement needs:

$$Projected\ housing\ needs_{n,2025-2035} = Demographic\ change\ needs_{n,2025-2035} + Replacement/amortisation\ need_{n,2025-2035} \quad (5.1.3)$$

The different components for each NUTS 3 region can be displayed over time, as illustrated in Figure 8 for Brussels. The light-green line represents the actual housing demand using number of private households; combined with the occupancy ratio. For Brussels (BE100) the occupancy ratio for 2020 corresponds to 83.6%. The light-orange line shows housing supply. In 2010, housing demand almost met the existing housing supply. However, since then, they have not expanded at the same rate, creating a gap already visible in 2024 (left purple arrow). This gap corresponds to the past insufficient construction as defined in formula (5.1.1) and corresponds to almost 460 thousands dwellings. This divergence is projected to grow, resulting in an even larger shortfall by 2035 (right purple arrow) amounting to 829 thousand dwellings. The red arrow indicates the change in demand due to demographic changes as defined in formula (5.1.2) and amounts to almost 400 thousand. The difference between the gap in 2035 and that in 2024 provides the actual projected housing construction gap as defined in (5.1.4). Note that all data from 2024 onwards are based on projections.

**Figure 8.** Evolution of housing demand and housing supply for Brussels (BE100)




*Source: JRC calculations based on ECFIN-JRC mapadomo*

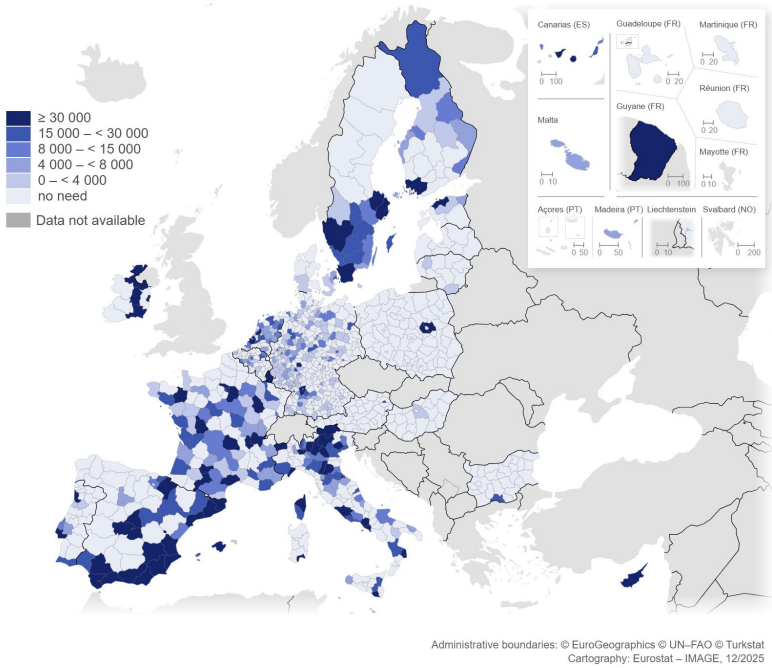
Note: Housing demand corresponds to the number of households within the region increased using the occupation ratio of the region. For Brussels (BE100) the occupancy ratio for 2020 corresponds to 83.6% and is used as constant over time

Partially these housing needs will be compensated by new constructions that have been estimated using the current regional construction patterns. This results in a housing construction gap:

$$Projected\ housing\ construction\ gap_{n,2025-2035} = Projected\ housing\ needs_{n,2025-2035} - expected\ constructions_{n,2025-2035} \quad (5.1.4)$$

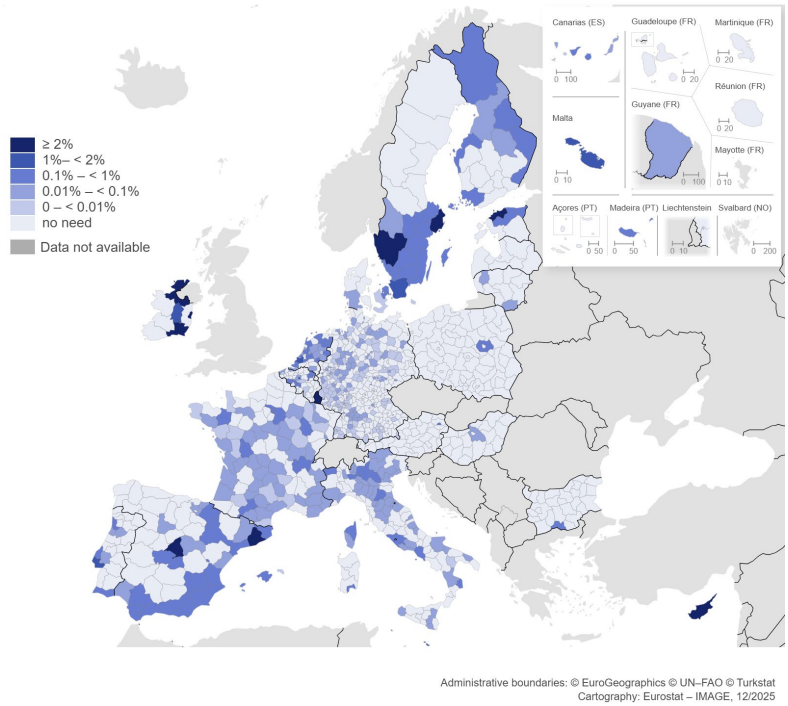
The projected total housing needs at the NUTS 3 regional level (formula 5.1.3), both in total dwelling units and as a share of the existing national dwelling stock in 2024 are presented in maps (Figure 9 and Figure 10).

**Figure 9.** Investment needs per NUTS3 region in absolute number of dwellings




*Source: JRC calculations based on ECFIN-JRC mapadomo*
*Note: For CZ, EL, HR, RO, SI, SK. data are under revision*

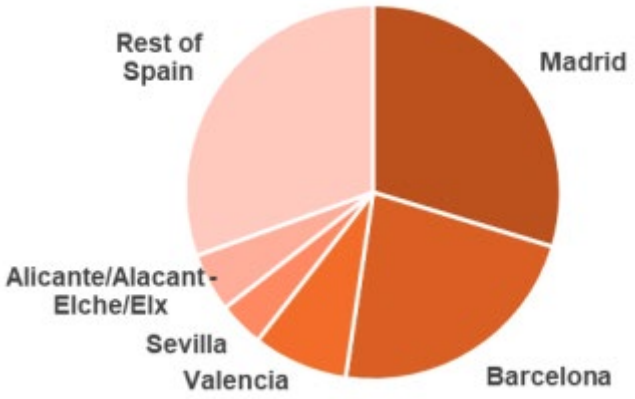
**Figure 10.** Investment needs per NUTS3 region in % of the 2024 national dwelling stock




*Source JRC calculations based on ECFIN-JRC mapadomo*
*note: For CZ, EL, HR, RO, SI, SK. data are under revision*

Across the EU, major cities and capital regions are expected to face the strongest future housing pressures, reflecting sustained population growth, urbanisation trends, and limited land availability. Overall, housing needs in the top 30 metropolitan areas account for 35.5% of total expected EU housing needs. For example, in Spain, shortages are highly concentrated in the major metropolitan areas of Madrid and Barcelona (see also Figure 11), where strong population inflows, economic dynamism and limited land availability exert significant pressure on housing supply and affordability. High housing needs are also projected in many coastal and touristic regions, which are already characterised by dense settlement patterns. In several Member States, such as the Netherlands, high population density is a characteristic of the entire territory, rather than just specific urban areas. As a result, these countries tend to experience more widespread investment pressures compared with larger or more geographically diverse economies. In summary, new construction is a key component to addressing future housing demand, particularly in high growth areas.

**Figure 11.** Breakdown of housing needs in Spain between 2025–2035




*Source: JRC calculations based on ECFIN-JRC mapadomo*

In summary, across the EU, current and future housing needs are concentrated in a limited number of regions and urban areas where one quarter of the EU's population lives. These regions are already densely populated, and face scarcity of available land. Increasing the number of dwellings in these places requires the expansion of residential space together with better use of existing buildings.

## 5.2. Identification of regions of need

All components are aggregated at the national level to produce a country-wide estimate of investment needs. Regions that have historically experienced or are projected to experience an oversupply are excluded from this aggregation, because that surplus cannot offset the unmet demand in other areas due to geographic constraints. Hence the following criteria are applied for the aggregation.

For the historical accumulated housing needs, country aggregated data are the sum of all 'real' needs in NUTS 3 regions identified with an increased number of households:

$$Country\ past\ insufficient\ construction_{2010-2024} = \sum_n \left(\max\left(Past\ insufficient\ construction_{n,2010-2024}, 0\right) \middle| HH_{n,2024} > HH_{n,2010}\right) \quad (5.2.1)$$

Similar for the projected housing needs, the country aggregated data are the sum of all expected 'real' needs in regions within the country:

$$Country\ projected\ housing\ needs_{2025-2035} = \sum_n \left(\max\left(Projected\ housing\ needs_{n,2025-2035}, 0\right) \mid HH_{n,2035} > HH_{n,2025}\ \&\ Projected\ housing\ needs_{n,2025-2035} > expected\ constructions_{n,2025-2035}\right) \quad (5.2.2)$$

And for the construction gap:

$$Country\ projected\ housing\ construction\ gap_{2025-2035} = \sum_n \left(\max\left(Housing\ construction\ gap_{n,2025-2035}, 0\right) \mid HH_{n,2035} > HH_{n,2025}\ \&\ Projected\ housing\ needs_{n,2025-2035} > expected\ constructions_{n,2025-2035}\right) \quad (5.2.3)$$

For the total country needs one would then take into account both the accumulated 'needs' from the past and combine those to the newly expected needs and construction gap:

$$Country\ housing\ needs_{2025-2035} = Country\ past\ insufficient\ construction_{2010-2024} + Country\ projected\ housing\ needs_{2025-2035} \quad (5.2.4)$$

and

$$Country\ housing\ construction\ gap_{2025-2035} = Country\ past\ insufficient\ construction_{2010-2024} + Country\ projected\ housing\ construction\ gap_{2025-2035} \quad (5.2.5)$$

## 5.3. European level investment needs

The European-level indicator is derived directly from the national results that have already been calculated for each member state in Section 5.2. Because the metric is defined on an absolute scale (e.g., total country housing needs or construction gap), no weighting, normalization, or transformation is required when moving from the country to the European level. In practice, the EU figure is simply the arithmetic sum of the individual country values: we add together every country's result, and the resulting total represents the overall European outcome. Consequently, the EU-wide number can be interpreted as the cumulative contribution of all member states, leading to the results summarized in Table 5.

**Table 5.** Components of EU total housing and investment needs in 2025 and until 2035

| | **Components** | |
|---|---|---|
| **Past** | (1) Insufficient construction 2010-24 in regions with a shortfall of dwellings (in million housing units) – see formula (5.1.1) | 4.57 |
| **Future (2025-2035)** | (2) Dwelling need due to demographic change only (in million housing units) – see formula (5.1.2) | 5.09 |
| | (2.1) of which in regions with expected demographic increase and an expected shortfall of dwellings. (in million housing units) | 4.77 |
| | (3) Replacement/amortisation need (in million housing units) | 3.55 |
| | (3.1) of which in regions with expected demographic increase and an expected shortfall of dwellings. (in million housing units) | 0.75 |
| | (4) Expected construction (in million housing units) | 17.06 |
| | (4.1) of which in regions with expected demographic increase and an expected shortfall of dwellings. (in million housing units) | 2.95 |
| | **Housing needs between 2025-2035 (1+2.1+3.1), in million housing units** | **10.09** |
| | **Housing construction gap between 2025-2035 (1+2.1+3.1-4.1), in million housing units** | **7.14** |
| | **Yearly additional investment need (in million housing units)** | **0.65** |

*Source: JRC calculations based on ECFIN-JRC mapadomo*

According to the data, the estimated housing needs in the EU until 2035 are substantial, with a total of 7.14 million additional dwelling units required. This means adding about 650,000 housing units per year to the 1.6 million built currently (i.e. 17.06 million over 11 years).

For each country, the total investment need can then be converted into monetary terms as outlined in section 4.3. Also here, the EU figure is the arithmetic sum of the individual country values. This translates to a significant investment need, totalling €1.68 trillion by 2035, or approximately €150 billion per year, when expressed in 2024 prices.

# 6. Conclusions

ECFIN-JRC calculations indicate that housing supply in the EU will need to grow strongly to keep pace with increasing household numbers. The analysis demonstrates that housing needs differ markedly across countries and regions, reflecting diverse demographic trajectories and housing market conditions. This underlines the importance of assessing needs at the local level, so that investment efforts can be directed towards the areas where demand pressures are most acute.

Metropolitan areas, hosting around 75% of the European population, account for around 30% of the EU's construction gap and are witnessing a surge in the number of households, partly related to decreasing average household size. Most rural regions, by contrast, are expected to experience comparatively lower investment pressures.

Current and future housing needs are concentrated in a limited number of regions where one quarter of the EU's population lives. These regions are already densely populated and face scarcity of available land. Increasing the number of dwellings in these places requires the expansion of residential space together with better use of existing buildings. This implies a focus on urban densification, particularly through the conversion of underused or non-residential land. The activation of brownfield sites is key, as it enables housing to be provided in central locations while minimising environmental and construction costs. Complementing these efforts, the renovation and activation of existing non-primary dwellings could also play a crucial role in bridging the housing gap, notably in regions where such dwellings represent a significant share of the overall housing stock.

The results should nevertheless be interpreted in light of the methodological choices underlying the framework. A key design decision is the exclusion of regions with projected oversupply from the national aggregates. This reflects the premise that geographic mobility constraints prevent surplus dwellings in one region from alleviating shortfalls in another. While this approach avoids artificially offsetting genuine needs with irrelevant surpluses, it implies that country-level totals may not be directly comparable with estimates from models that allow for full spatial substitution.

A further consideration concerns the use of fixed 2020 headship rates in the household projections. Holding headship rates constant means that only changes in the size and age-sex composition of the population drive projected household numbers, while behavioural shifts in household formation — such as delayed family formation, increased single-person living, or changing cohabitation patterns — are not captured. This provides a transparent and conservative benchmark, but it may also understate future housing needs in regions where household formation rates continue to rise.

On the supply side, the reliance on census-based net stock growth rates to initialise construction rate estimates introduces sensitivity to the quality and comparability of census dwelling counts across Member States. Adjustments applied to align modelled construction rates with recent national completions data mitigate this risk, but residual measurement uncertainty remains, particularly for countries where subnational completions data are not available.

These limitations also suggest useful directions for further work. Future refinements could allow headship rates to evolve over time, improving the capacity of the framework to capture changing household formation behaviour. Moreover, robustness checks, such as using 2015 rather than 2010 as the starting point for the historical needs assessment, can also provide a valuable cross-check on the sensitivity of accumulated shortfall estimates to the choice of anchor year.

Overall, the framework provides a transparent and regionally granular baseline for assessing housing investment needs across the EU. Its main value lies in identifying where demand pressures are likely to be most acute and in showing that housing needs are substantial, spatially concentrated, and increasingly tied to the capacity of cities and regions to accommodate growth in

a sustainable and efficient way. In this way, this work contributes to the policy agenda in two complementary ways. First, it quantifies the magnitude of the challenge by delivering EU-wide estimates of the investment required to close the existing supply-demand gap. Second, it maps the geographic distribution of the shortfall, highlighting the regions where the problem is most acute. Future research should aim to pinpoint the drivers behind the widening gap and to evaluate policy options that could narrow it—such as enhancing the attractiveness of lagging regions, regulating short-term rentals, promoting new construction, and facilitating building-stock renovation.

## References


*ABF Research (2025) ABF Woningmarktverkenning 2025-2040 Scenario's met woningmarktsimulatiemodel Primos Woningmarkt 2025 (link)*

*Balouktsi, D., Joossens, E., LE, B. J., Pagano, A., & Zeugner, S. (2025). Housing investment needs in the EU, European Commission, Ispra, 2025, JRC144703.*

*DiPasquale, D., & Wheaton, W. C. (1996). Urban economics and real estate markets. (No Title).*

*European Commission. (2016). Evaluation of Directive 2010/31/EU on the energy performance of buildings. Commission Staff Working Document; SWD(2016) 408 final. Brussels: European Commission*

*European Commission (2023). The impact of demographic change – in a changing environment. Commission Staff Working Document, SWD(2023) 21 final. Brussels: European Commission. https://commission.europa.eu/document/download/c00f88d7-1fdf-40bd-b177-84253fa5bc2b_en?filename=the_impact_of_demographic_change_in_a_changing_environment_2023.PDF (accessed 25 March 2026).*

*European Parliament and Council of the European Union. (2024). Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast) [OJ L 1275, 8.5.2024]*

*European Commission. (2025,). European affordable housing plan. Commission Staff Working Document, SWD(2025) 1053 final. Brussels: European Commission*

*European Investment Bank. (2025). Investment report 2024/25: innovation, integration and simplification in Europe. Publications Office. https://doi.org/10.2867/8065730*

*Eurostat. (2024). Demography of Europe – 2024 edition Publications Office. https://doi.org/10.2785/911441*

*Eurostat. (2025). Area by NUTS 3 region [Dataset]. European Commission. (Dataset code: reg_area3; Customised extraction: reg_area3__custom_18388147; Accessed October 2025)*

*Gyourko, J., & Saiz, A. (2003). Urban decline and housing reinvestment: the role of construction costs and the supply side. Federal Reserve Bank of Philadelphia Working Paper, (03-9).*

*Hartless, R. (2003). Application of energy performance regulations to existing buildings. Final report of the Task B4, ENPER TEBUC Project. SAVE 4.1031/C/00-018. Watford, UK: Building Research Establishment.*

*IC (2005), Construction growth expected to increase, International Construction 44, 12–13.*

*Manual, V. I. I. (1973). Methods of Projecting households and families. Population Studies, 54.*

*Mankiw, N. G., & Weil, D. N. (1989). The baby boom, the baby bust, and the housing market. Regional science and urban economics, 19(2), 235-258.*

*Mulder, C. H. (2006). Population and housing: a two-sided relationship. Demographic research, 15, 401-412.*

*Müther, A. M., & Waltersbacher, M. (2025). Zentrale Ergebnisse der BBSR-Wohnungsbedarfsprognose. Bundesinstitut für Bau-, Stadt- und Raumforschung. https://doi.org/10.58007/KXYG-CM28*

*Oksuzyan, A., Juel, K., Vaupel, J. W., & Christensen, K. (2008). Men: good health and high mortality. Sex differences in health and aging. Aging clinical and experimental research, 20(2), 91-102.*

*Rappaport, J. (2008). Consumption amenities and city population density. Regional science and urban economics, 38(6), 533-552.*

*Saiz, A. (2010). The geographic determinants of housing supply. The Quarterly Journal of Economics, 125(3), 1253-1296.*

*Statistics Canada (1990) Projections of Households and Families for Canada, Provinces and Territories, 1989-2011. Catalogue no. 91-522, Ottawa.*

*The Housing Commission (2024) Report of The Housing Commission ISBN: 978-1-903848-88-3. https://assets.gov.ie/static/documents/housing-commission-report.pdf*

*WHO Regional Office for Europe. (2024). European health report 2024: Keeping health high on the agenda in the aftermath of the COVID-19 pandemic. World Health Organization*

## List of abbreviations and definitions

| Abbreviations | Definitions |
|---|---|
| ECFIN | DG Economic and Financial Affairs |
| HR | Headship rate |
| HH | Households |
| JRC | Joint research Centre |
| M2perdwl | Square metre per dwelling |
| NUTS | Nomenclature of territorial units for statistics |
| Ppm2 | Price-per-square-metre |
| Ppdwl | Price per dwelling |
| Pop | Population |
| PHH | Private Household |

## List of figures

**Figure 1.** Household projections from 2021 onwards for Mittelburgenland (AT111) ..... 12

**Figure 2.** Past and projected EU households and population (2010=100) ..... 13

**Figure 3.** Top 10 NUTS3 in terms of absolute dwelling growth (left) and in terms of percentage dwelling growth (right) during the period 2024-2035. ..... 17

**Figure 4.** Regional average price-per-square-metre (2024) ..... 19

**Figure 5.** Average dwelling price per country ..... 20

**Figure 6.** Supply versus demand by NUTS 3, 2010–2024 ..... 21

**Figure 7.** Relative change in number of households and number of dwellings by NUTS3 for the 30 largest European metropolitan areas (in %), 2010-2024 ..... 22

**Figure 8.** Evolution of housing demand and housing supply for Brussels (BE100) ..... 23

**Figure 9.** Investment needs per NUTS3 region in absolute number of dwellings ..... 24

**Figure 10.** Investment needs per NUTS3 region in % of the 2024 national dwelling stock ..... 25

**Figure 11.** Breakdown of housing needs in Spain between 2025–2035 ..... 26

## List of tables

**Table 1.** Data sources used for the demand-side number of households ..... 7

**Table 2.** Data sources used for the supply-side housing projections ..... 9

**Table 3.** Example of family composition and headship rate for Austrian region (AT111) broken down by sex and age for 2020 ..... 12

**Table 4.** Estimated housing construction, depreciation, and net stock growth rates by country (NUTS3 averages, % per year) ..... 16

**Table 5.** Components of EU total housing and investment needs in 2025 and until 2035 ..... 27

**Table A1.** Estimated housing construction, depreciation, and net stock growth rates by country (NUTS3 averages, % per year) ..... 36

**Table A2.** NUTS3 for the 30 largest European metropolitan areas ..... 37

## Annexes

**Table A1.** Estimated housing construction, depreciation, and net stock growth rates by country (NUTS3 averages, % per year)

| **Country** | **Construction Rate (annual)** | **Depreciation Rate (annual)** | **Net Growth (annual)** |
|---|---|---|---|
| | Weighted Mean (%) | Weighted Mean (%) | Weighted Mean (%) |
| AT | 1.06 | 0.12 | 0.94 |
| BE | 0.81 | 0.11 | 0.70 |
| BG | 0.66 | 0.14 | 0.52 |
| CY | 1.56 | 0.14 | 1.42 |
| CZ | 0.63 | 0.14 | 0.49 |
| DE | 0.52 | 0.13 | 0.39 |
| DK | 0.80 | 0.15 | 0.64 |
| EE | 0.66 | 0.14 | 0.53 |
| EL | 0.10 | 0.15 | -0.05 |
| ES | 0.36 | 0.13 | 0.23 |
| FI | 0.78 | 0.35 | 0.43 |
| FR | 0.71 | 0.12 | 0.59 |
| HR | 0.72 | 0.14 | 0.58 |
| HU | 0.38 | 0.12 | 0.26 |
| IE | 1.19 | 0.11 | 1.08 |
| IT | 0.27 | 0.10 | 0.17 |
| LT | 0.86 | 0.14 | 0.73 |
| LU | 1.03 | 0.12 | 0.91 |
| LV | 0.30 | 0.14 | 0.16 |
| MT | 1.88 | 0.05 | 1.83 |
| NL | 0.77 | 0.11 | 0.66 |
| PL | 1.16 | 0.11 | 1.05 |
| PT | 0.43 | 0.11 | 0.32 |
| RO | 0.49 | 0.14 | 0.35 |
| SE | 0.66 | 0.14 | 0.52 |
| SI | 0.68 | 0.14 | 0.55 |
| SK | 0.79 | 0.13 | 0.66 |

*Source: own elaboration based on ECFIN-JRC mapadomo*

**Table A2.** NUTS3 for the 30 largest European metropolitan areas

| COUNTRY | European metropolitan areas | NUTS2021 | | COUNTRY | European metropolitan areas | NUTS2021 |
|---|---|---|---|---|---|---|
| AT | Wien | AT112 | | DE | Stuttgart | DE114 |
| AT | Wien | AT125 | | DE | Stuttgart | DE115 |
| AT | Wien | AT126 | | DE | Stuttgart | DE116 |
| AT | Wien | AT127 | | DK | København | DK011 |
| AT | Wien | AT130 | | DK | København | DK012 |
| BE | Bruxelles / Brussel | BE100 | | DK | København | DK013 |
| BE | Bruxelles / Brussel | BE231 | | DK | København | DK021 |
| BE | Bruxelles / Brussel | BE241 | | ES | Alicante/Alacant - Elche/Elx | ES521 |
| BE | Bruxelles / Brussel | BE310 | | ES | Barcelona | ES511 |
| CZ | Praha | CZ010 | | ES | Madrid | ES300 |
| CZ | Praha | CZ020 | | ES | Sevilla | ES618 |
| DE | Berlin | DE300 | | ES | Valencia | ES523 |
| DE | Berlin | DE404 | | FR | Lille/Dunkerque/Valencienne | FRE11 |
| DE | Berlin | DE405 | | FR | Lyon | FRK26 |
| DE | Berlin | DE406 | | FR | Marseille | FRL04 |
| DE | Berlin | DE408 | | FR | Marseille | FRL05 |
| DE | Berlin | DE409 | | FR | Paris | FR101 |
| DE | Berlin | DE40A | | FR | Paris | FR102 |
| DE | Berlin | DE40C | | FR | Paris | FR103 |
| DE | Berlin | DE40E | | FR | Paris | FR104 |
| DE | Berlin | DE40H | | FR | Paris | FR105 |
| DE | Frankfurt am Main | DE712 | | FR | Paris | FR106 |
| DE | Frankfurt am Main | DE713 | | FR | Paris | FR107 |
| DE | Frankfurt am Main | DE717 | | FR | Paris | FR108 |
| DE | Frankfurt am Main | DE718 | | HU | Budapest | HU110 |
| DE | Frankfurt am Main | DE719 | | HU | Budapest | HU120 |
| DE | Frankfurt am Main | DE71A | | IE | Dublin | IE061 |
| DE | Frankfurt am Main | DE71C | | IE | Dublin | IE062 |
| DE | Frankfurt am Main | DE71E | | IT | Milano | ITC49 |
| DE | Hamburg | DE600 | | IT | Milano | ITC4C |
| DE | Hamburg | DE933 | | IT | Milano | ITC4D |
| DE | Hamburg | DE939 | | IT | Napoli | ITF33 |
| DE | Hamburg | DEF06 | | IT | Roma | ITI43 |
| DE | Hamburg | DEF09 | | IT | Torino | ITC11 |
| DE | Hamburg | DEF0D | | NL | Amsterdam | NL230 |
| DE | Hamburg | DEF0F | | NL | Amsterdam | NL321 |
| DE | Köln | DEA23 | | NL | Amsterdam | NL323 |
| DE | Köln | DEA24 | | NL | Amsterdam | NL324 |
| DE | Köln | DEA27 | | NL | Amsterdam | NL325 |
| DE | Köln | DEA2B | | NL | Amsterdam | NL327 |
| DE | München | DE212 | | NL | Amsterdam | NL328 |
| DE | München | DE217 | | NL | Amsterdam | NL329 |
| DE | München | DE218 | | PL | Katowice | PL228 |
| DE | München | DE21A | | PL | Katowice | PL229 |
| DE | München | DE21B | | PL | Katowice | PL22A |
| DE | München | DE21C | | PL | Katowice | PL22B |
| DE | München | DE21E | | PL | Katowice | PL22C |
| DE | München | DE21H | | PL | Warszawa | PL911 |
| DE | München | DE21L | | PL | Warszawa | PL912 |
| DE | Stuttgart | DE111 | | PL | Warszawa | PL913 |
| DE | Stuttgart | DE112 | | PT | Lisboa | PT170 |
| DE | Stuttgart | DE113 | | SE | Stockholm | SE110 |

*Source: Eurostat Nuts 2021*

## Getting in touch with the EU

### In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

### On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

— by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
— at the following standard number: +32 22999696,
— via the following form: european-union.europa.eu/contact-eu/write-us_en.

## Finding information about the EU

### Online

Information about the European Union in all the official languages of the EU is available on the Europa website (europa.eu).

### EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/write-us_en).

### EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

### Open data from the EU

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

# Science for policy

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society

Scan the QR code to visit:

**Joint Research Centre**
https://joint-research-centre.ec.europa.eu

Publications Office
of the European Union