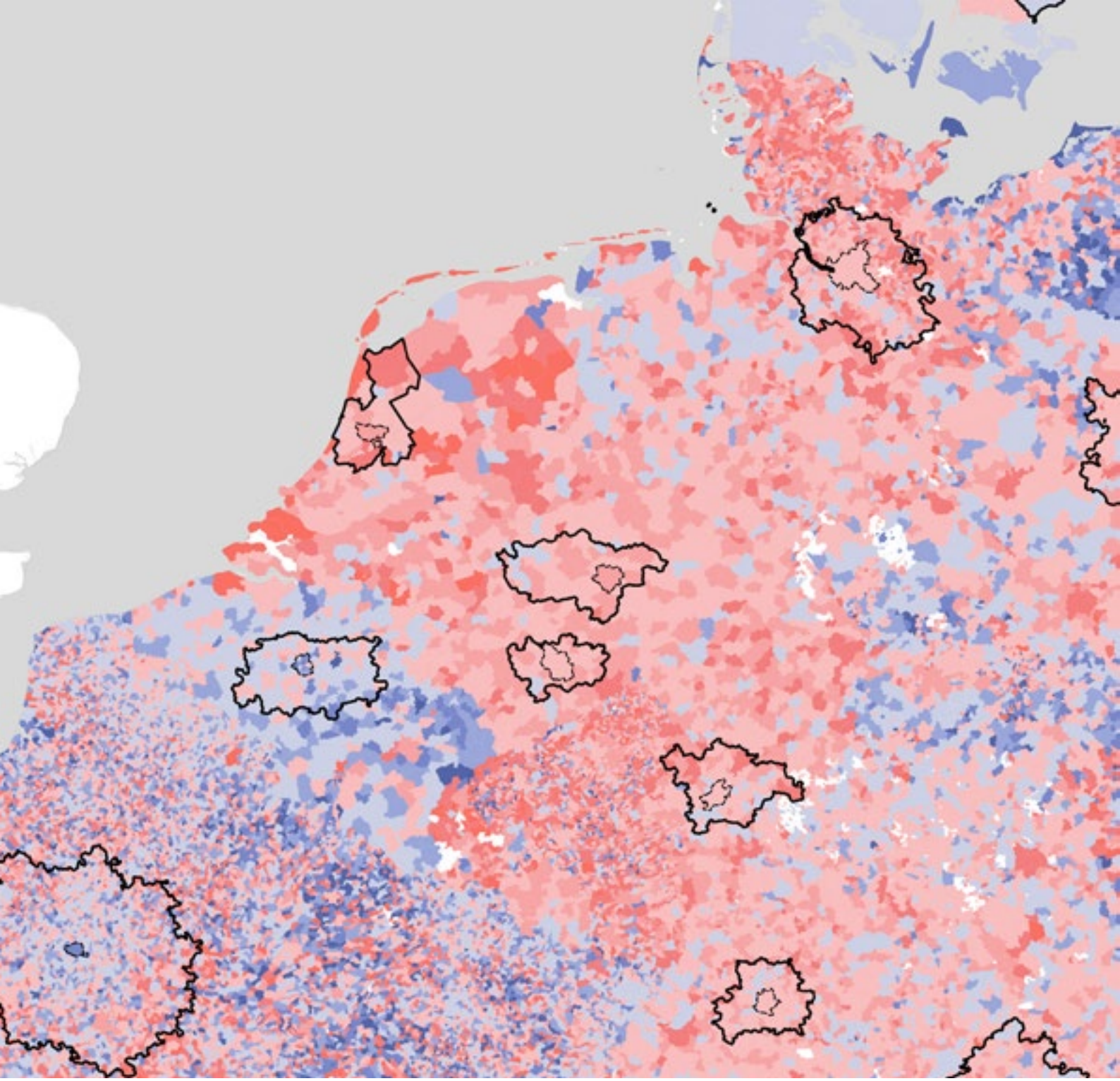

Housing in European Metropolises:

Supply dynamics and planning frameworks in large Urban Areas of the EU

Part I: research thesis

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Mikel Berra Sandin | May 2025

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Abstract

Europe's housing affordability crisis presents significant territorial challenges, particularly as housing demand increasingly spills over from inner cities to surrounding municipalities at the metropolitan scale. This study addresses key policy questions regarding the coordination of housing supply and planning instruments in large urban areas of the European Union.

Focusing on 23 large Functional Urban Areas (FUAs), the research follows a three part approach: a quantitative analysis of municipal-level housing production and demographic growth between 2011 and 2021 based on Census data; an analysis of the effects of housing supply on housing prices; and an AI-powered quantitative examination of urban plans, at municipal, metropolitan, and regional scales to observe whether they establish housing supply goals. This methodology generates evidence on the spatial dynamics of housing development, by creating an EU-wide database at municipal granularity, while providing a novel focus and analytical approach to institutional urban plans as drivers of housing supply.

Findings prove mixed alignments between housing supply and demographic growth, with Southern and coastal urban areas falling short on housing supply. In most cases, there is a pronounced metropolitan effect, where peripheral municipalities experience larger housing and population growth. When analyzing the plans, more frequent planning relates to larger housing provision. In addition, the research highlights that housing goals are usually determined at local plans, showing a mismatch between planning efforts and housing dynamics, which tend to be metropolitan or regional. Therefore, the research deepens the understanding of European housing provision and the planning of urban territories, highlighting the need for stronger housing policy mechanisms at the metropolitan level.

Housing in European Metropolises: supply dynamics and planning frameworks in large Urban Areas of the EU
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May 2025

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Table of contents

Housing in European Metropolises:

Supply dynamics and planning frameworks in large Urban Areas of the EU

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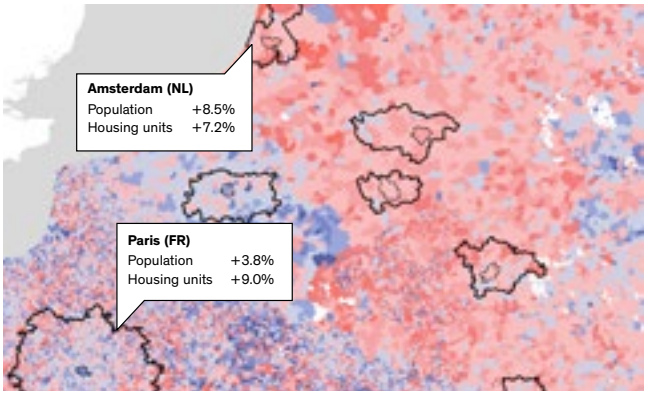
Massachusetts Institute of Technology, May 2025

This study analyzes how housing supply has taken place in the European Union between 2011 and 2021. It focuses on large Urban Areas, where population growth and housing pressure is higher. The study analyzes Census data and Urban Planning documents, and determines where housing scarcity is stronger, and whether cities are planning for enough housing. In doing so, it aims to help orient policy responses at the EU level, by providing data and evidence on housing and planning dynamics.

What does this research do?

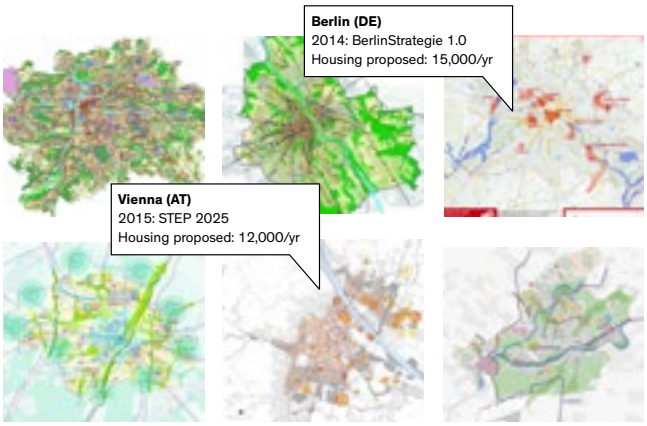
Housing is a Europe-wide issue, but it is mostly planned at local level. This research gathers and creates datasets to bridge that gap.



Gather housing unit, population and household data for every EU municipality* in 2011 and 2021, and analyze change over time

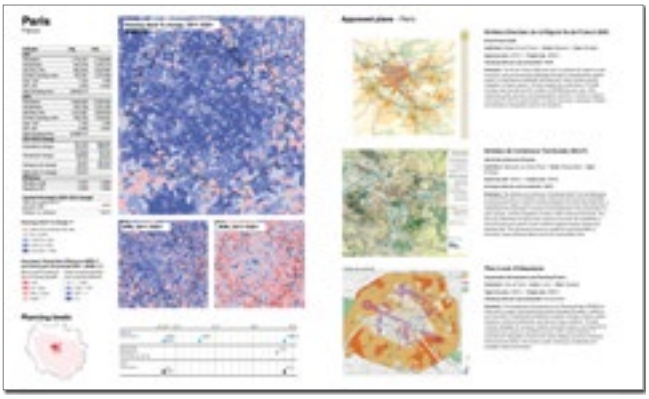
This leads to observing how housing stock has grown in the 10-year period, and how it compares to population and household growth.

* Data from EU Census Hub, Insee (FR), Czech Statistics Office (CZ) and Statistics Poland. No data available for Italy and Romania.



Analyze planning documents for 23 large Urban Areas, at the local, metropolitan and regional level, leveraging AI to compare plans

By doing so, we can verify which plans consider housing or establish goals for housing supply. It also allows to see at which territorial level planning happens, and how often it is made.



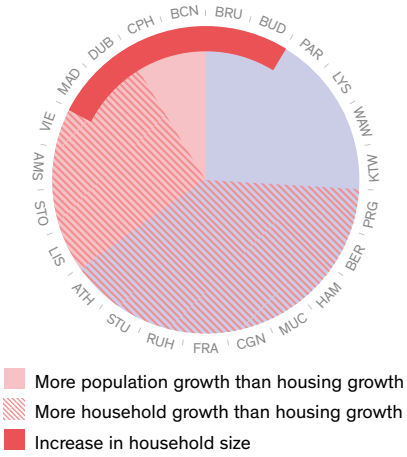
Create an Atlas of the 23 large Urban Areas, to understand their housing supply and planning frameworks

All Urban Areas above 2 million inhabitants (except Milan, Rome, Naples and Bucharest) are analyzed, which in 2021 hosted 84.7 million inhabitants, 19% of the total EU population.

What insights does it offer?

The created datasets can offer new evidence to orient housing policy, by providing municipality-level data over time and showing housing supply dynamics in detail. Depending on policy needs, several analysis can be drawn from the data - here are some overarching insights, focusing on 23 large Urban Areas:

Housing pressure in each Urban Area

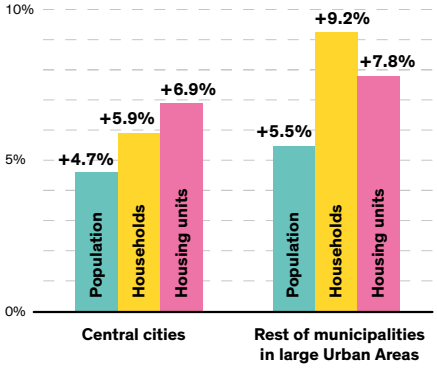


Most large Urban Areas are not building enough housing to cater to demographic changes

65% of large Urban Areas are not building enough housing for their household growth, and 35% are not building enough compared to population growth.

The housing supply shortage is more acute in Southern European Urban Areas, and in Coastal Urban Areas in Central and Northern Europe, even leading to growing household sizes in urban areas as Madrid, Dublin, Copenhagen or Barcelona.

Evolution in central cities and rest of municipalities in Urban Areas

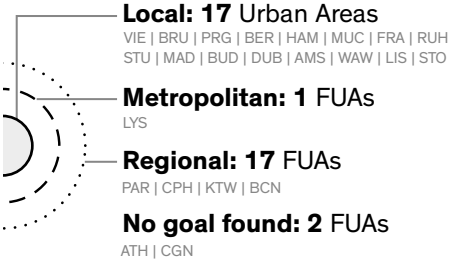


Housing growth is stronger in metropolitan municipalities than in central cities

Metropolitan municipalities are taking more of the housing and population growth than central cities, even if the political and policy focus is mainly in central cities.

In both geographies, housing growth is above population growth, but in metropolitan municipalities households are growing faster than housing units, adding more pressure to the housing market.

Level at which housing goals are set, 2011-2021



Planning for housing mostly happens at the local level - but frequent, multi-level planning works better to balance housing supply and demand

Urban Areas that provide ample housing tend to have frequent plans, and coordinate planning across local, metropolitan and regional levels.

In Urban Areas with outdated plans, housing supply is stalled despite increasing population.

1 Introduction

Housing has become a ubiquitous problem across all European countries, especially in large cities and their metropolitan areas. Rising rental and selling prices, paired with increasing competition for housing units, have resulted in a housing affordability crisis across the continent.

However, consensus largely ends there. There is little agreement on the root causes of the crisis, and consequently, of its solutions. Interpretations vary: some see it as a supply crisis, arguing that we need to build more housing (European Commission 2022). Others blame insufficient regulation, advocating for rental caps and controls on property acquisitions (Kettunen and Ruonavaara 2021). And some might argue the opposite, claiming that excess of regulation is hindering the housing market, and thus more flexible rules would allow for more, cheaper housing (Büchler and Lutz 2024).

Responsibility for addressing the crisis is equally up for debate. While housing supply and planning are usually a local responsibility, regional and national policy are largely influential in shaping housing markets. Now, given the continental scale of the problem, local, regional and national governments are asking the European institutions to intervene (Buces 2025), even if housing has historically been outside the European Union's mandate (Vincze and Betavatzi 2024).

Given this context, a critical question emerges: what action can European institutions take in alleviating the housing crisis? Any meaningful intervention first requires a shared understanding of the problem's roots. Yet reaching consensus is still a long shot, for several reasons. First, echoing the European motto, we are "united in diversity" in the housing crisis: the affordability crisis is common to almost all countries, but the causes and ongoing action in each of them are very disparate. Second, there is a lack of data: housing indicators across the European Union are limited and predominantly reported at the national level, not allowing to deepen into the regions or cities where the crisis is most severe. This thesis aims to cover the data gap by leveraging newly published census data at the municipal level across European countries. And third, housing is an inherently complex issue, where economic, legal, fiscal, political, social, geographic, urban, architectural and other forces come to play. Such multifactoriality adds complexity to the issue, and even more so in the European Union, where forces and systems vary in every country or region.

This thesis aims to clarify some of this complexity by establishing a comparative foundation for understanding the housing crisis. To do so, it will frame the discussion in two ways: on one hand, by examining how housing supply has been planned and implemented, as it

is an easily comparable analysis across different geographies. And on the other hand, it will focus on large metropolitan areas, where the housing crisis is more acute. The goal is to contribute to a more nuanced understanding of Europe's housing crisis and help chart a path toward viable, coordinated solutions.

2 Context

2.1. Defining the housing crisis

The housing crisis in Europe is undeniably complex, and in order to define it, basic questions need to be answered.

First: what is happening? In brief, Europe is facing a housing affordability crisis. Between 2011 and 2021, housing prices in the European Union increased by 37%. In the same period of time, inflation grew 13%, salaries grew 17% and GDP per capita grew 11%. Today, over 10% of urban households are cost-burdened (European Commission 2024a). A closer look reveals that prices remained relatively stable from 2011 to 2015. It is only after 2015 that sharp increases start taking place, with the 37% increase happening in the 2015-2021 period, as Figure 1 shows.

However, the housing affordability crisis is not affecting all countries equally: diverging processes emerge when analyzing where prices have increased most. Based on Eurostat data, among the countries where price increases were higher between 2011 and 2021, prices more than doubled in Hungary (+130%) and Estonia (+120%). Italy and Cyprus instead are the only countries where housing prices declined in the analyzed period (European Commission 2024a).

Despite the national-level statistics, available European data lacks detail on cities and metropolitan areas. Yet empirical evidence suggests that the affordability crisis is most acute in major metropolitan regions (Metropolis 2023; LSE Cities 2023). This territorial spread of the problem complicates efforts to both analyze and act upon it: the

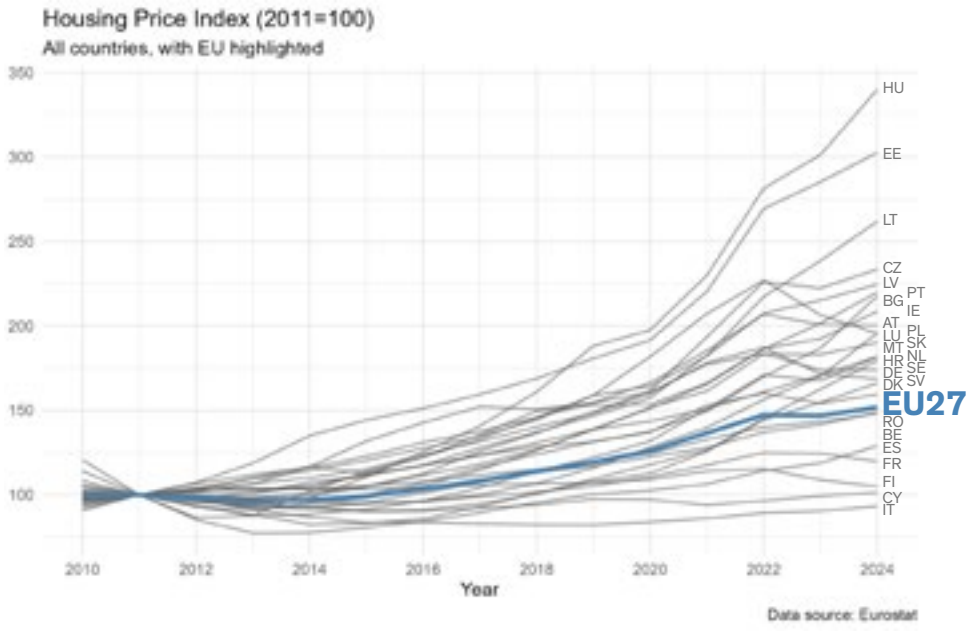


Figure 1 Change in Housing Price Index, with 2011 as base=100. In the 2011-2021 period, housing prices in the EU increased 37%.

national or regional scales do not offer the level of analysis to properly detect the issue, while the municipal boundaries of large cities are usually too narrow to capture the nature of housing issues. Central cities typically experience the highest prices and pressure over housing, but such pressure spreads to surrounding municipalities at commuting distance.

Why is this happening? This is perhaps the most difficult question. Multiple factors come into play – on the demand side, factors as demographics, employment or economic growth, and on the supply side, construction costs, access to finance and financing costs are determining housing prices (Melecky and Paksi 2024). Still, none of these offer clear, single-standing justifications for price increases. For example, as for demographics, the European Union is at a standstill: in the 2011-2021 period, population grew by 1.3% in the 27 member states (Eurostat 2022). However, migration between and within countries, especially towards larger cities and their surroundings, may be putting a burden over metropolitan housing markets. In addition, trends have been exacerbated by humanitarian crises as the 2022 Ukraine war, which has put a short-term pressure in Eastern European cities (Trojanek and Gluszak 2022), even if this is not captured by this research as it is posterior to the analysis period. And on another topic, construction costs rose by 16% in the 2011-2021 period, an increase that does not fully explain the housing price surge.

And last but not least, how can the problem be solved? While urgent action is required, the nature of that action is debated. Solutions can target either the demand side, by offering subsidies to residents, or in the supply side, by facilitating the development of new housing units (Saiz 2023).

Both strategies have their caveats. On one hand, demand-side subsidies can prove rather ineffective in providing a significant value for money. In contexts where no price or rent controls are in place and where supply is inelastic, the bulk of subsidies can be absorbed by price increases. On the other hand, in order to be effective, the supply side solutions should account on two elements: first, a lack of housing supply, and second, a targeted approach of housing supply towards affordable housing.

Currently, many European countries seem to fall short on both fronts. To understand why, it is helpful to examine how housing policy and affordable supply have evolved across the continent.

2.2. Affordable housing supply in Europe

2.2.1. HOUSING POLICY HISTORY

Has Europe been capable of providing affordable housing in the past? Clearly, it has. Despite significant shifts in housing policy over time, European countries have a long record of publicly led mass housing supply, even if each country had different specificities and

outcomes in the process.

The earliest examples of mass housing provision emerged in Germany and Austria during the interwar period. In Berlin, the "Siedlungen", subsidized housing estates established starting in 1924, provided large amounts of housing in a city known to be the densest on earth by the late 1800s. In Frankfurt, the "Neues Frankfurt" affordable public housing program was launched in 1925, which provided 12,000 new apartments in a six-year period (Laborda Yneva 1997). And in Vienna, the Social Democrats' election in 1919 led to the "Rotes Wien", where the creation of new housing was an overarching goal. As a result, over 60,000 new apartments were built between 1925 and 1934 (Ngo 2024).

After the war, the reconstruction efforts and economic improvement also led to a new wave of mass housing supply, with different solutions that portrayed the political systems in place in each country after the war. In democratic countries, there was a push towards providing rental housing. In France, the Habitations à Loyer Moderé (HLM, "Housing at moderate rents") were mainly developed starting in the 1950s, even if the legal scheme was existing before WWII (as Habitations bon marché or HBM) (Wong and Goldblum 2016). In Sweden, the Miljonprogrammet ("Million Programme") aimed to build one million public housing units between 1965 and 1974, targeted to citizens of all income levels (Stockholmskällan 2025).

Similarly, in countries under the communist rule, the construction of prefabricated housing estates proliferated from the 1960s onwards, either as Plattenbauten (East Germany), Panelák (Czechia) Panelhaz (Hungary) or Wielka płyta (Poland) (Doudová 2019). These housing units, offered as very low rentals at the time, were sold mainly to sitting tenants after the end of the communist rule.

Exceptionally, Spain's dictatorship also promoted mass housing development in Viviendas de Protección Oficial (VPOs, "Officially protected housing"), yet these subsidized housing units were owner-occupied, offering them at restricted prices. However, the price restriction only lasted for a certain amount of years since construction, effectively converting the units into market-rate housing after the restriction ends (Burón 2025).

After decades where mass housing supply was the norm, the public-led provision of social housing changed course in the 1990s, where privatization and deregulation diminished public action in the housing realm. Even if in countries outside the EU, as the United Kingdom and the United States, the diminishing role of the public sector was much more pronounced, countries within the EU also followed course in a more controlled manner (Calavita 2010).

Consequently, in recent times, the examples of mass housing programmes are more limited. Even if in some cases, as Spain, market conditions and land liberalization led to massive housing supply in the 1998-2008 period, publicly led programmes are scarce. A relevant exception is the VINEX program (the Dutch Ten-Year Housing Programme, 1996-2005) in the Netherlands, which has provided

over 500,000 new units (Boeijenga, Mensink, and Grootens 2008).

As a result of this, the diminishing public efforts in housing supply since the 1990s have led to a larger role of the private sector, both within affordable housing and market-rate efforts (Wehrhahn et al. 2019).

2.2.2. HOUSING POLICY TODAY

Today, countries have several approaches to housing policy, depending on their availability of social rental housing stock and on the rent regulations and demand side incentives in place. Based on the criteria followed by several scholars and practitioners (Scanlon 2014; Burón 2025) and OECD's Affordable Housing Database (OECD 2024) approaches from countries can be grouped in different categories. In this analysis, "social rental housing" refers to "residential rental accommodation provided at sub-market prices and allocated according to specific rules rather than market mechanisms" (Salvi del Pero et al. 2016).

First are countries with large social rental housing sectors, where social rental housing is more than 20% of the total housing stock – Netherlands, Austria and Denmark fall within this category. The social housing stock has been generated over sustained supply overtime, and in addition, all countries have demand-side measures to procure housing affordability. In the Netherlands, financial support to homebuyers is ample, while rent regulations are present in part of the stock. And both in Austria and Denmark, rent regulation is also strong: in Denmark, about 90% of privately rented units are subject to rent control, while in Austria, rent regulation also applies to most private rental, with rent caps determined based on building conditions and age.

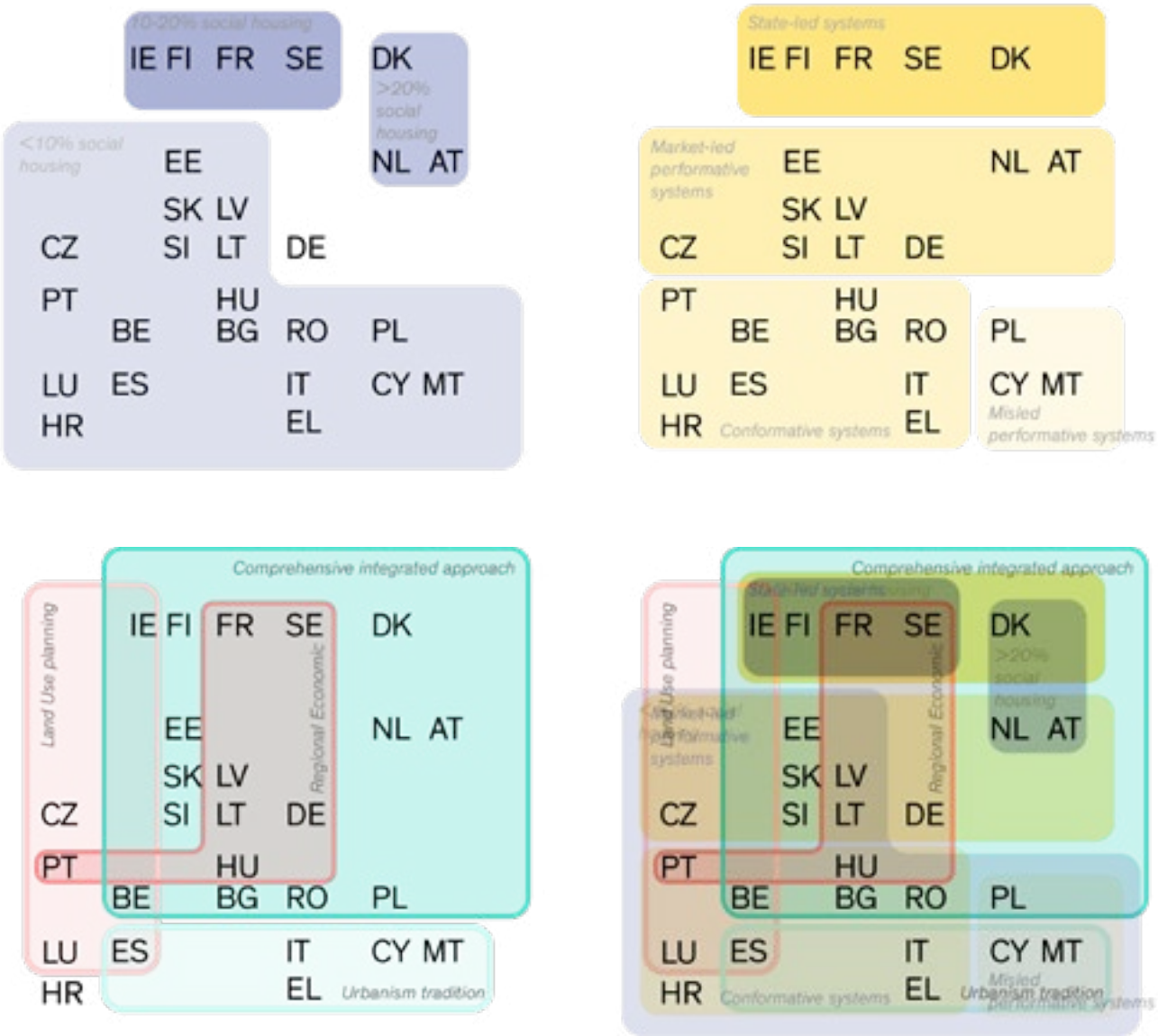
Afterwards, Sweden, Ireland and France also have relatively large social housing sectors, with 10 to 20% of the stock being social housing. Sweden's case is exceptional, as its 'municipal housing' is not strictly considered social housing – it does not aim to cater to specific demographics or low-income households. In any case, municipal housing forms close to 20% of the country's total housing stock, and both municipal housing and private rents are subject to rent control. In addition, the central government also offers housing allowances, while municipalities offer social welfare payments for housing. In France instead, social housing in form of Habitations à loyer moderé make up for 14% of the total stock. In addition to this, France offers fiscal incentives both in the supply side (for provision of limited rent units) and the demand side (for mortgage interest deductions).

Germany is a unique case: even if it has a small social housing sector (3% of total stock), its high share of renters (52% of the population is a tenant) and its rental regulations make it a unique case. There are three avenues towards affordable housing: privately developed subsidized housing (Fördervertrage), municipally owned housing companies, and rent regulation in private markets (Mietspiegel).

And last, are the rest of countries which have small social housing sectors. Among these, in some of the countries social housing stock was large but has been depleted over time. In formerly communist countries, former social housing (especially units built as panel housing) still serve as affordable housing, either because they are still owned by their former tenants or because their market-rate prices are far lower compared to other market-rate units. In other countries as Spain, social housing has predominantly been owner-occupied, with restricted pricing being limited in time and units become effectively market-rate after a time period.

Therefore, the diversity of approaches to housing policy requires from a tailored analysis and solutions, in order to fit the existing context.

Figure 2 Social housing (OECD 2024, top left), public-private intervention (Berisha et al. 2021, top right), and planning tradition (Farinós Dasí 2007, bottom left) classifications for EU countries, and combination of all three classifications (bottom right).



2.3. Urban planning

Housing cannot be built without land—and how land is planned and regulated shapes how housing can be delivered. Planning systems vary largely between and within countries, as regulations take place in different government levels (local, metropolitan, provincial, regional, national) and follow different legal traditions.

Classifications of European planning systems abound in literature, with classifications based on legal families, planning styles, or the balance between state-led and private power. For the matter of supply promotion, analyzing how planning styles and power balance take place is especially relevant.

As for spatial planning styles, the EU Compendium of Spatial Planning Systems and Policies (European Commission 1997) defines four main styles, ordered here based on the detail or depth in regulations. First is the Integrated approach, where planning's role is to coordinate sectoral policies and their spatial impacts. Second is the Regional economic approach, where planning is aimed towards intervening on economic disparities. Third is Land use planning, where planning regulates land use changes. And fourth is the Urbanism tradition, where planning determines urban design and buildings through zoning. The definition of these different styles is relevant towards understanding how quickly plans are made and can adapt to changing demands in housing or other sectors. The deeper in detail urban planning regulates, the slower plan drafting processes are, and the less reactive planning is to changes.

Another relevant classification criteria is the public capacity to control spatial development and the private actors acting in it (Berisha et al. 2021). To do so, two factors are regarded: on one hand, the state's and market's role in spatial development, and on the other, the flexibility of planning. If planning is inflexible and does not align with project timing, it is considered 'conformative', while if planning is flexible and adapts alongside the project process, is considered 'performative'. Based on such criteria, this classification determines four planning systems: 1) state-led systems, where Scandinavian countries and France sit; 2) market-led neo-performative systems, where the market has greater power and capacity to shape planning, as is the case of Austria, Netherlands, Germany, and the Czech Republic; 3) conformative systems, where states do not play a strong role in spatial development and planning decisions are made before private development projects start, and 4) misled performative systems, where a high level of flexibility is matched with a low capacity of influence of the public sector, as it is the case in Poland.

Beyond the specificities and accuracy of each classification in properly depicting planning systems, all of them show a wide variety of approaches to urban planning as shown in Figure 2, which add complexity to the analysis of housing supply and the implementation of solutions to the housing crisis across Europe.

2.4. Governance levels and the role of the EU

And last is the analysis of governance levels involved, which also varies in each country and city. Depending on the country and region, planning can be determined in two, three, four or five levels of government, ranging from national to infra-local (ESPON 2018).

On top of this, the European Union and its institutions can also play a role in housing – a role that is currently changing. Traditionally, the EU has had little direct competence in housing or urban planning. However, the growing urgency of the housing crisis and political pressure from member states and city governments are pushing the European Commission to act (Buces 2025). Indeed, for the first time the European Commission's current College of Commissioners (2024-2029) has a Commissioner in Energy and Housing.

However, in the past, other European level policies and mandates have shaped housing policies, be it through recommendations on land use, urban planning and architecture, or through financing deployed by the European Investment Bank and European Commission.

2.4.1. POLICY EFFECTS

Despite housing not being a European matter, other European policy decisions and recommendations have affected the housing market and supply across the EU.

Economic policy has been key to shaping housing markets. The creation of the European Single Market and the Economic and Monetary Union, a centerpiece of economic policy at the EU, led to the free movement of capital across borders in 1992, easing foreign real estate investment. In addition, fiscal rules limit deficit and debt for countries, thus affecting their capacity to spend in social or housing policy (Vincze and Betavatzi 2024). And last but not least, the Competition Policy and State Aid Rule regulates the direct or indirect aid given by each member state to companies (European Commission, n.d.). As argued by some scholars and practitioners, these rules affect the housing market by both easing private investment and speculation, and setting roadblocks for public expenditure and action (Burón 2025).

In addition, the EU has also played a role in creating land use rules. In 2011, the European Commission set the goal to "achieve no net land take by 2050" (European Commission 2011), thus effectively limiting urban expansion in European cities. The policy is based on environmental goals, and aims to promote inner-city development before urban expansion. However, in consolidated cities with little available land for redevelopment, this policy might deter the provision of housing supply, increasing pressure over the housing market (Tosics 2024).

And last, the Urban Agenda for the European Union establishes housing as one of its priority themes, focusing on public affordable hou-

sing, state aid rules, and housing policy (Council of the European Union 2016). In order to pursue this priority, the Housing Partnership was established in 2015, rallying 5 member states, different urban areas and international institutions. Their approach considered the need to increase affordable housing options, and they defined an Action Plan in 2018 with three major goals: better legislation, better knowledge and governance, and better funding (Vincze and Betavatzi 2024). Unfortunately, none of these have resulted in specific Europe-wide actions.

2.4.2. FUNDING RESOURCES

However, the most solid action from European institutions in the housing realm is specifically geared towards funding or financing housing development and renovations. In this regard, two main mechanisms come to play:

The European Investment Bank has been offering support for social and affordable housing projects for a long time. Its support includes all non-market or regulated accommodation and housing, and consists of investment loans, framework loans, and advisory services (European Investment Bank 2019). In the 2019-2023 period, according to UN-Habitat, the EIB has deployed more than 17 billion USD in housing projects (UN-Habitat 2024).

Apart from EIB's action, the COVID pandemic created a new paradigm with the European Commission as a key partner. It offered extensive funding, in grants and loans, to member states in order to spur economic recovery. These funds, popularly known as NextGenerationEU, are in deployment between 2021 and 2026, and mainly focus on the digital and green transition ("Recovery and Resilience Scoreboard," n.d.). The centerpiece of NextGenerationEU is the Recovery and Resilience Facility (RRF), which offers €648 billion, 25% of which (around €163 billion) goes to social objectives (European Commission 2024b).

Despite housing not being a main focus of the NextGenerationEU funds, part of the social objectives budget has been devoted to housing policy. However, the EU determined that the funds should mainly be used for refurbishment works, while only a small part could be used to promote new affordable and social housing (Burón 2025).

2.4.3. INCOMING POLICY DEVELOPMENTS

In the coming years, the EU action in housing is expected to ramp up. The Commissioner of Housing's goals are the creation of the first-ever European Affordable Housing Plan, the development of a European Strategy for Housing Construction, and the establishment of a pan-European investment platform to attract more private and public investment (European Commission 2025).

Among these actions, the new pan-European investment platform for affordable and sustainable housing was rolled out in March 2025, as a collaboration between the European Commission and

the European Investment Bank, offering direct loans, green bonds, and guarantees to construction companies, real estate developers and housing intermediaries.

In sum, European institutions' influence on the housing realm is expected to increase in the coming years, mainly focusing on providing more housing. To do so, a better understanding of different dynamics in every country and metropolitan area will be needed.

3 Literature review

The complex housing crisis in Europe has led to extensive, albeit mostly fragmented, analysis of housing markets and supply and demand trends across European countries. Academic consensus stands that in order to accommodate population growth, more housing is needed, and that the creation of more housing results in more moderate housing price increases. However, analysis across European country borders is not that prevalent, especially when it comes to analyzing housing markets at the metropolitan level.

3.1. Housing supply and demographics

When it comes to the relation of housing supply and demand, this is established by several factors, but the key element is household growth, caused both by population growth and by shrinking household size (Patel, Rajan, and Tomeh 2024). On top of this, other elements as the depreciation of the stock, or the preexisting backlog or deficit of stock also affect the demand for housing.

However, recent demographic changes add complexity to its application. Even if the equilibrium between housing supply and demography needs to still be fulfilled, currently in European cities demographic changes are caused by migration patterns, be it economic migration or caused by humanitarian or climate crises, rather that natural migration changes (births and deaths). This results in more variable and unpredictable changes in demographics, and therefore in housing demand, which can result in lack of housing supply in the short term (Módenes 2023).

3.2. Housing supply and housing prices

As for the effect of supply on housing prices, there is academic and institutional debate on whether larger housing supply results in lower price hikes. In Europe, when analyzed at the country level, the EU institutions have assumed that larger supply leads to lower prices (European Commission. Directorate General for Economic and Financial Affairs. 2022). The relationship with rents is not as clear, though: analysis in Germany has offered evidence that a 1% increase in new supply lowers average rents by 0.19% (Mense 2025), but such relationship is yet to be proved in large cities (Hilber and Mense 2021).

Specific authors also claim that the effect of lowering prices as housing supply rises is expected to stay true even if such supply is higher-end, in a phenomenon that has been described as 'Trickle-down housing economics'. Multi-city evidence is ample in the

United States (Nathanson 2019; Mast 2023). Even if there are not comparable multi-city studies in Europe, specific cases in Sweden (Kindström and Liang 2024) and Finland (Bratu, Harjunen, and Saarimaa 2023) have been analyzed, showing that in such cases higher-end housing supply has ended up creating opportunities for housing for the lower-income levels of society.

Still, in other European cities, diverging patterns have been found. It is the case of Lisbon, where despite large housing stock vacancy (14.9% of housing units remain vacant), housing is becoming increasingly unaffordable due to pressures from short-term rental and a generation of new stock geared exclusively towards the high-end market (Garha and Azevedo 2025).

In addition, the increasing pressure of rents and lack of access to property ownership has fueled debates as 'Supply skepticism', where affordable housing advocates do not see mass supply as a solution to reduce prices. This phenomenon has been largely debated in the US (Been, Ellen, and O'Regan 2019; Nall 2025; Been, Ellen, and O'Regan 2025), yet advocates in Europe also align with the concept (Palomera 2025).

3.3. Housing supply and planning

Finally, spatial planning frameworks and regulations also affect housing supply. Scholars have argued that stringent regulations on zoning and land use are hindering housing supply, and thus causing a raise in housing prices (Büchler and Lutz 2024).

At the same time, a mismatch between metropolitan plans and local regulations has also been documented (Malý 2024), where larger plans advocate for housing but without establishing specific mechanisms, while local regulations block new housing supply.

However, both issues pose larger questions of the role of planning vis a vis new development. Plans and regulations can be both promoting development or curtailing it, depending on the political goals of the plan at every moment. Even more so, as hinted before, plans can also state or announce that they have a certain goal, but then establish mechanisms that have the opposite effect.

In sum, existing literature points out towards the need for equilibrating new housing creation with household growth, the contribution of ample housing supply towards affordability, and the role of planning as an element that limits housing supply.

3.4. Indicators

Despite common agreement that housing supply has to match demographic change, and more specifically the creation of new households (Patel, Rajan, and Tomeh 2024), to the knowledge of this author, there is no specific indicators to measure the relationship between new housing supply and new household creation.

In similar use cases, though, there are indicators to measure whether the evolution of urban resources matches population growth. It is the case of land use analysis. As part of the Sustainable Development Goals indicators, UN-Habitat promoted the use of the Land Use Efficiency or LUE (UN-Habitat 2018), which is used to compare land consumption and population growth. This indicator divides Land consumption rate by Population growth rate, offering a clear understanding of how land consumption has happened when compared to population growth. LUE is calculated with the following formula:

Equation 1 Equation of Land Use Efficiency, used to calculate Land Consumption in comparison to Population Growth.

$$LUE = \frac{Land\ Consumption\ Rate}{Population\ Growth\ Rate} = \frac{\frac{LN\left(\text{Urban land}_{t2}/\text{Urban land}_{t1}\right)}{years}}{\frac{LN\left(\text{Population}_{t2}/\text{Population}_{t1}\right)}{years}}$$

The outcomes of LUE are meant to be easily interpretable. If LUE>1, land consumption is outpacing population growth, leading to inefficient land use. If LUE=1, land consumption and population growth are on par. If LUE<1, population growth is faster than land consumption, showing a redensification of urban land.

However, the way LUE is calculated poses some significant issues, especially in areas where population is decreasing. Given that both the nominator and denominator are calculated with a logarithm, if population is not growing, this yields negative values to the resulting LUE, making results difficult to read. In addition, for areas with very low population growth, little changes in population growth can show great variations in LUE values.

4 Scope and goals

4.1. Scope of research

As we have observed in the context and literature review, even if the focus of comparative research has been in analyzing housing markets in European countries as a whole, housing follows a predominantly metropolitan logic. Consequently, this thesis will analyze housing supply at a metropolitan level, focusing on large European metropolitan areas. In the EU, there are 27 metropolitan areas that are larger than 2 million inhabitants, which the research will review.

More specifically, the temporal and geographic scope are defined by data availability and feasibility of research. The research will focus its analysis in the 2011-2021 period. This is due to data availability: in European countries, the census is developed every 10 years, and the last two occasions were 2011 and 2021. In addition, it is the only two instances where the census has been planned in a coordinated manner across countries, easing data comparability.

In terms of geographic scope, each of the research parts will have a specific scope. The research starts with a Europe-wide overview of housing with relation to demographics. Afterwards, the detailed quantitative analysis of housing with relation to demographics, housing prices and planning is conducted in 23 out of the 27 large metropolitan areas, shown at Figure 3 and Table 1 (Milan, Rome, Naples and Bucharest are discarded). The analysis uses data at the municipal level, aggregating it as needed for the different levels of analysis. For such metropolitan areas, the Annex offers an Atlas of metropolitan areas and their data, geographic distribution of new housing, and key planning documents.

The research will also delve into more detail in two of the metropolitan areas, in order to contrast quantitative research with qualitative fieldwork. The two metropolitan areas were chosen after a preliminary research, based on both their housing supply and planning framework. As a result, Vienna, Austria and Prague, Czechia, were chosen. In the case of Vienna, the combination of a rapidly growing housing stock, an increasing population, and a stable planning framework, made it a relevant case. For Prague, the preliminary research showed a very steady growth in housing, accompanied by a stable population, thus providing an opportunity to analyze a case where housing provision outpaces demographic growth. The proximity, relatively similar size, and similar administrative structure, while coming from completely different political and economic systems, makes their analysis even more interesting.

Table 1 Basic data of the 23 analyzed Functional Urban Areas.

			FUA population, 2021	Municipal units within FUA	Central city population, 2021
1	PAR	Paris (FR)	13,171,058	1,929	2,133,110
2	MAD	Madrid (ES)	6,956,732	166	3,277,452
3	BCN	Barcelona (ES)	5,070,099	135	1,627,557
4	RUH	Ruhr Area (DE)	5,028,203	54	592,632
5	BER	Berlin (DE)	4,863,129	118	3,550,886
6	ATH	Athens (EL)	3,623,409	104	643,449
7	WAW	Warsaw (PL)	3,374,742	90	1,863,056
8	HAM	Hamburg (DE)	3,350,441	382	1,789,990
9	BRU	Brussels (BE)	3,331,496	137	1,226,329
10	VIE	Vienna (AT)	3,036,536	328	1,926,960
11	LIS	Lisbon (PT)	3,011,919	151	545,796
12	BUD	Budapest (HU)	2,973,490	199	1,681,033
13	MUC	Munich (DE)	2,959,112	194	1,463,663
14	AMS	Amsterdam (NL)	2,891,896	46	873,343
15	FRA	Frankfurt (DE)	2,601,836	103	733,451
16	STR	Stuttgart (DE)	2,475,336	137	604,236
17	KTW	Katowice (PL)	2,417,386	60	282,755
18	STO	Stockholm (SE)	2,415,137	26	978,772
19	LYS	Lyon (FR)	2,308,826	398	522,251
20	PRG	Prague (CZ)	2,270,361	588	1,301,432
21	DUB	Dublin (IE)	2,219,523	56	586,793
22	CGN	Cologne (DE)	2,138,141	28	1,009,974
23	CPH	Copenhagen (DK)	2,131,090	35	638,117

Figure 3 Location of analyzed Functional Urban Areas.

4.2. Goals

The overarching goal of this thesis is to respond to the following research question:

How has housing supply taken place in large EU metropolises between 2011 and 2021?

This broad question will be regarded from four lenses: demographic change, housing prices, urban planning, and implementation.

Each of the research steps will focus on one of the lenses. First is housing supply and demographics, in order to analyze whether large European metropolises have built enough housing to accommodate population growth. Second is housing supply and housing prices, to clarify whether providing enough hosing results in more affordable housing. Third is housing supply and planning, to observe how urban plans aim for housing provision. And last is housing supply in practice, where we will analyze how two cities, Vienna and Prague, implement new housing supply.

5 Methodology

The research follows a predominantly quantitative methodology, based on comparing different datasets across geographies. In addition, the research complements the quantitative approach with qualitative research in two cities, Vienna and Prague, in order to verify whether quantitative approaches reflect realities in place.

5.1. Data collection

The research retrieves data from public, official sources, be it statistical data, urban plans, or information on urban developments. The research also inquires public officials about their approach to urban planning and development.

Administrative divisions data is used to map and locate subsequent datasets. To do so, municipality names and boundaries for 2011 and 2021 are sourced from GISCO - Local Administrative Units (LAU), Functional Urban Areas are sourced from EUROSTAT – Local Administrative Units (LAU), 2021.

The research uses census data to obtain population, household and housing data. Census data is produced by each state's statistical office, yet these data are amalgamated and distributed in a comparable format by the EU Census Hub. The EU Census Hub provides data for all analyzed urban areas (FUAs located in Austria, Belgium, Denmark, France, Ireland, Netherlands, Portugal, Sweden, Spain, Germany, Greece, Hungary), except for those located in Poland, Czechia, Romania and Italy. For Poland, data is sourced from Statistics Poland, with data for housing units and population being available but data for households being inexistent. For Czechia, the census does not provide data for 2011. Data for 2011 is retrieved from the Czech Statistical Office, with data available for households and population, and for housing units built in the 2011-2021 period. For France, 2021 data on households is sourced from Insee, as the EU Census Dataset does not provide correct information on households. For the Barcelona FUA, census data showed a loss of housing units, which does not reflect the reality in place - this has been contrasted with locally sourced data (Ruiz et al., 2024) and data has been duly corrected.

Romania and Italy are discarded from the analysis, as the data is acknowledged to be unreliable. For Romania, as of April 5th, 2025, the 2021 housing census has not been published yet (INSSE, n.d.). For Italy, the 2011 and 2021 housing unit counting methodologies are different and not comparable (Istat, n.d.).

As for other elements, for housing prices, the research uses Deloitte's Property Index yearly reports, which provide values of new hou-

sing sale prices (Deloitte 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020; 2021; 2022). The index provides information for the whole analysis period (2011-2021) for 15 of the cities, and for the 2013-2021 period for Dublin and Lisbon. It does not provide comprehensive information for Katowice (only 2019-2021 available), Athens (no information available), Stockholm, Ruhr Area, Stuttgart and Cologne. For these last four cities, alternative data has been found, which has been used as reference but not added to the analysis: for Stockholm, 2011-2021 data from Swedish Real Estate Statistics (Svensk Mäklarstatistik 2025), and Ruhr Area, Stuttgart and Cologne, 2017-2021 data from the online portal Immowelt (Immowelt 2025a; 2025c; 2025b).

Urban plans for the 27 largest Functional Urban Areas are retrieved from official sources of each municipality, metropolitan area or region. In order to select plans, only plans approved by government bodies are taken into account. Therefore, plans drafted by soft cooperation organizations or without direct governmental backing are not contemplated.

Lastly, a more in-depth analysis focuses on Vienna and Prague, and uses a mix of unstructured interviews with city officials and academics at both cities, and site visits to newly developed sites in both cities. This on-site analysis is combined with data sources from municipal reports, webpages and other publications to analyze the urban plans and development projects that have taken place between 2011 and 2021.

Interviews have been conducted with members of the following institutions:

- City of Vienna: Executive Group for Construction and Management (two interviews, in person)
- City of Vienna: MA 18 - Urban Development and Planning Department (one interview, in person)
- Wien3420 aspern development AG (one interview, online)
- PDS Prague – Prague Development Company (one interview, in person)
- IPR Prague – Institute for Planning and Development (one interview, online)
- ČVUT – Czech Technical University in Prague (one interview, in person)

5.2. Data cleaning

Administrative data is geographically analyzed in order to equalize Local Administrative Units between 2011 and 2021, to ensure that the concerned units are comparable. Three scenarios are accounted for: 1) municipalities do not change, 2) Municipality fusion: 2 or more municipalities in 2011 convert into one municipality in 2021, 3) Municipality division: one municipality in 2011 converts into two or more municipalities in 2021. Municipality boundary changes which do not divide or absorb other municipalities are not taken into account.

5.3. Data analysis

5.3.1. HOUSING SUPPLY AND DEMOGRAPHICS

Demographic and housing data are analyzed quantitatively, in order to clarify the housing supply trends in each municipality, and compare them to the population and household change trends. To do so, initial data will be the total population, total households and total housing units in 2011 and 2021.

In order to explain whether housing supply has followed population or household growth, the research requires a clear indicator, that allows us to read the relationship between housing and demographics easily.

Inspired on UN-Habitat's Land Use Efficiency indicator, we will create the following indicators:

Equation 2 Proposed equation for Housing to Population Efficiency.

$$HPE = \frac{Housing\ unit\ change\ \%}{Population\ change\ \%} = \frac{\left(\text{Housing}_{t2}/\text{Housing}_{t1}\right)}{\left(\text{Population}_{t2}/\text{Population}_{t1}\right)}$$

The Housing to Population Efficiency (HPE) compares housing unit growth and population growth, by dividing the housing percentage in t2 compared to t1, by the population percentage in time t2 compared to t1. By doing so, the Housing to Population Efficiency provides an easily readable result: if HPE>1, housing has grown faster than population, indicating a surplus of housing; if HPE=1, housing and population have changed equally, and if HPE<1, housing growth has been slower than population growth, indicating a shortage of housing.

Apart from comparing housing units to population, demand in housing might be better understood by the creation of households. However, household counting methodologies and available data are not always comparable, and thus this research will prioritize the use of Housing to Population Efficiency. In any case, the Housing to Household Efficiency follows the same logic as the Housing to Population Efficiency, and is calculated as follows:

Equation 3 Proposed equation for Housing to Household Efficiency.

$$HHE = \frac{Housing\ unit\ chg.\ \%}{Household\ change\ \%} = \frac{\left(\text{Housing}_{t2}/\text{Housing}_{t1}\right)}{\left(\text{Households}_{t2}/\text{Households}_{t1}\right)}$$

Therefore, if HHE>1, housing has grown faster than households, indicating a surplus of housing; if HHE=1, housing and households have changed equally, and if HHE<1, housing growth has been slower than household growth, indicating a shortage of housing.

For both indicators, it is assumed that they provide an underestimate of housing demand. In the case of HPE, even when housing units

and population grow at the same rate (HPE=1) the shrinking size of households would result in a higher demand for housing units than the amount of units created.

In the case of HHE, even when housing units and households change equally (HHE=1), this would assume that household creation is the only reason for housing use. Therefore, this indicator does not account for other types of occupations (students, temporary workers…) who do not constitute or may not be counted as a household but still need from housing units.

In any case, given the availability of data and the changing sizes of households, having both metrics will help analyze the evolution of supply.

5.3.2. HOUSING SUPPLY AND HOUSING PRICES

As for comparing housing supply and housing prices, the research calculates the housing price increases for new housing units in each of the central cities. Housing price increases are not deflated.

Given the scarcity of data, the research in this regard cannot expand much or be conclusive: data is only available for 18 of the 23 analyzed cities, and it only accounts for new housing units. Consequently, the type and amount of new construction might severely affect the data. For example, Lisbon is the city with largest price increases in the analyzed period (+227%), but the city has had very limited new supply in the analyzed period, which might have been marketed for higher-end customers and thus increasingly expensive.

5.3.3. HOUSING SUPPLY AND PLANNING

Urban plans are analyzed both in a quantitative and qualitative manner. Urban plans are classified following three criteria:

- Geographic coverage
    - Local: plans concerning the central municipality within the Functional Urban Area.
    - Metropolitan: plans concerning the metropolitan territory. In most instances, this scale is the most similar to the Functional Urban Area.
    - Regional: plans concerning the region where the Functional Urban Area sits.
- Effect
    - Binding: plans that conform legal or regulatory changes.
    - Strategic: plans that do not conform legal or regulatory changes, yet define a comprehensive direction for urban policy action.
    - Sectorial: plans that neither conform legal or regulatory changes nor define a comprehensive direction for urban policy action, yet they define action in the housing policy and development realm.

- Housing supply goals
    - Determination of whether a plan establishes a housing supply goal.
    - Quantification of the goal, in new units per year.

In order to visually represent the amount and scope of plans that have been analyzed, these are represented in timelines, showing their geographic coverage and effect. The content of urban plans will be initially analyzed through an AI-powered model. The model uses GPT-4o-mini to analyze the plans, and detect the amount of housing units proposed. After the AI analysis, results are manually verified in order to ensure accuracy.

6 Housing supply and demographics

This chapter aims to clarify a simple yet large question: is there a scarcity of housing units in large European metropolises? Certainly, the research is expected to find out different dynamics in each of the metropolitan areas, and also within each metropolitan area.

6.1. The larger picture

6.1.1. COUNTRY-SCALE DATA

In the EU countries where data is fully available (all but Italy, Romania and Poland), in 2021 there were 328.7 million inhabitants, 145.5 million households and 175.5 million housing units. Compared to 2011, all three metrics grew: inhabitants were up 2%, households were up 6.5%, and housing units were up 7.3%. Therefore, in Europe as a whole, housing units grew faster than both population and households, and thus we can assume that housing supply covered the demographic demand.

When regarding the evolution over time at the country level, shown in Table 2, it is only in Luxembourg, Ireland and Slovenia that population has grown faster than housing units. And if we look at households, it is in ten out of twenty-four countries that households have grown faster than population: Cyprus, Czechia, Germany, Greece, Ireland, Luxembourg, the Netherlands, Portugal, Sweden and Slovenia. Based on this level of analysis, which is the usual when observing housing data, we could say that a lack of supply affects to less than half of EU countries, as population growth at the country level is slow, while housing unit growth is faster. However, when changing the scale of analysis to Functional Urban Areas, a completely different picture arises.

Table 2 Population, household and housing change, and Housing to Population Efficiency and Housing to Household Efficiency, at Country level in the 2011-2021 period.

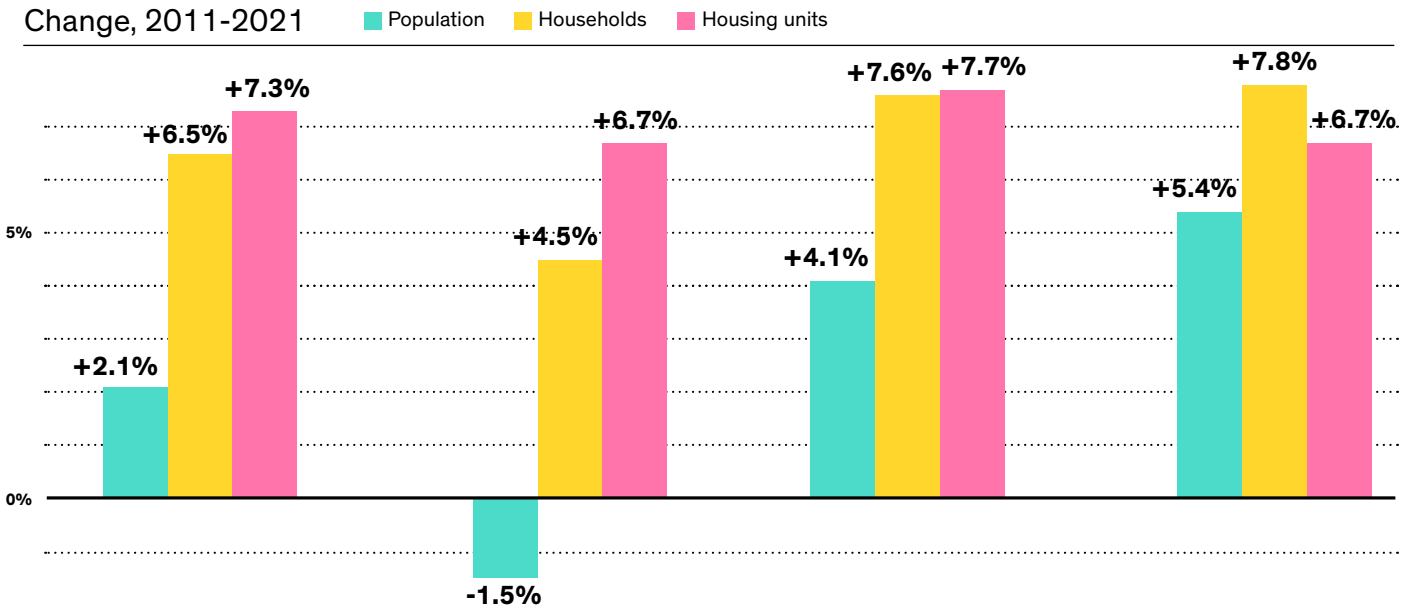
Country	Population, 2021	Population % change, 2011-2021	Household % change, 2011-2021	Housing unit % change, 2011-2021	HPE, 11-21	HHE, 11-21
Austria	8,969,068	6.75%	10.42%	10.54%	1.035	1.001
Belgium	11,554,767	5.04%	6.53%	8.89%	1.037	1.022
Bulgaria	6,519,789	-10.85%	-3.98%	10.82%	1.243	1.154
Cyprus	923,344	9.87%	18.03%	14.04%	1.038	0.966
Czechia	10,524,167	0.84%	9.78%	5.82%	1.049	0.964
Germany	81,929,780	2.14%	7.79%	6.26%	1.040	0.986
Denmark	5,840,054	5.03%	5.74%	6.91%	1.018	1.011
Estonia	1,331,824	2.89%	-6.36%	12.79%	1.096	1.205
Greece	10,482,379	-3.05%	4.82%	3.59%	1.069	0.988
Spain	47,400,708	1.25%	2.52%	5.62%	1.043	1.030
Finland	5,533,789	2.95%	9.04%	11.28%	1.081	1.021
France	67,439,576	3.86%	9.47%	10.43%	1.063	1.009
Croatia	3,871,784	-9.64%	-5.50%	6.46%	1.178	1.127
Hungary	9,574,619	-3.65%	-2.84%	3.66%	1.076	1.067
Ireland	5,145,710	12.89%	11.66%	6.11%	0.940	0.950
Lithuania	2,810,761	-7.64%	-4.10%	4.62%	1.133	1.091
Luxemburg	643,941	25.68%	20.01%	18.26%	0.941	0.985
Latvia	1,893,252	-8.55%	-4.07%	4.46%	1.142	1.089
Malta	519,573	24.47%	31.62%	32.82%	1.067	1.012
Netherlands	17,429,787	4.70%	7.82%	4.75%	1.000	0.972
Portugal	10,343,066	-2.02%	2.66%	1.96%	1.041	0.993
Sweden	10,452,326	10.22%	16.60%	14.22%	1.036	0.980
Slovenia	2,108,977	2.87%	5.69%	2.33%	0.995	0.968
Slovakia	5,449,270	0.97%	7.58%	12.22%	1.111	1.043
TOTAL	**328,692,311**	**2.09%**	**6.51%**	**7.37%**	**1.008**	**1.051**

6.1.2. URBAN-RURAL DIVIDE

Looking at the data with a finer level of detail, we can first divide European municipalities among those which sit inside any of the 444 Functional Urban Areas in the EU countries (there are 176 FUAs in Italy, Romania and Poland, which are not counted in this part of the analysis, as there is no household data for those). The municipalities within FUAs account for 215 million people, or 65% of the total population, while municipalities outside FUAs sum up to 113.7 million people. In this division, different patterns arise, which are shown in Table 3: in municipalities within FUAs, population, households, and housing units all grow (4%, 7.6% and 7.7% respectively), while in municipalities outside FUAs, population falls (-1.5%) while households (4.4%) and housing units (6.8%) grow. In any case, both within FUAs and outside FUAs, housing units are growing faster than population and households. Yet data shows a pattern where population growth is concentrated in the Functional Urban Areas, while municipalities outside FUAs lose population, thus hinting to a migration from rural to urban areas.

Table 3 Population, Household, and Housing Unit evolution in the EU as a whole, and outside or inside Functional Urban Areas.

European Union (excl. Poland, Italy, Romania)	Outside FUAs	In Functional Urban Areas	In large FUAs (<2M inh.)
Population			
2011 322 M 2021 328.7 M Change +2.1%	2011 115.4 M 2021 113.7 M Change -1.5%	2011 206.5 M 2021 215 M Change +4.1%	2011 74.7 M 2021 78.8 M Change +5.4%
Households			
2011 136.6 M 2021 145.5 M Change +6.5%	2011 47.5 M 2021 49.7 M Change +4.5%	2011 89.1 M 2021 94.7 M Change +7.6%	2011 32.6 M 2021 35.1 M Change +7.8%
Housing units			
2011 163.5 M 2021 175.5 M Change +7.3%	2011 61.7 M 2021 66 M Change +6.7%	2011 101.7 M 2021 109.5 M Change +7.7%	2011 36.6 M 2021 39.1 M Change +6.7%



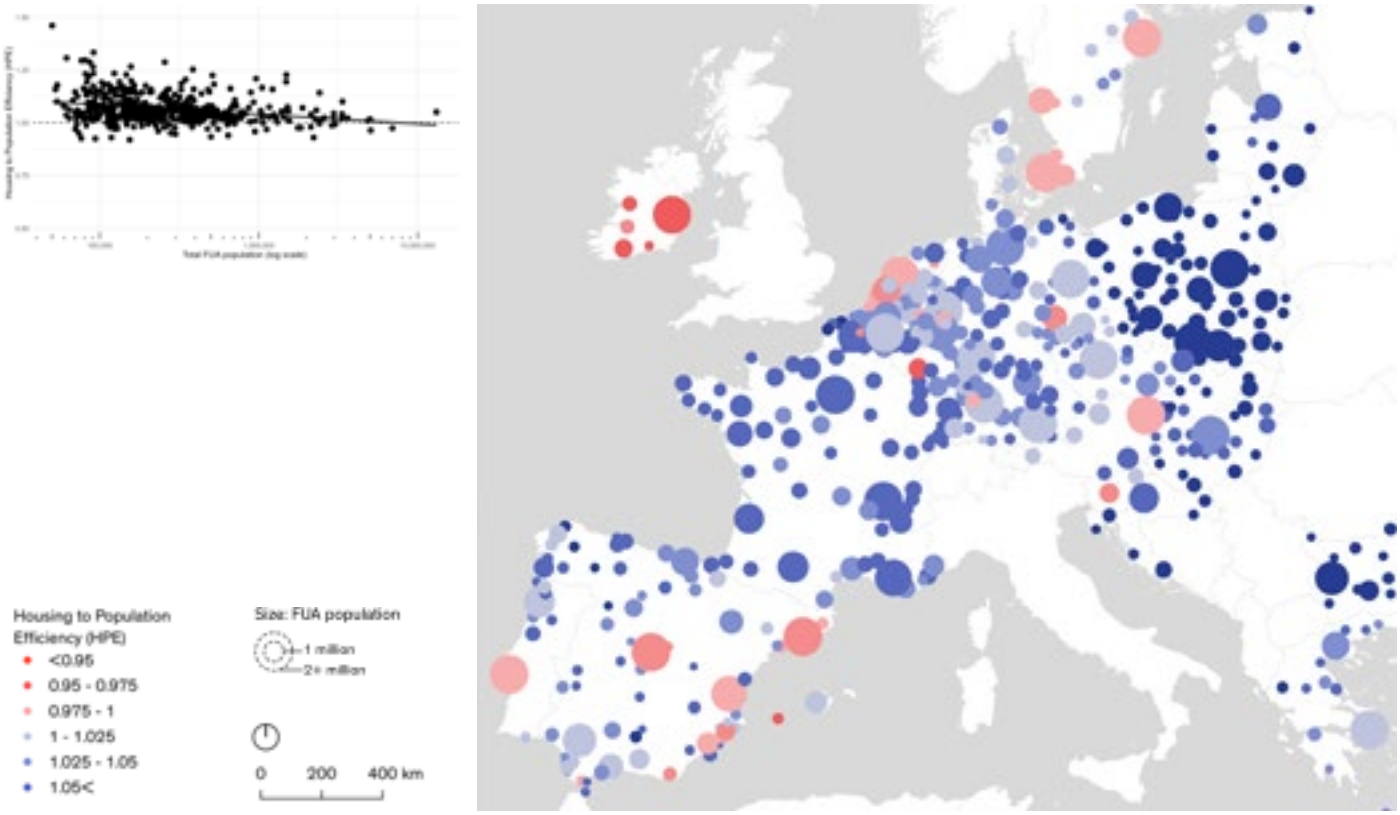
HPE | HHE			
1.051 | 1.007	1.083 | 1.021	1.034 | 1.001	1.012 | 0.989

6.1.3. ALL FUNCTIONAL URBAN AREAS

It is, though, when we analyze Functional Urban Areas based on their size, where the shortage of supply shows up. Figure 4 hints that larger Functional Urban Areas have sharper supply scarcity issues. Indeed, when we split the Functional Urban Areas in two groups (those with a population above 2 million inhabitants, and those with a population below 2 million), we can see that smaller FUAs are building more housing despite their population growing less. In FUAs below two million inhabitants (accounting for 136.1 million people), population is growing 3.3% while housing is growing 8.2%, while in the larger FUAs (accounting for 78.8 million people, 24% of total population in analyzed countries), population is growing 5.4% while housing is growing 6.8%. In fact, larger FUAs are the only geographic area where households are growing faster than housing. Therefore, data shows that large urban areas are having the largest population growth, while housing unit growth is not as fast as in smaller FUAs, matching findings from previous studies (Rowe et al. 2019). As a result, the population growth and migration towards large urban areas is not being matched by a housing supply that responds to such demand.

Given that large metropolises are where housing supply is at highest pressure, and they are also the areas where affordability issues are starker, the research will focus on analyzing the Functional Urban Areas larger than 2 million inhabitants. In the EU, there are 27 such FUAs: the research discards four of them (Milan, Rome, Naples, Bucharest) due to lack of housing unit data, has partial data for two (Warsaw and Katowice) and full data for the other 21.

Figure 4 Map of all Functional Urban Areas in the EU (excl. Italy and Romania) and their Housing to Population Efficiency.

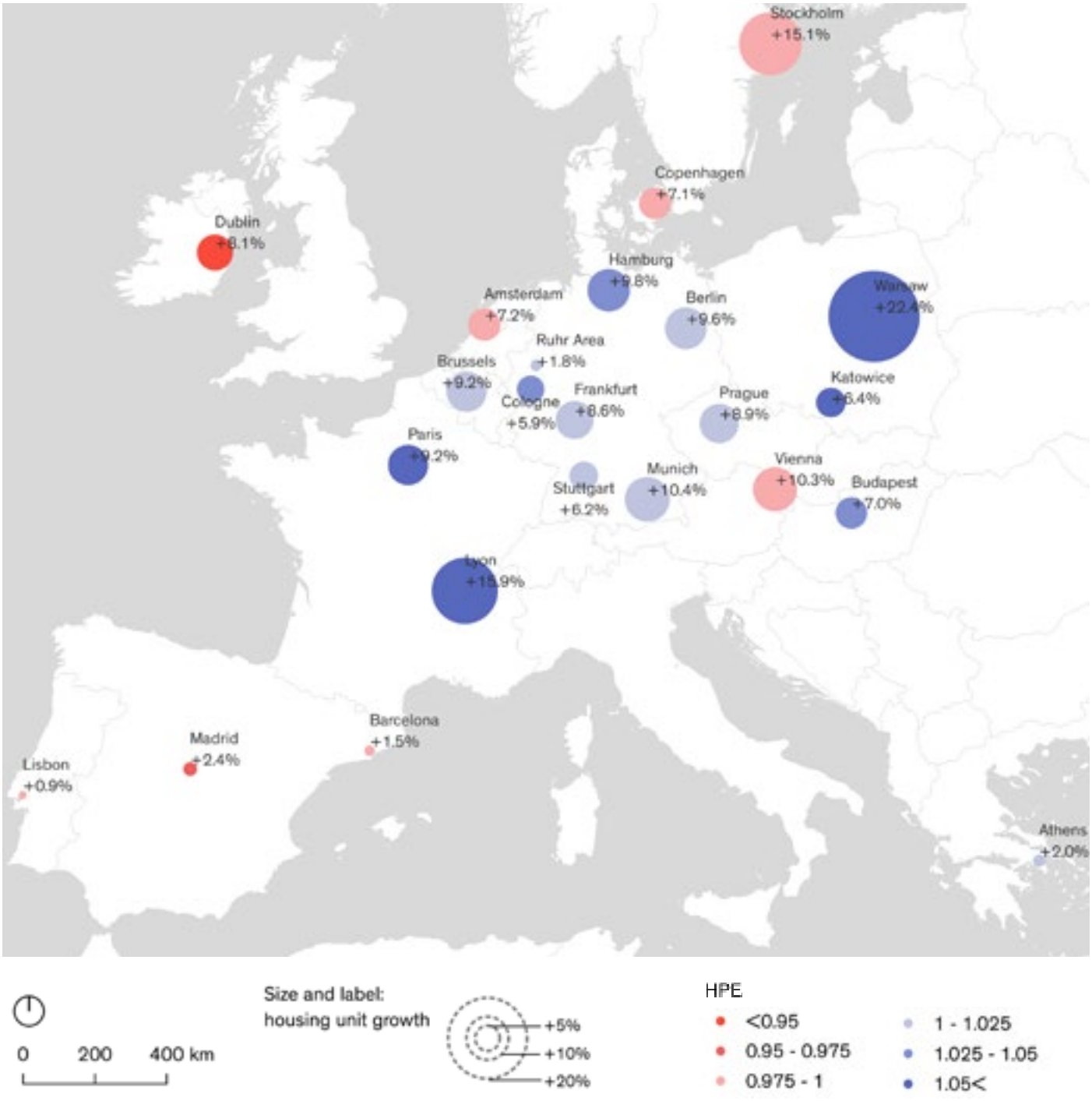


6.2. Large Functional Urban Areas

As seen in the previous paragraphs, housing supply pressures happen mainly in large Functional Urban Areas. However, not all large FUAs follow the same patterns, as there are large differences among these in terms of their housing stock, population and household changes. To analyze this, we will first review the initial characteristics of population and housing stock in large FUAs, to later analyze how each metric has changed over time.

Figure 5 and Table 4 offer a summary of the results for each of the large Functional Urban Areas, which we will develop in more detail in the following pages.

Figure 5 Housing unit growth (size) and Housing to Population Efficiency (color) for the 23 analyzed Functional Urban Areas.



		Functional Urban Area	Population, 2021	Population % change, 2011-2021	Household % change, 2011-2021	Housing unit % change, 2011-2021	HPE, 11-21 (Housing to Population Efficiency)	HHE, 11-21 (Housing to Household Efficiency)
1	PAR	Paris (FR)	13,171,058	3.83%	7.00%	9.21%	1.052	1.021
2	MAD	Madrid (ES)	6,956,732	5.02%	3.45%	2.39%	0.975	0.990
3	BCN	Barcelona (ES)	5,070,099	3.24%	1.18%	1.40%	0.982	1.002
4	RUH	Ruhr Area (DE)	5,028,203	-0.02%	4.05%	1.77%	1.018	0.978
5	BER	Berlin (DE)	4,863,129	8.57%	11.07%	9.62%	1.010	0.987
6	ATH	Athens (EL)	3,623,409	-0.26%	8.45%	1.99%	1.023	0.940
7	WAW	Warsaw (PL)	3,374,742	11.09%		22.36%	1.101	
8	HAM	Hamburg (DE)	3,350,441	5.33%	11.03%	9.80%	1.042	0.989
9	BRU	Brussels (BE)	3,331,496	7.11%	6.34%	9.23%	1.020	1.027
10	VIE	Vienna (AT)	3,036,536	10.90%	11.52%	10.25%	0.994	0.989
11	LIS	Lisbon (PT)	3,011,919	1.70%	3.93%	0.90%	0.992	0.971
12	BUD	Budapest (HU)	2,973,490	2.45%	0.92%	7.00%	1.044	1.060
13	MUC	Munich (DE)	2,959,112	8.00%	10.47%	10.40%	1.022	0.999
14	AMS	Amsterdam (NL)	2,891,896	8.48%	9.97%	7.23%	0.988	0.975
15	FRA	Frankfurt (DE)	2,601,836	6.08%	10.49%	8.62%	1.024	0.983
16	STR	Stuttgart (DE)	2,475,336	4.52%	7.33%	6.22%	1.016	0.990
17	KTW	Katowice (PL)	2,417,386	-6.87%		6.44%	1.143	
18	STO	Stockholm (SE)	2,415,137	15.48%	22.99%	15.06%	0.996	0.936
19	LYS	Lyon (FR)	2,308,826	9.32%	15.08%	15.91%	1.060	1.007
20	PRG	Prague (CZ)	2,270,361	6.96%	15.85%	8.94%	1.019	0.940
21	DUB	Dublin (IE)	2,219,523	16.06%	12.44%	8.09%	0.931	0.961
22	CGN	Cologne (DE)	2,138,141	1.80%	7.36%	5.92%	1.040	0.987
23	CPH	Copenhagen (DK)	2,131,090	9.18%	6.59%	7.09%	0.981	1.005

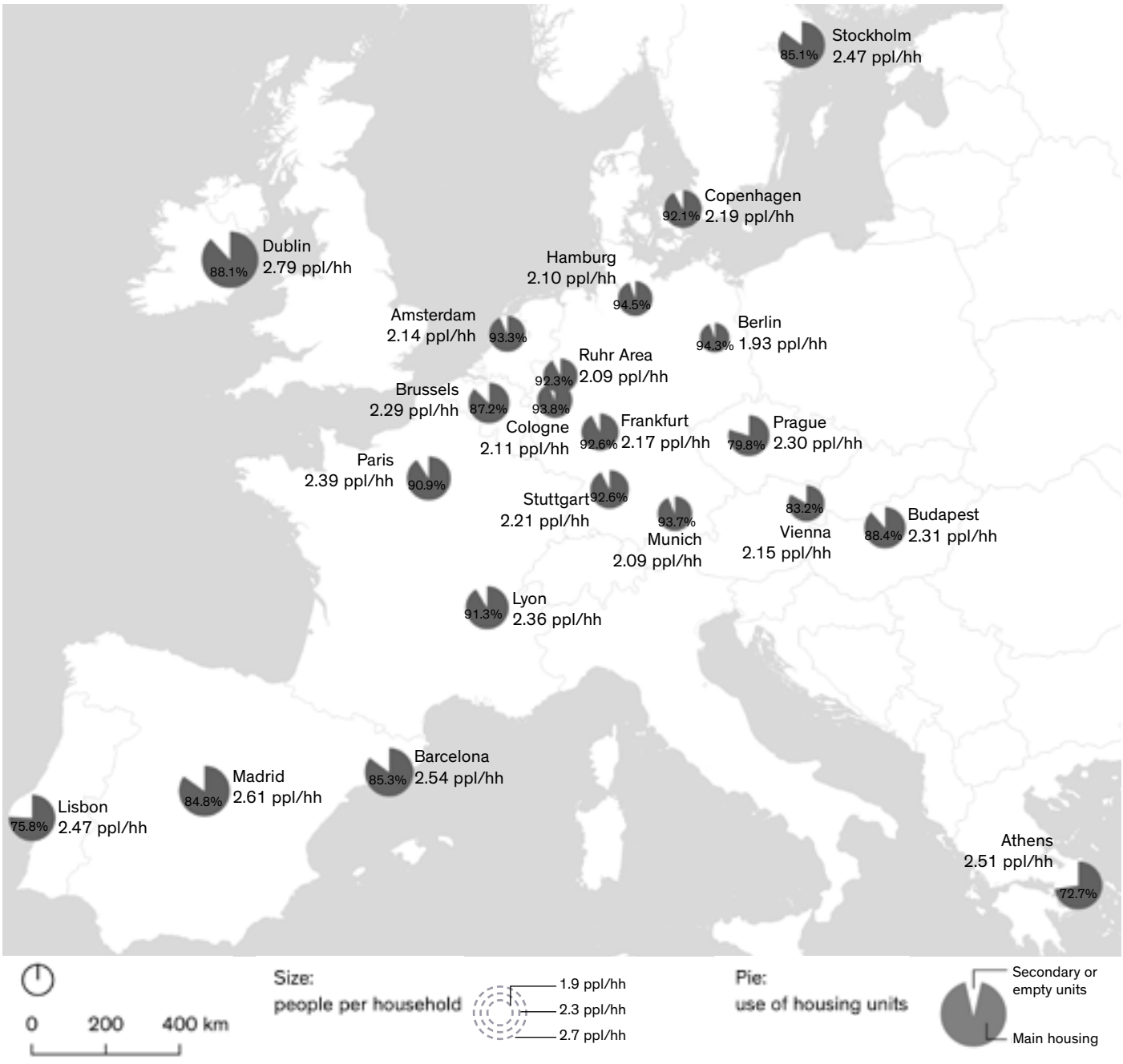
Table 4 Population, household and housing change, and Housing to Population Efficiency and Housing to Household Efficiency, in Functional Urban Areas in the 2011-2021 period.

6.2.1. INITIAL CONDITIONS IN 2011

Based on available data, we can establish a comparison of initial conditions across FUAs in 2011. It is relevant to note that in 2011, Europe was still in the depth of the Global Financial Crisis, and thus real estate construction was slowed down at the time – in some cases, the GDP share of the construction sector fell to all-time lows in 2011 (Sun, Mitra, and Simone 2013).

When analyzing initial conditions, as shown in Figure 6, we can observe that there are significant changes in both people per household and the use of housing units across the continent. Data shows that in Southern FUAs, there are more people per household than in Central European FUAs. Equally, Southern FUAs tend to have higher home vacancy rates compared to Central European FUAs.

Figure 6 Proportion of secondary/empty houses and average household size in 2011 for the 23 analyzed Functional Urban Areas.



6.2.2. HOUSING AND POPULATION GROWTH

Among large FUAs, we can observe diverging patterns. Figure 7 depicts how in eight of them HPE is below 1, and thus population has grown faster than housing units between 2011 and 2021.

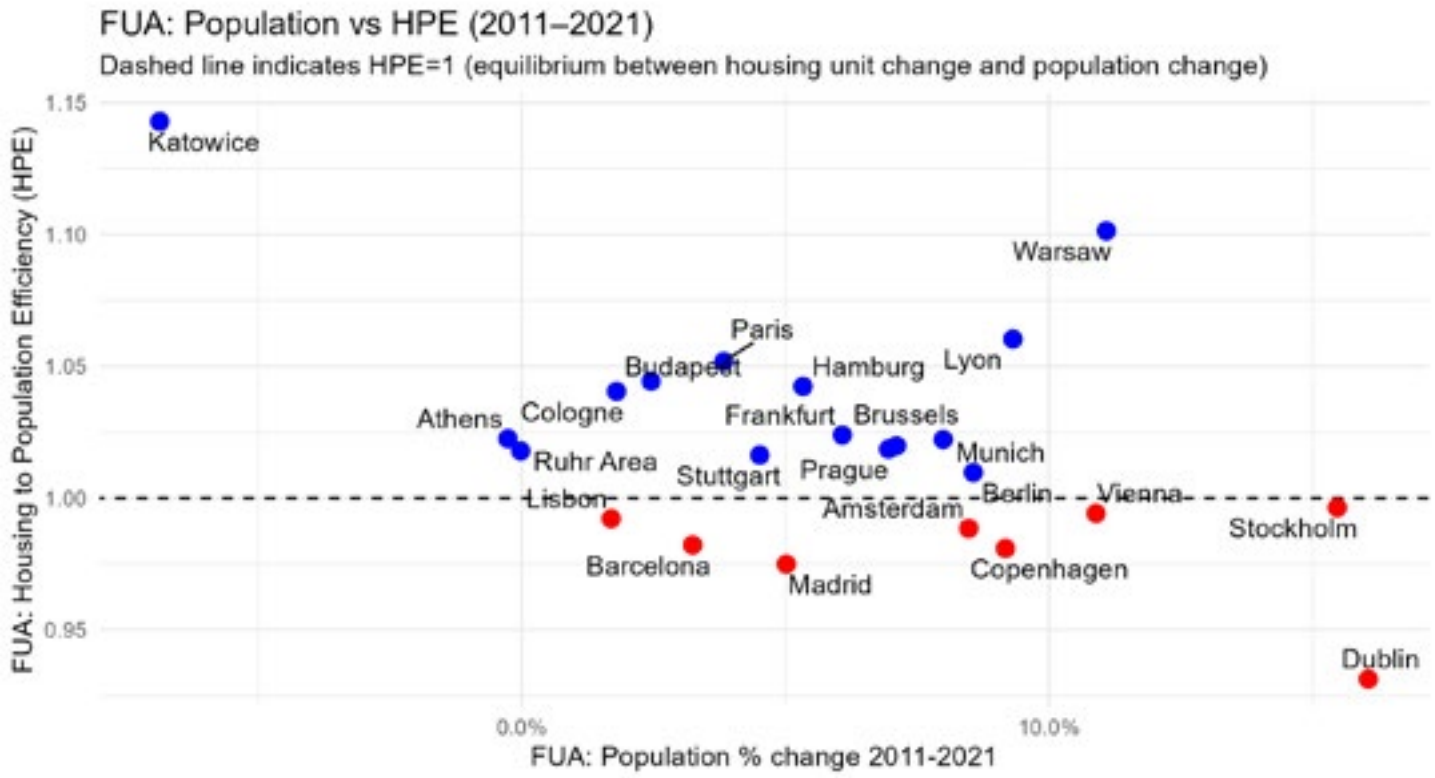


Figure 7 Population growth and Housing to Population Efficiency between 2011 and 2021 for the analyzed Functional Urban Areas.

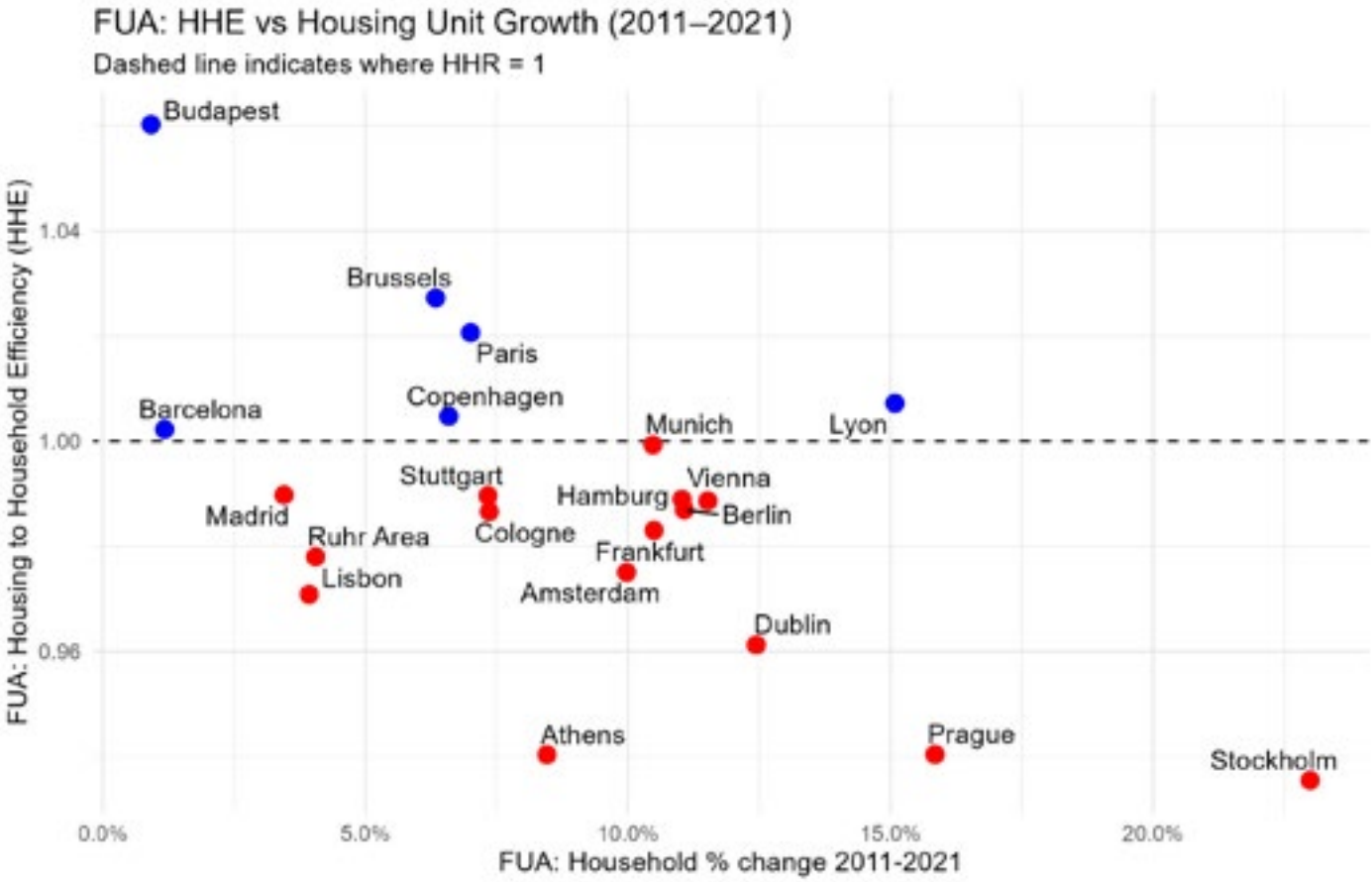
- Housing ballooning - metropolitan areas where housing growth is happening much faster than population growth: Warsaw, Katowice, Lyon, Paris.
- Population increasing, housing keeping up – metropolitan areas where population growth is lower than housing growth: Ruhr Area, Hamburg, Brussels, Munich, Frankfurt am Main, Stuttgart, Cologne, Prague.
- Population increasing, housing trying to keep up – metropolitan areas where population growth is less than 2% above housing growth: Amsterdam, Lisbon, Vienna, Stockholm.
- Population increasing, housing not keeping up – metropolitan areas where population growth is more than 2% above housing growth: Madrid, Dublin, Copenhagen, Barcelona.

The classification shows some clear patterns: in metropolitan areas in Poland and France, housing is growing well above population. In German and Belgian metropolitan areas, housing is growing at a similar rate as population. In Amsterdam, Berlin, Lisbon, Vienna and Stockholm, housing is just behind population. And the areas where lack of housing supply is more patent is in Spain, where low population growth is accompanied by even lower housing supply, and in Dublin and Copenhagen, two cities where the housing crisis is more patent.

6.2.3. HOUSING AND HOUSEHOLD GROWTH

In 15 of the 21 urban areas where household data is available, HHE is below 1 (see Figure 8), and thus households have grown faster than housing units. As expected, most Functional Urban Areas fare worse when the analysis is done based on household growth rather than on population growth, as households are expected to be shrinking and therefore its growth be faster that population growth.

Figure 8 Household growth and Housing to Household Efficiency between 2011 and 2021 for the analyzed Functional Urban Areas. Household data is not available for Warsaw and Katowice.



However, the data does hint towards some specific phenomena: in urban areas as Barcelona and Copenhagen, their performance is better when analyzing it based on household growth, hinting towards growing households.

6.2.4. CHANGES IN HOUSEHOLD SIZES

Last, in order to understand the relationship between the analyzed metrics, it is worth observing how household sizes have changed in the analyzed urban areas. Overall, households have become smaller as the majority of blue arrows in Figure 9 show, with the largest decreases happening in Athens, Stockholm or Prague. In some of these, as it is the case of Prague, the post-Communist economic change has led to substantial shifts in household structures. Equally, even if there is no data for Warsaw and Katowice, they are expected to have similar evolutions as Prague. In select FUAs, though, the average household size has grown in the analyzed period: in Brussels, Budapest, Madrid, Barcelona, Copenhagen and Dublin, population has grown faster than households, leading to an increasing crowding of housing units.

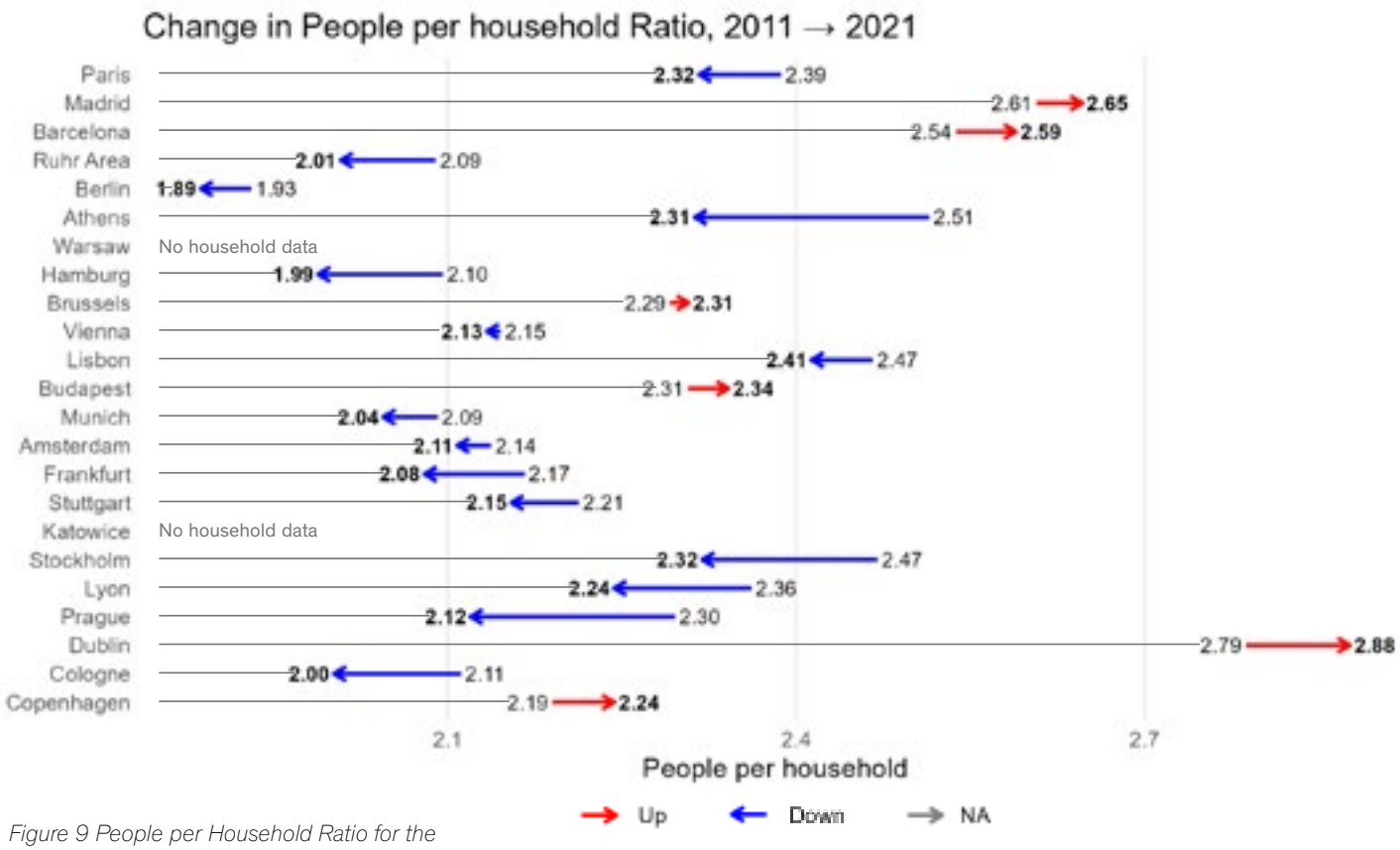


Figure 9 People per Household Ratio for the analyzed Functional Urban Areas. Household data is not available for Warsaw and Katowice.

Therefore, the overall trend is towards decreasing household sizes, aligning with previous notions of smaller family units and an increase of individual households (Eurostat 2018). However, in the exceptional cases where household sizes are increasing, different factors might play a role. These could be, on the one hand, due to changes in cultural and social structures, namely migration from countries with larger household structures. However, there are not large differences in immigration rates at the country level: Belgium, Denmark, Germany, Spain, Netherlands, Austria and Sweden's immigration inflows in the 2012-2021 period are equivalent to between 10 and 13% of the 2021 population. For Czechia, France, Hungary, Poland and Portugal, the rate has been between 5 and 7%. The only outlier is Ireland, with migration inflows being 16% of the total 2021 population. Even if this can justify the household size growth in Dublin, the values for cities as Brussels, Copenhagen, Madrid or Barcelona should be similar to cities as Amsterdam, Stockholm, Vienna or the German cities, and this is not the case. Still, the migration data is national and does not show countries of origin or cities of arrival – if more specific data were available, there could be a more detailed analysis to observe if migration is a factor that drives household size growth in some cities, while not doing so in others.

On the other side, the availability and affordability of housing might be a relevant piece to the discussion. An indicator for this might be the average age of young people leaving the parental household (Eurostat 2024): in the EU as a whole, this indicator has barely changed in the past decade (26.5 years both in 2011 and 2021, with the lowest value between both times being 26.1 in 2019). How-

	Migration inflows, 2012-2021	Population, 2021	% of migration inflows over total population	Average age of leaving the parental household, 2011	Average age of leaving the parental household, 2022	Diference, 2022-2011
Belgium	**1,316,036**	**11,554,767**	**11.39%**	**25.4**	**26.3**	**0.9**
Bulgaria	275,662	6,519,789	4.23%	29.9	30.0	0.1
Czechia	**544,143**	**10,524,167**	**5.17%**	**27.2**	**25.9**	**-1.3**
Denmark	**651,335**	**5,840,054**	**11.15%**	**21.0**	**21.7**	**0.7**
Germany	**8,663,196**	**81,929,780**	**10.57%**	**24.0**	**23.8**	**-0.2**
Estonia	130,042	1,331,824	9.76%	24.6	22.7	-1.9
Ireland	**827,003**	**5,145,710**	**16.07%**	**25.5**	**26.9**	**1.4**
Greece	**859,008**	**10,482,379**	**8.19%**	**28.7**	**30.7**	**2.0**
Spain	**4,929,313**	**47,400,708**	**10.40%**	**28.5**	**30.5**	**2.0**
France	**3,558,411**	**67,439,576**	**5.28%**	**23.6**	**23.4**	**-0.2**
Croatia	204,300	3,871,784	5.28%	31.1	33.4	2.3
Italy	3,091,192	59,030,133	5.24%	29.7	30.0	0.3
Cyprus	200,835	923,344	21.75%	26.4	28.0	1.6
Latvia	103,368	1,893,252	5.46%	27.7	26.8	-0.9
Lithuania	363,874	2,810,761	12.95%	26.5	24.7	-1.8
Luxembourg	234,115	643,941	36.36%	25.9	26.8	0.9
Hungary	**634,742**	**9,574,619**	**6.63%**	**27.8**	**27.2**	**-0.6**
Malta	185,006	519,573	35.61%	30.9	28.4	-2.5
Netherlands	**1,751,478**	**17,429,787**	**10.05%**	**23.5**	**23.0**	**-0.5**
Austria	**1,154,194**	**8,969,068**	**12.87%**	**25.4**	**25.3**	**-0.1**
Poland	**2,188,397**	**37,019,321**	**5.91%**	**28.5**	**28.2**	**-0.3**
Portugal	**508,156**	**10,343,066**	**4.91%**	**28.7**	**30.1**	**1.4**
Romania	1,619,793	19,053,815	8.50%	28.4	27.7	-0.7
Slovenia	213,098	2,108,977	10.10%	29.2	29.4	0.2
Slovakia	64,573	5,449,270	1.18%	30.8	30.8	-
Finland	323,300	5,533,789	5.84%	21.9	21.3	-0.6
Sweden	**1,209,160**	**10,452,326**	**11.57%**	**20.3**	**21.6**	**1.3**
EU27	**35,803,730**	**443,795,580**	**8.07%**	**26.5**	**26.4**	**-0.1**

Table 5 Evolution of migration inflows and average age of leaving the household. Migration inflows are analyzed between 2012 and 2021 because there is no data for 2011, the average age of leaving the parental household is analyzed between 2011 and 2022 due to inconsistencies in the 2021 data..

In bold are countries where the analyzed FUAs are located.

ever, in some countries this indicator has grown, as in Spain (28.5 in 2011, 30.5 in 2022) or Ireland (25.5 in 2011, 26.4 in 2021), as summarised in Table 5. This might be a relevant indicator to portray the housing shortage, even if again, this data is national and could have territorial nuances.

6.2.5. COMBINATION OF HOUSING STOCK, HOUSEHOLD AND POPULATION CHANGES

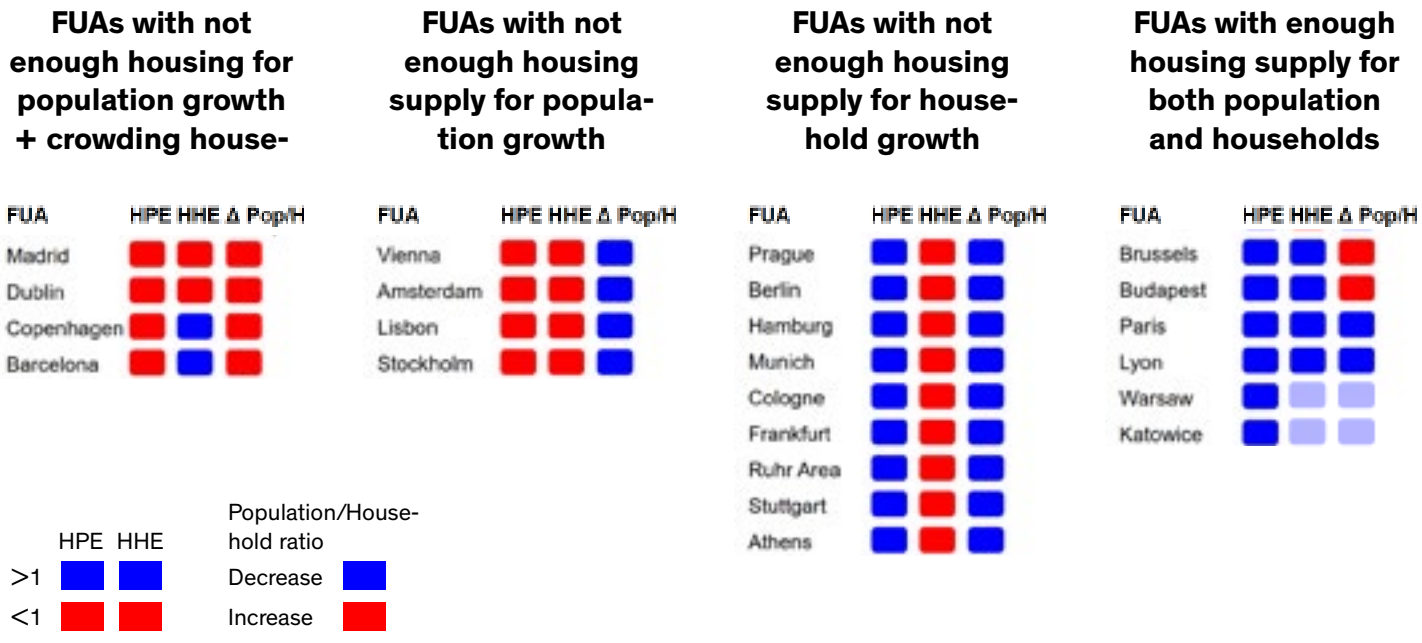
When combining all three comparisons of the previous paragraphs, we can see different groups of Urban Areas emerge, which can be a depiction of their housing supply's sufficiency, as Figure 10 shows.

First are urban areas with not enough housing to cater for population growth, and where in addition to that, households are crowding. Madrid, Dublin, Copenhagen and Barcelona belong to this group. In these FUAs, housing stock growth is not being ample enough, and households are becoming larger, contrary to the demographic trend in European cities and countries. Even if different factors can contribute to growing households, as migration and cultural changes, the lack of housing supply might also be a contributing factor leading to more crowding, be it because people are forced to share flats or because young citizens have to emancipate later in life.

Second are urban areas with not enough housing to cater for both population and household growth. Vienna, Amsterdam, Lisbon and Stockholm are within these. In these urban areas, both popluation and household numbers are exerting pressure over an insufficient housing stock growth. However, the amount of popluation per household is still shrinking, showing that there was a preexisting empty stock which still allows for the creation of more, smaller households.

Third are urban areas with not enough housing to cater for household growth, but where population growth is already served for. In these areas (Prague, Berlin, Hamburg, Munich, Cologne, Frankfurt, the Ruhr Area, Stuttgart and Athens), the main driver for pressure over the housing stock is household creation, while household sizes are still shrinking. Among these, we have specific cases as Prague or Athens, where households have rapidly shrunk in size in the analyzed period.

Figure 10 Classification of Functional Urban Areas based on housing unit, household and population metrics.



And fourth are urban areas supplying enough housing units for both population and household growth. Brussels, Budapest, Paris, Lyon, Warsaw and Katowice are part of this group, with some differences among these. In Paris and Lyon, housing construction has been steady in the analyzed period. In Warsaw and Katowice, there is no specific data about household creation. In both cases, an aging affordable housing stock (HLMs or panel buildings) and the desire of citizens to move out of these towards newly built units might be a contributing factor that has driven large housing supply.

Overall, this classification also shows some clear regional differences: while urban areas in Central Europe are doing fairly well in terms of housing supply when comapred to demographics, both in Southern Europe and in coastal cities in Central and Easterm Europe, housing stock is being insufficient. In the case of Southern Europe, this is happening amidst low population growth and almost no new construction. In the coastal cities in Central and Northen Europe, though, very fast population growth is taking place, which is not being catered for by new housing construction.

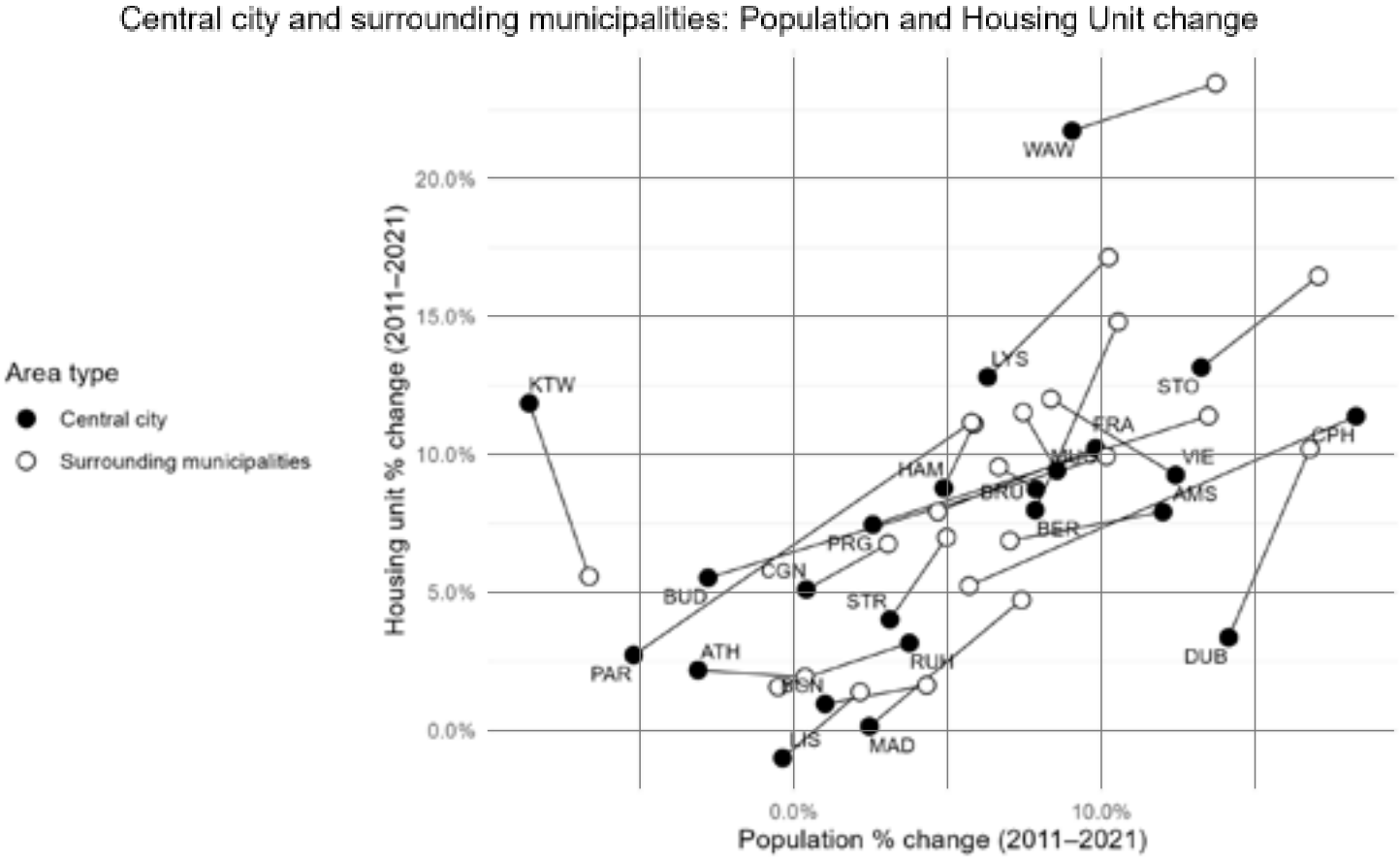
6.3. City – metropolis differences

A closer analysis comparing where growth is happening in each Functional Urban Area, whether in the city proper or in its periphery, helps cast light on how development is happening in large European metropolises.

6.3.1. LOCATION OF POPULATION AND HOUSING GROWTH

Figure 11 shows the differences in housing unit percentage change and population percentage change in central cities and surrounding municipalities. The further left the points are, the higher is the population change, and the further up they are, the higher is the housing unit change. Each pair of dots connected by a line represents the central city (full black dot) and surrounding municipalities (outlined dot) of each Functional Urban Area. Consequently, if the outline dot is further left than the full dot, it means that in the given FUA, the population growth rate is higher in the surrounding municipalities than in the central city. Equally, if the outline dot is further up than the full dot, it means that in the given FUA, the housing unit growth rate is higher in the surrounding municipalities when compared to the central city.

Figure 11 Comparison of housing unit and population change between Central Cities and Surrounding Municipalities within each Functional Urban Area.



Only in seven of the metropolitan areas population is growing faster in the city than in the metro area: Copenhagen, Frankfurt, Amsterdam, Ruhr Area, Vienna, Brussels and Munich. Only in six of the metropolitan areas housing percentage growth is higher in the city than in the periphery: Katowice, Copenhagen, Frankfurt, Ruhr Area, Amsterdam, and Athens. Taking these into account, it is interesting to see cases where population is growing faster in the city, but housing is growing faster in the metro area: the case of Copenhagen, Vienna, Brussels and Munich.

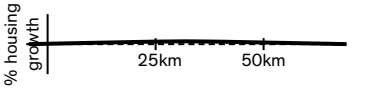
If we analyze the growth of housing units based on the distance to the central city, depicted in Figure 12, we can observe different patterns for development. Some metropolitan areas are evenly growing their housing stock across different distances from the city center: it is the case of Vienna, Brussels, Munich, Cologne, Stuttgart, Warsaw or Stockholm. In some cases, the main housing stock percentage growth is happening in the closest periphery (<25km from city center), as it happens in Prague, Berlin, Hamburg, Madrid, Paris, Lyon, or Dublin. And in other cases, it is peripheries at larger distances (ca. 50km) the ones building more housing in proportion: it is the case of the Ruhr area, Barcelona, or Amsterdam.

6.3.2. PRESSURE ON HOUSING

When analyzing at what distances population has grown more with regard to housing (i.e. Housing to population efficiency has been lowest), as summarized in Figure 13 and shown geographically in Figure 14, we can also detect metropolitan areas where such pressure is worsening in the cities proper, and others where the periphery is taking the toll. In cities as Vienna, Brussels, Berlin, Munich, Copenhagen, Amsterdam, Lisbon or Stockholm, the city centers have suffered increased pressure in the 2011-2021 period. In some other cities, such pressure has mainly increased in the first periphery (<25km), as it is the case in Prague, Athens, Barcelona or Budapest. And Madrid and Dublin are seeing increased pressure in peripheries further away, at 50km distance or longer from the city center.

In light of the position of growth, we can elucidate that for many metropolitan areas, housing needs to be tackled in a metropolis-wide manner: both population and housing growth are happening more in the metropolitan periphery than in central cities, in some cases with peaks of either construction growth or population growth in first (ca. 50km from city center) and second (ca. 50km from city center) peripheries.

Figure 12 Housing stock % change in municipalities of Functional Urban Areas, based on the distance to central city.

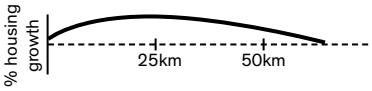


Even growth

Brussels
Copenhagen
Hamburg
Katowice
Lisbon
Munich
Ruhr Area
Stuttgart
Vienna

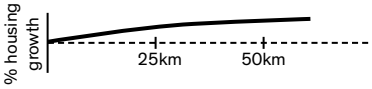
Growth in central city

Athens
Berlin
Frankfurt
Lyon



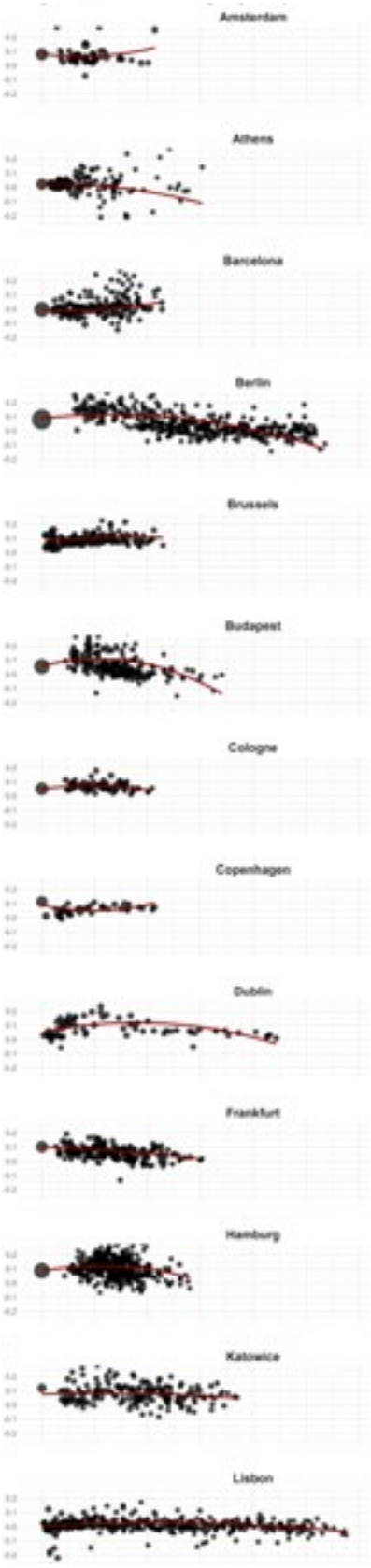
Growth in close periphery

Budapest
Cologne
Dublin
Hamburg
Madrid
Paris
Prague



Growth in farther periphery

Amsterdam
Barcelona
Stockholm



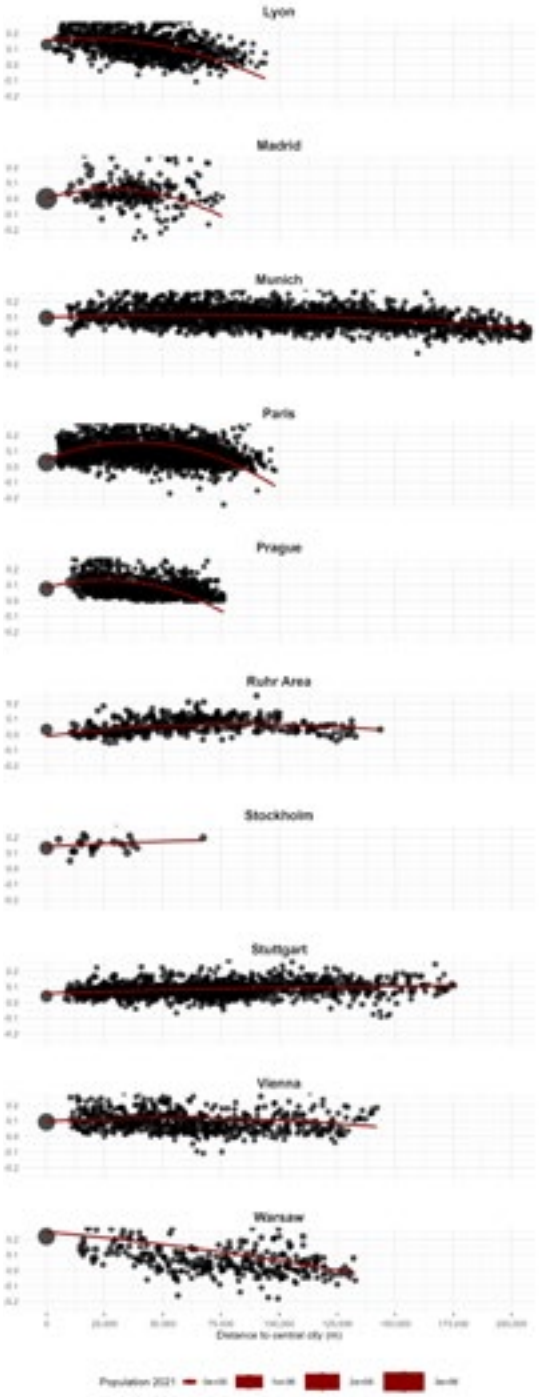
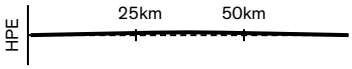
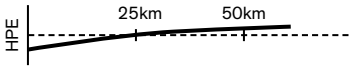


Figure 13 Housing to Population Efficiency in municipalities of the analyzed Functional Urban Areas, based on the distance to central city.



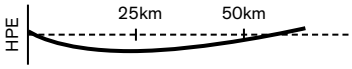
Even pressure

Paris
Munich
Stuttgart
Frankfurt
Cologne
Stockholm



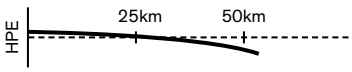
Largest pressure in central city

Ruhr Area
Berlin
Warsaw
Hamburg
Brussels
Vienna
Amsterdam
Copenhagen
Dublin
Frankfurt



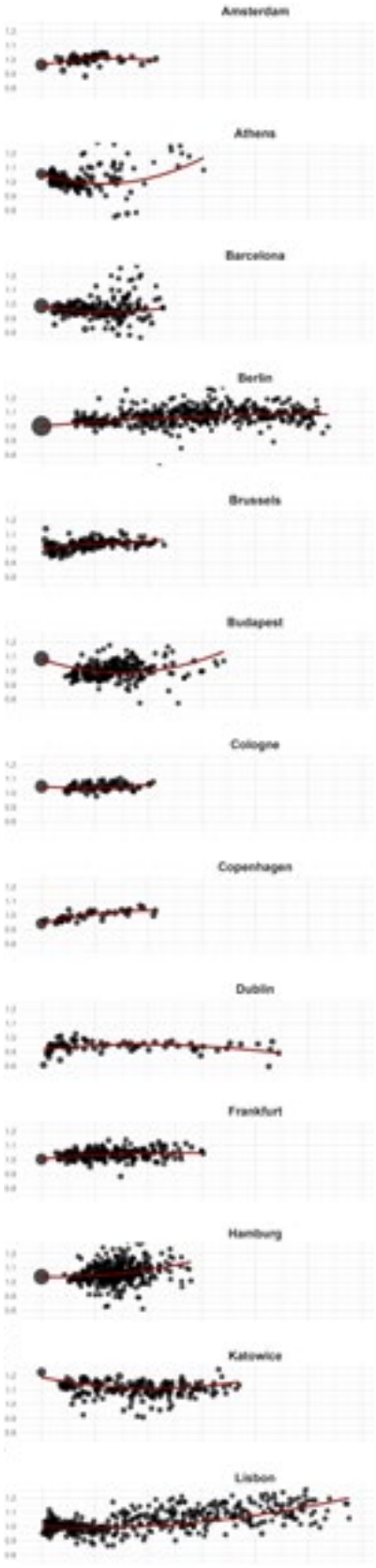
Largest pressure in close periphery

Barcelona
Athens
Lisbon
Budapest
Prague



Largest pressure in farther periphery

Madrid
Katowice
Lyon



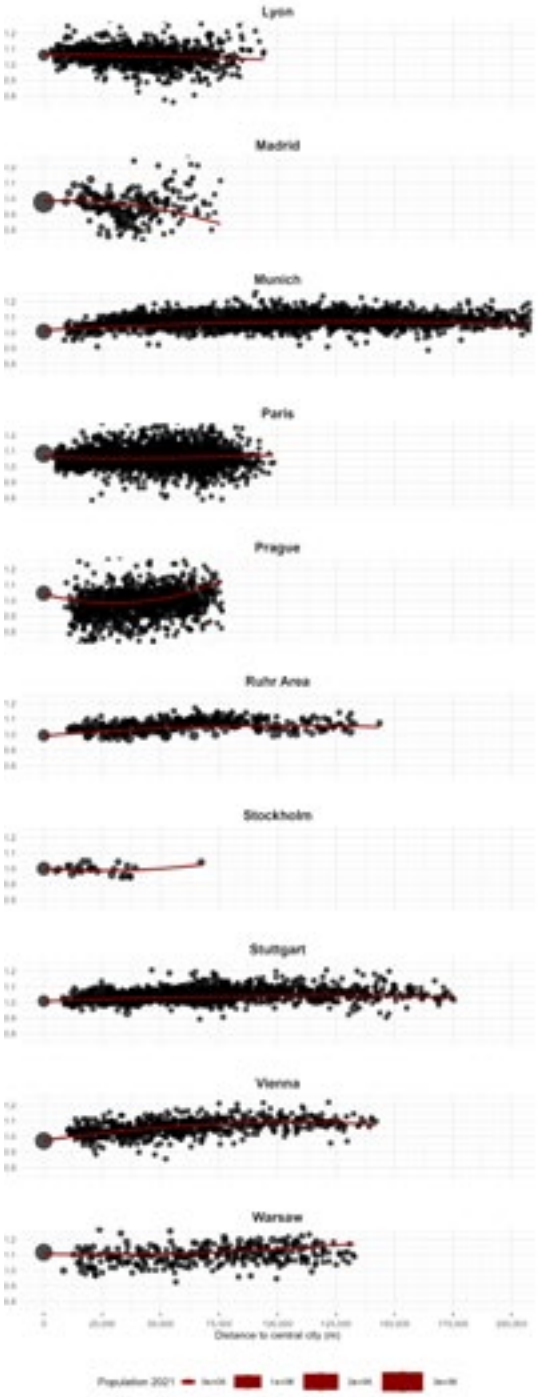
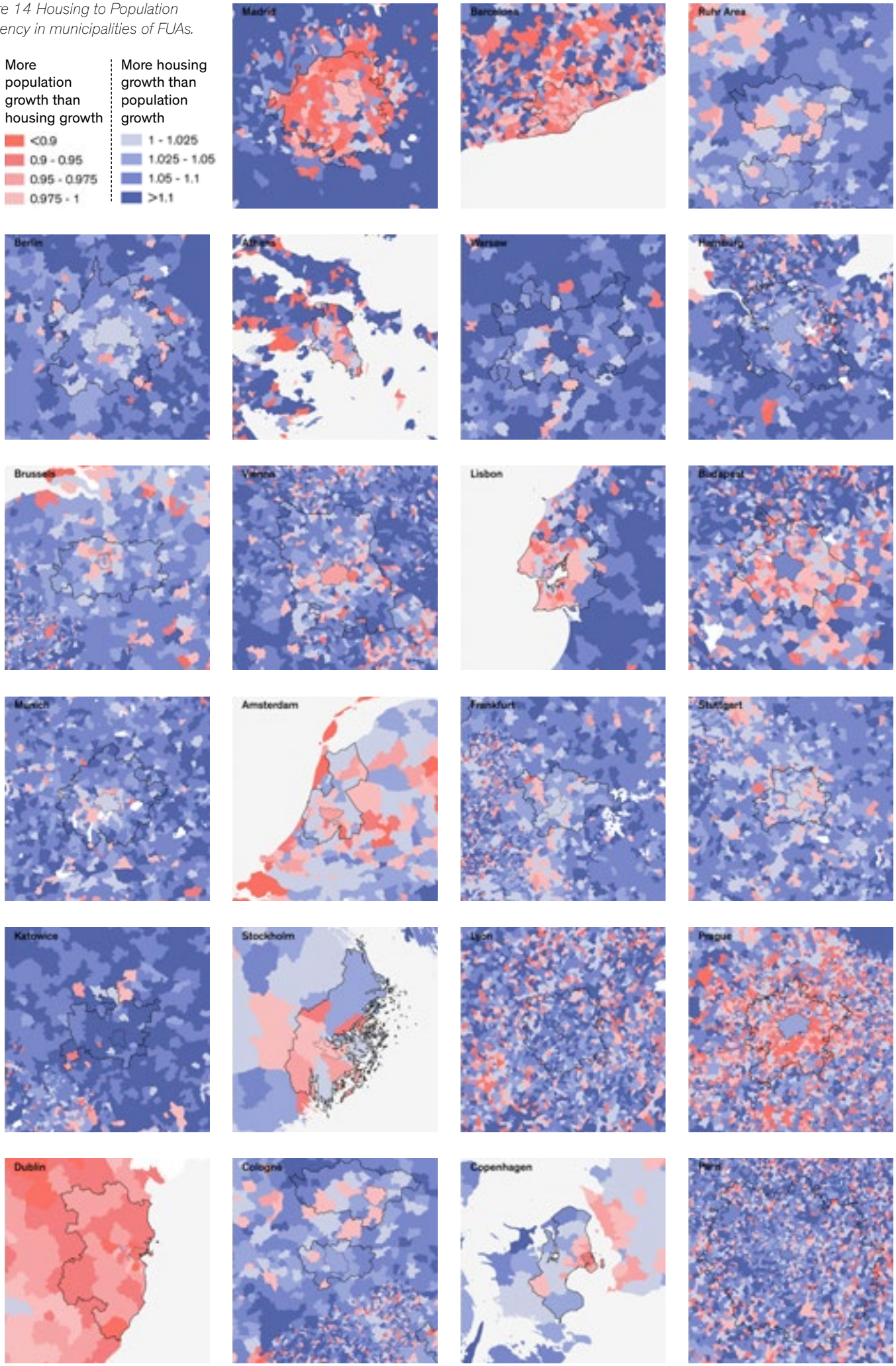


Figure 14 Housing to Population Efficiency in municipalities of FUAs.



6.4. Discussion

The quantitative approach to housing supply and its comparison to demographic trends casts some light on how supply has happened in the 2011-2021 period. As seen before, supply seems to be insufficient: it does not cover household growth in almost two-thirds of the analyzed urban areas, and it does not cover population growth in one-third of the analyzed areas. In addition, in some of the FUAs household size has increased, an increase that does not appear to be justifiable by migration or cultural changes, but rather by a scarcity of housing supply and affordability.

As mentioned before, these calculations might still be an underestimate of demand, as demand that does not form a household or does not register as citizen does not count in official datasets. Therefore, it seems relevant to push for further supply, in order to cover the needs of citizens and newcomers.

Equally, the analysis has shown that both housing growth and population growth are more rapidly happening in surrounding metropolitan municipalities, when compared to central cities. This phenomenon raises concerns about the suburbanization and evolution towards sprawl and lower densities in Europe, and about whether the planning and administrative levels are properly set up to tackle this issue.

Last but not least, analyzing where housing supply and population growth are aligning better shows different patterns of pressure over housing: in most cases the largest pressure (or lowest HPE) takes place in the central city. However, in those cases where pressure is higher in surrounding municipalities, this research is not able to verify whether this higher demand in surrounding municipalities is led by desire to live in the outskirts (be it due to a search for more space, lower density, or a different lifestyle) or if it is led by the lack of space and opportunities in central cities. Apart from that, there might be other factors that lead to a higher pressure in central cities, which this research cannot fully capture: the use of housing units as tourist apartments, the use of housing units as investment vehicles or the higher prevalence of non-registered residents. All three phenomena are more typical in central cities than in surrounding municipalities, and could justify part of the higher pressure on cities.

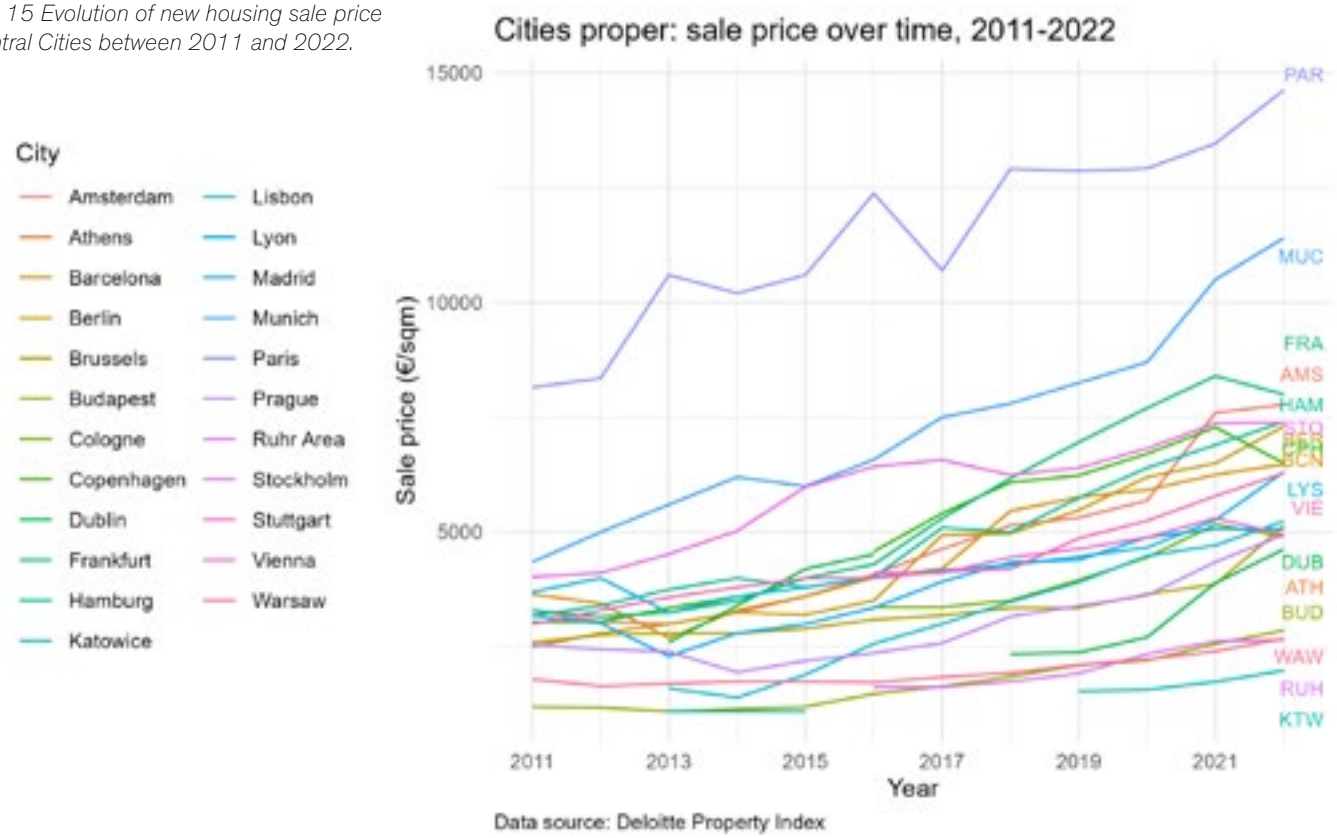
7 Housing supply and housing prices

The analysis of housing supply and prices will help clarify whether if more supply helps contain price hikes, as academic evidence suggests, or if 'supply skepticism' can be justified. However, this analysis, as any affordability analysis across European cities, is limited by the scarcity of comparable data at the city or metropolitan area region.

The only data that is jointly gathered, openly available, spans in time and focuses on cities comes from Deloitte's Property Index, a data source created by a private company which only captures prices of new housing in the analyzed period, as shown in Figure 15.

Still, comparing price increases to supply and demographic changes does help cast some light on the issue of affordability. To begin with, the analysis of price evolution in the period analyzed shows that prices, both for new sales and for rents, have significantly grown. For new housing sales prices, the lowest increase between 2011 and 2021 was in Warsaw (33%) while the highest was in Lisbon (227%).

Figure 15 Evolution of new housing sale price in Central Cities between 2011 and 2022.



When analyzing the correlation between housing supply and housing prices, which is shown in Figure 16, there is a trend: in cities where housing supply has outpaced population growth, price increases are lower. In any case, this trend is not statistically significant. Therefore, given the lack of statistically significant outcomes and the narrow scope of data, we cannot reliably state that more housing supply in relation to population growth results an more affordable prices.

However, the trend points towards such conclusion – whenever publicly sourced comparable data allows to pursue such analysis, it will open new avenues for research through a more detailed analysis.

Figure 16 New housing sale price percentage change and Housing to Population Efficiency, between 2011 and 2021, in Central cities.

8 Housing supply and planning

After observing how metropolises have grown and built housing in the 2010s decade, the research aims to review how they planned for it, or the lack of plan thereof.

8.1. The nature and frequency of plans

Each city and metropolitan area has a different approach to spatial planning, both with regards to the frequency of plans and with the levels where planning takes place. Even if national laws shape both the depth of plans and the interaction between public and private actors, as reviewed in the context, city politics and realities end up shaping how planning is made, and as a result, how urban spaces are built.

The research has reviewed how planning takes place in the 23 analyzed Functional Urban Areas. To do so, it gathers 143 plans at the local, metropolitan and regional level, summarized in Figure 17, and shown in detail in the Annex. As for plan classification, it classifies plans based on time of approval, type of plan and administrative level. Plans types are ranked as either binding (i.e. including codes or laws), strategic, or sectorial. As for administrative levels, plans are ordered in three territorial divisions: local (municipal plans), metropolitan, and regional. Taking those criteria into account, and observing their temporal spread, allows to classify plans in different groupings and categories, as done in Figure 18.

Among the analyzed urban areas, large differences arise in terms of the geographic levels involved in planning, and the frequency and depth of plans. With regard to geographic levels, seven of the 23 analyzed urban areas have plans only at one level, seven have plans at two levels, and nine have plans at three levels.

When it comes to plan types and frequencies, a major split appears: those cities which have a stable binding plan, and those which have done complete overhauls of their binding plan. The first group is the largest, while only a few cities or functional areas have done overhauls of their binding plan. In terms of administrative levels involved in planning, in the subnational level, these cities may have planning documents in one, two or three levels: local, metropolitan, and regional.

The classification above leads to detecting clear territorial patterns: most central European cities have a stable binding plan and a frequent or infrequent strategic plan. Southern European cities are divided into those with a stable binding plan and no strategic plan, or those with a changing binding plan, which depicts a more complex

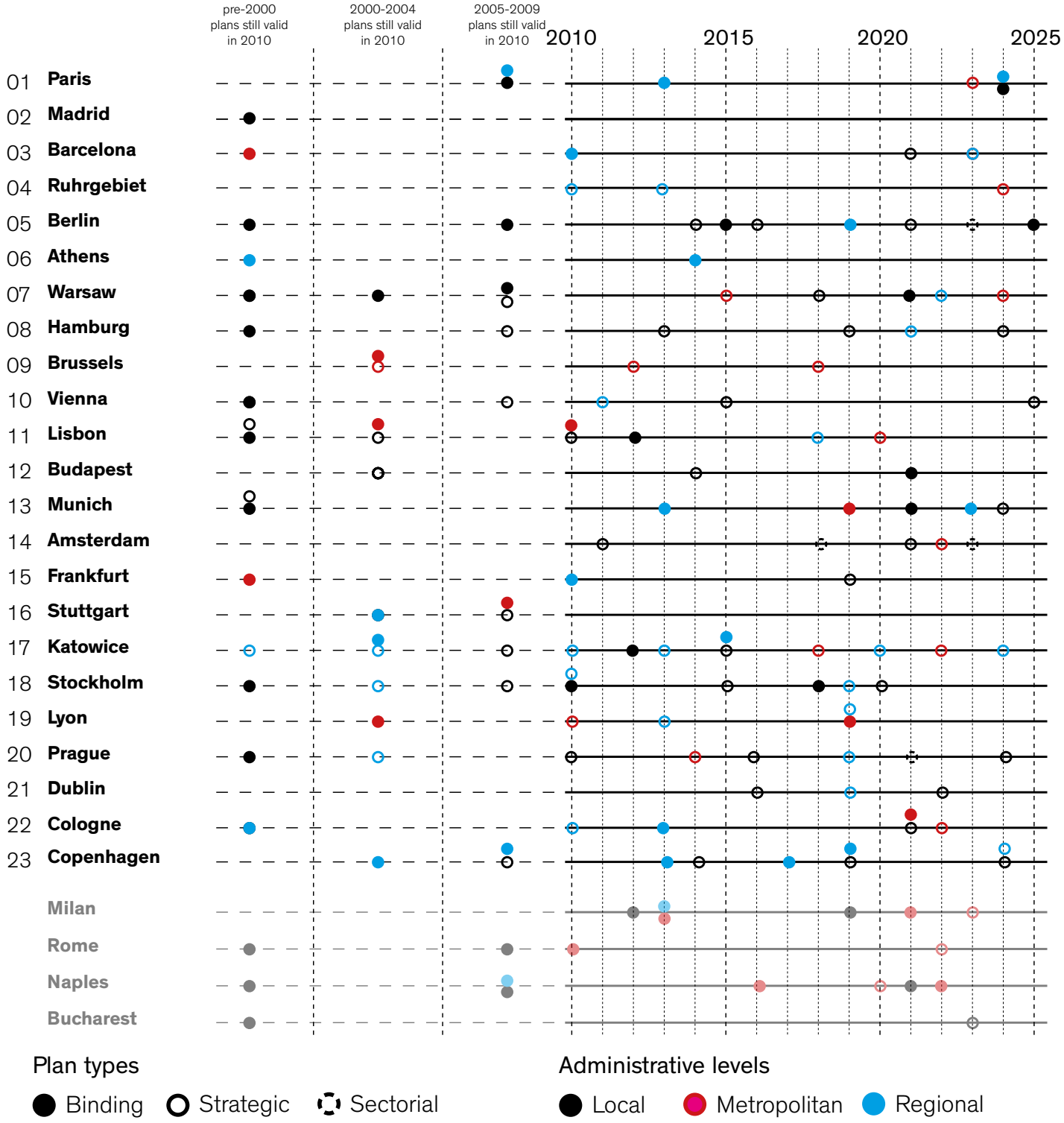


Figure 17 Plans approved in Functional Urban Areas, classified by plan type and administrative level.

adaptation to changing realities: they either do not have any plan updates, or they have to go through fully rebuilding a binding plan.

These outcomes reflect preexisting classifications, as shown in the context, that classify plans in either spatial planning styles and the public capacity to control spatial development. Cities that are part of the Urbanism tradition, which are also those with conformative systems (i.e. no flexibility in plans) have either a stable binding plan and no strategic plan, or a frequently changing binding plan.

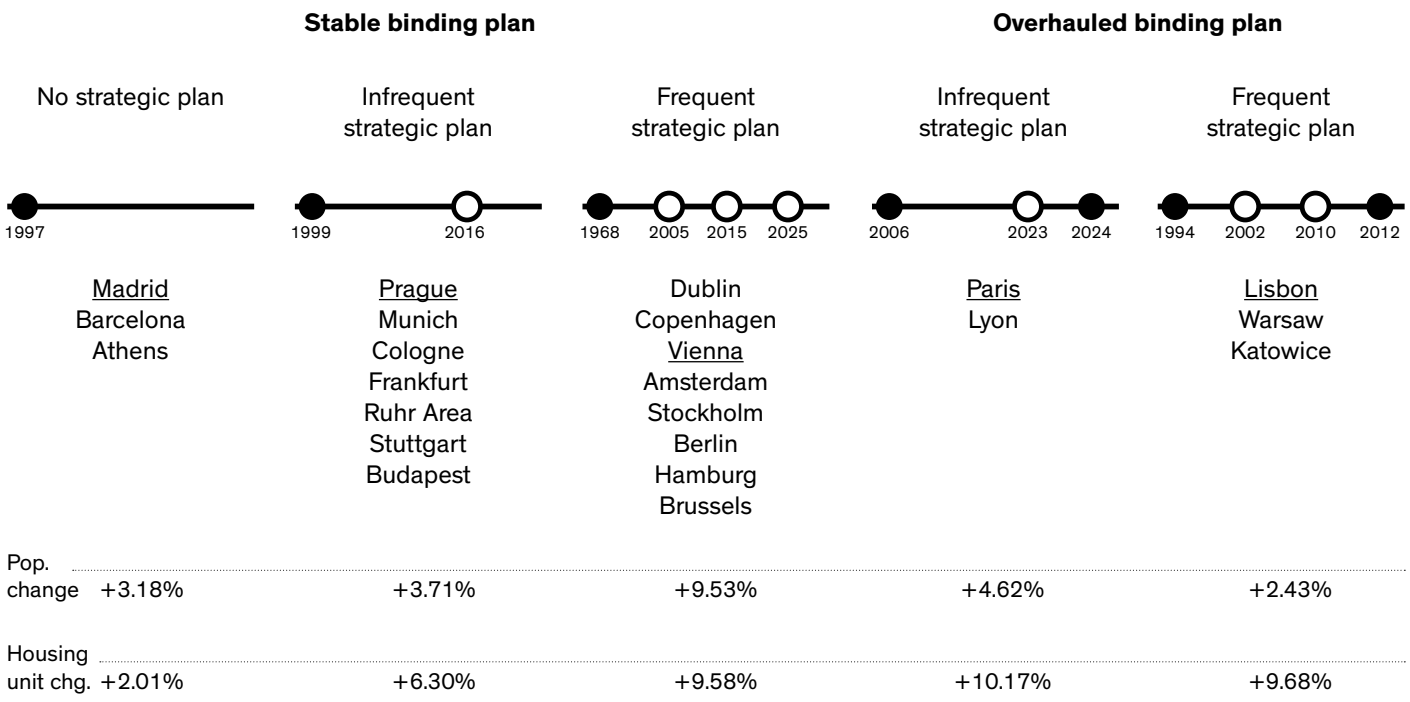


Figure 18 Planning frameworks in Functional Urban Areas based on planning types and frequency.

It is relevant to compare the frequency of plans with overall housing unit growth. In urban areas with more frequent planning, housing unit growth is highest: either for urban areas with no changes in binding plans and frequent strategic planning, or urban areas with overhauls in binding plans, housing unit growth is above 9% in the analyzed 10-year period. Among these, though, the urban areas with larger population growth are those with no plan overhauls and frequent strategic planning.

When comparing this grouping based in frequency with the classification of cities based on the alignment of housing supply and demographics, we can observe specific patterns arise. For example, most of the FUAs with enough housing supply are urban areas with overhauled binding plans, as it is the case in Paris, Lyon, Warsaw and Katowice.

This research is unable to determine whether plans are a lever for growth, or if they are being made in a reactive way to control growth. However, in light of the results in analyzed urban areas, different questions could be further analyzed. On one hand, among the urban areas with highest housing stock growth, population growth is fast only in urban areas with no changes to binding plans, and frequent changes to strategic plans. This could show that strategic plans, which are shorter and easier to draft, could be a response to quick population growth. In urban areas where the binding plan is overhauled, though, population growth is moderate while housing unit growth is high, which could lead to a more detailed analysis of their new binding plans, and whether these promote new housing production proactively, before demand is set.

8.2. Do plans foster housing supply?

Out of all the analyzed plans, however, not all plans or administrative levels specify the amount of housing growth needed. In 15 of the cities, the urban plan determines housing growth goals; in one city, it is the metropolitan plan the one determining housing supply, and in four cities, the regional plan determines growth goals. For three of the cities, no goals have been determined. For each Functional Urban Area, Table 6 shows at what administrative level are housing supply goals determined in plans, which is the planned growth per year, and how many units were delivered per year for that same administrative area between 2011 and 2021.

When comparing plan goals to actually delivered growth, cities' performance does differ widely, from 2% (Madrid) to 187% (Warsaw). Data shows that in more recent plans, it is more difficult for cities to accomplish the goal, both because housing supply goals are rising and because supply may have not adapted yet to the desired goal.

Table 6 Housing unit growth goals determined by plans, and actual growth in the 2011-2021 period, at different administrative levels in each Functional Urban Area.

	Functional Urban Area	Plan jurisdiction	Referred plan year	Planned housing unit growth per year	Delivered housing unit growth per year, 2011-2021	% delivered, with respect to planned
1 PAR	Paris (FR)	Regional	2013	70,000	50,834	72.62%
2 MAD	Madrid (ES)	Urban	1997	12,333	227	1.84%
3 BCN	Barcelona (ES)	FUA	2010	25,000	3,457	13.83%
4 RUH	Ruhr Area (DE)	NA				
5 BER	Berlin (DE)	Urban	2014	17,500	14,940	85.37%
6 ATH	Athens (EL)	NA				
7 WAW	Warsaw (PL)	Urban	2001	10,000	18,695	186.95%
8 HAM	Hamburg (DE)	Urban	2007	6,000	7,959	132.66%
9 BRU	Brussels (BE)	Urban	2002	3,600	5,081	141.14%
10 VIE	Vienna (AT)	Urban	2005	10,500	9,113	86.79%
11 LIS	Lisbon (PT)	Urban	2010	No growth	-323	
12 BUD	Budapest (HU)	Urban	2005	4,000	5,009	125.22%
13 MUC	Munich (DE)	Urban	1998	6,000	7,096	118.26%
14 AMS	Amsterdam (NL)	Urban	2011	3,340	3,270	97.90%
15 FRA	Frankfurt (DE)	Urban	2019	9,000	3,740	41.55%
16 STR	Stuttgart (DE)	Urban	2006	1,500	1,216	81.05%
17 KTW	Katowice (PL)	Regional	2013	23,400	12,101	51.71%
18 STO	Stockholm (SE)	Urban	2010	4,200	5,584	132.94%
19 LYS	Lyon (FR)	Metropolitan	2013	7,500	9,869	131.58%
20 PRG	Prague (CZ)	Urban	2021	9,000	5,009	55.65%
21 DUB	Dublin (IE)	Urban	2016	4,215	814	19.32%
22 CGN	Cologne (DE)	NA				
23 CPH	Copenhagen (DK)	Regional	2005	6,250	5,838	93.40%

In addition, we can observe that in Functional Urban Areas with more frequent strategic plans, there is a better alignment between planned growth and delivered housing units. However, it is challenging to clarify whether plans are shaping housing supply, or if having more frequent plans allows to adapt plans to housing supply trends, and therefore reflect market conditions.

Last but not least, in urban areas where subsequent plans have been approved in the analyzed periods, we can observe an upward trend in the amount of units proposed. In the case of Berlin, for example, the 2014 BerlinStrategie1.0 proposed 150,000 units up to 2025, about 14,000 per year. The 2016 BerlinStrategie2.0 instead aimed for 20,000 new units per year. Equally, in Amsterdam, the 2011 Structuurvisie proposed 2,300 new units per year, the 2021 Omgevingsvisie proposed 5,000 new units per year, and the 2024 Ontwikkelstrategie raised the goal up to 7,500 units per year.

8.3. Discussion

In sum, the analysis of planning documents and its relationship with housing supply offers evidence that could support specific claims. On one hand, more frequent planning is related to more housing supply, and specifically, the analysis hints that more frequent strategic planning is related with more population growth, while more frequent binding planning provides housing supply without pressing population growth.

On the other hand, even if as seen in Chapter 6, housing and population growth happen mainly in metropolitan municipalities and not in central cities, housing supply goals are still overwhelmingly set at the local level. This portraits a mismatch between needs and policy responses, which should require a rethinking of administrative boundaries in planning.

However, the research is aware that the frequency and levels of plans is politically mandated, both by requirements by higher levels of government and by political needs and ambitions of each administration, and not necessarily a response to the need for housing. Equally, not all plans are necessarily promoting further growth or housing supply: plans can be pro-limits or pro-growth. This discussion is not analyzed in depth by this research, yet very few plans have made explicit their desire to not grow further (e.g. Lisbon's 2010 Carta Estratégica, which considers there is enough housing in the city and advocates for reuse and renewal of the existing stock), while most plans aim for growth, with a mix of inner-city and greenfield development, and in specific cities we observe a growing ambition for growth.

9 Housing supply in practice

Planning establishes ambitious visions over the territory, ensuring to procure for the space and resources a city needs to build its future. However, translating plans into implemented, tangible realities is often the most difficult step – one that is dependent on political, economic, fiscal, social and other conditioning elements.

In order to better understand how such forces come to play, the research will dive deeper in two cities, Vienna and Prague. Both of them are capital cities, have delivered a sizeable amount of housing units in the past few years, and sit in close proximity. However, a very different political history and approach to urban policies will showcase how urban development can be conducted in disparate ways, and lead to different outcomes.

9.1. Vienna

Vienna, the capital city of Austria, is a 1.92 million inhabitant city (2021 data), while the Functional Urban Area as a whole houses 3.04 million inhabitants. Vienna has seen an accelerated growth in the analyzed period, as shown by the data and map in Figure 19. At the metropolitan level, the Functional Urban Area's population grew 10.9%, while housing units grew 10.3%. However, population growth in the city proper is more accelerated, as it has grown 12.4%, while housing units have grown 9.3%. Therefore, we can observe that housing is under higher pressure in the city proper, where population is growing faster and housing units are growing slower than in the Functional Urban Area at large.

Such division between city proper and Functional Urban Area is also visible at the government level: Vienna is a city-state, while the rest of the Functional Urban Area sits mostly in the state of Lower Austria. There are no formal planning coordination vehicles, leading to policies that focus on the city itself, and creating clear divides between the city and its surrounding municipalities.

9.1.1. POLICY BACKGROUND

Housing policy

Vienna is a unique case in the development of public and affordable housing. Since the advent of the Red Vienna in 1919, city promoted public housing has been a cornerstone of the city's urban development. Its affordable housing development process has substantially changed over time. Until the early 2000s, the Gemeindebau or publicly developed housing units were the norm. However, between 2004 and 2017 the city did not build any new housing units, as the public

Vienna

Austria

Indicator	City	FUA
2011		
Population	1,714,227	2,738,189
Households	837,478	1,276,274
Housing units	983,840	1,533,596
Primary housing units	837,617	1,275,788
Pop / unit	1.742	1.785
HH / unit	0.851	0.832
New housing price	3000€/ m²	
2021		
Population	1,926,960	3,036,536
Households	930,358	1,423,285
Housing units	1,074,967	1,690,819
Primary housing units	926,780	1,418,357
Pop / unit	1.793	1.796
HH / unit	0.865	0.842
New housing price	5788€/ m²	
2011–2021 change		
Population change	212,733 (12.4%)	298,347 (10.9%)
Household change	92,880 (11.1%)	147,011 (11.5%)
Housing unit change	91,127 (9.3%)	157,223 (10.3%)
Sale price % change	92.9%	
Efficiency		
Housing / pop	0.972	0.994
Housing / HH	0.984	0.989

Context information (2011–2021 change)	
GDP per capita PPP % growth, FUA:	-4.0%
Inflation %, national:	19.6%

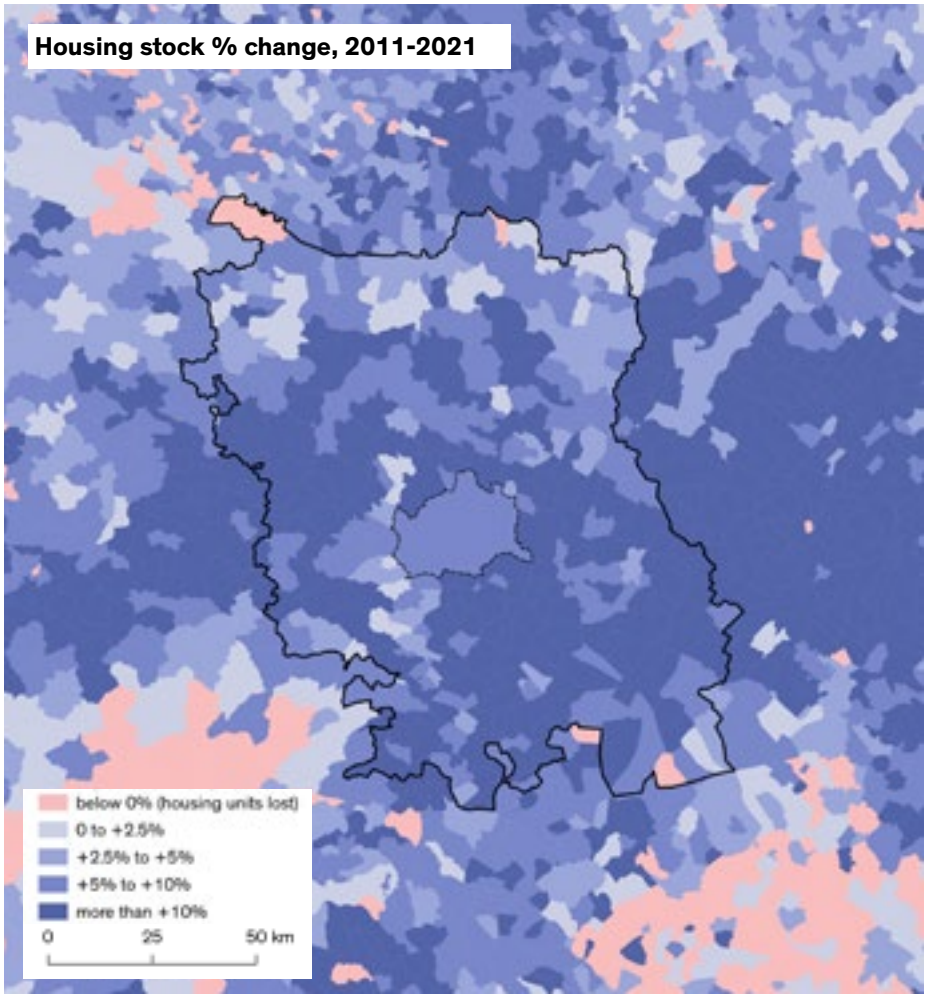


Figure 19 Basic figures and housing stock change between 2011 and 2021 in municipalities of the Functional Urban Area.

focus shifted towards renovations while Housing Associations built new housing. In recent years, though, the city is back to developing new housing: the first new public housing unit or "Gemeindebau NEU" was finished in 2019, and more than 4,000 units were delivered by the end of 2020.

Still, publicly owned housing units are not the only source of subsidized housing in the city. The other major source of subsidized housing are Limited Profit Housing Associations (Gemeinnütziger Bauvereinigungen or GBV). In Vienna, there are 88 such associations, either as cooperatives (35) or limited-profit corporations (53), and they manage 264,000 housing units in total.

This results in a housing market where, out of a total of 1,075,000 housing units, 75% of units are rental, and 20% are owner-occupied. Out of the total of units, 42% are subsidized in various forms (as Gemeindebau, GBV, or owner-occupied subsidized units).

Planning policy

Vienna's planning system follows a structured and stable approach over time. The city is a city-state in Austria, which means that there are no several plans in different government levels. In addition, there are no formal mechanisms of cooperation with surrounding municipalities in the abutting state of Lower Austria.

Therefore, Vienna's planning system is based on two documents: a legally mandated zoning plan, stable over time, and a non-mandatory city development program, renewed every 10 years.

Its zoning code and plan, the "Flächenwidmungs- und Bebauungsplan", was established in 1930, with a major revamp in 1968 (Gruber et al. 2018) and has been in constant review ever since. However, its strategic plan, the Stadtentwicklungsprogram or STEP (City development program) is developed every 10 years, in 1984, 1994, 2005, 2015 and 2025. The STEP defines the growth needs of Vienna for the following 10 years, and earmarks areas for development that will host such growth.

Two recent changes are especially relevant in orienting new development in Vienna. On one hand, zoning changes have created a new zoning code for new developments, which requires at least two-thirds of new development to be devoted to subsidized housing. On the other hand, the repercussion of land value to floor area is limited, in 188€/m2 of floor area.

Apart from the zoning code, Vienna orients its urban development through the Urban development plan. Vienna's STEP 2025 plan aims to orient the city's future in the 2015-2025 period. It is a plan that unequivocally fosters growth, coordination, governance and participation in urban decisions. The plan builds upon three pillars: 1) Building the future - urban renewal, urban growth, and transformation of centers and unused areas; 2) Reaching beyond its borders - a hub for high-impact activities and activation of the metropolitan region, and 3) Networking the city - open spaces, mobility and social infrastructure.

To achieve its goals, the city set bold growth predictions in the plan: expecting to grow from 1,741,000 inhabitants in 2013 to 1,910,000 in 2025. In order to host such growth, the city aims to provide space for up to 120,000 housing units, with 55% of those being built on newly developed land, and 45% on already existing land, either through modifying the use of existing buildings, further densifying existing building stock, or redeveloping areas in the consolidated city.

Ten years later, evidence shows that development has approximately aligned to the city's expectations, even if housing provision has fallen short of the population growth. Its population as of January 1st, 2025 is 2,028,499, while housing provision in the 2011-2021 period has been of almost 93,000 units.

As the 10-year deadline since approval of the previous plan has arrived, Vienna has recently approved a new plan in April 23rd 2025. The new plan, called simply "Wien-Plan" and targeting 2035, is a continuist plan, which follows the guidelines established in previous plans and aims for further urban growth and development.

Its proposals for urban development are based in three pillars, all three of them focusing on sustainability: Climate protection, Soil protection, and Resource conservation. Through the plan, the city expects to orient growth in order to host 2.2 million inhabitants by 2035. However, to do so it does not propose new development areas, as it considers that the currently earmarked development areas, both in construction or to be built, will be enough to host the influx of

new population. The new plan is also more strict with the provision of green areas within new developments, and the conservation of existing greenfields.

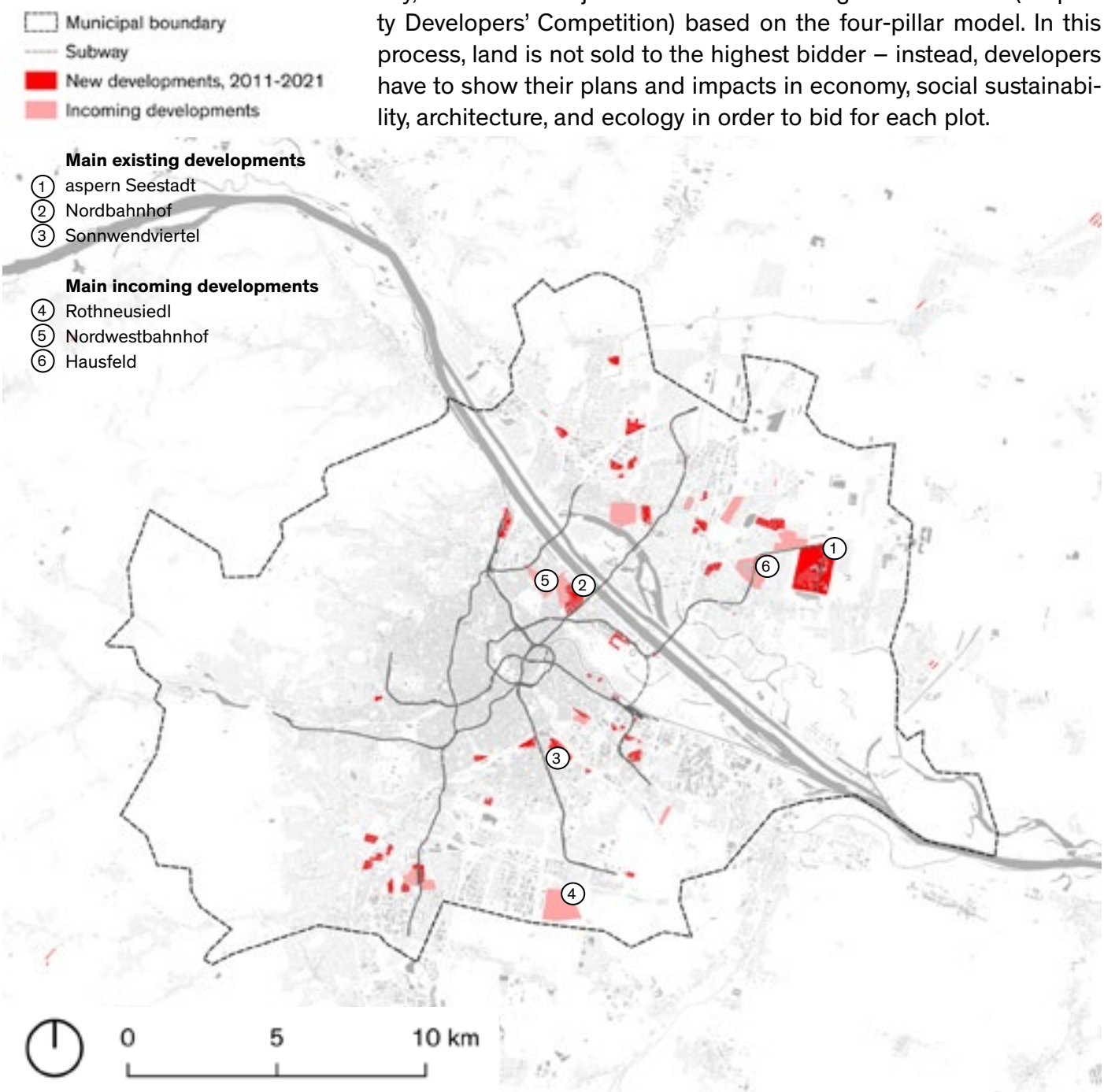
9.1.2. URBAN DEVELOPMENT

Process

Given the strong housing policy and constant planning efforts, the city plays a leading role in new urban developments within city limits. To begin with, most new urban development takes place in publicly owned land, either by the city of Vienna alone, or by the city in partnership with federal agencies. In addition, the urban design decisions are also coordinated from the public sector, with urban design competitions being commissioned by the city.

The allotment and adjudication of land plots is also decided by the city, and land is adjudicated in the "Bauträgerwettbewerb" (Property Developers' Competition) based on the four-pillar model. In this process, land is not sold to the highest bidder – instead, developers have to show their plans and impacts in economy, social sustainability, architecture, and ecology in order to bid for each plot.

Figure 20 Map of new developments (2011-2021) and areas earmarked for future development at the city level in Vienna.



In addition, different land ownership and management models are implemented in each development. In some cases, collaborations between city government and federal authorities lead to development, while in other, private partners are also part of the partnership.

Projects

In the analyzed period between 2011 and 2021, more than 35 large housing projects have been initiated in Vienna, with sizes ranging from 800 to more than 12,000 units and distributed as shown in Figure 20. In such periods, Aspern Seestadt, with 240 hectares and 12,600 housing units, Nordbahnhof, with 85 hectares and 5,700 housing units, and Sonnwendviertel, with 34 hectares and 5,500 housing units, have been the flagship developments.

In addition, in coming years further new projects will be developed, with Rothneusiedl, Hausfeld and Nordwestbahnhof as largest developments.

It is worth highlighting that most of these locations are heavily served by public transit, and where the existing transit network did not reach, new investments have taken place alongside the developments.

In the large developments that have taken place in the past decade, there have been different approaches to city building, even if all of them have common traits as being former land for transportation infrastructure. However, the involvement of different actors and coordination of processes in each development make them unique cases to analyze.

Among the new developments, aspern Seestadt is a case to highlight, both because of its scale, the partnerships involved, and the mechanisms put in place to advance public good. Aspern Seestadt is a 240-hectare development in the eastern city fringe of Vienna, in the site of a former airfield. The planning process started in the late 1990s, when the Federal Government decided to close the airfield. In order to start the development, the land was bought by Wien3420, a company created to direct the development of the aspern Seestadt district. Wien3420 was fully public, formed by the Federal Real Estate Company (25%) and the City of Vienna (75%).

Figure 21 Evolving streetscapes in aspern Seestadt: phase 1 (left) with more impermeable areas and phase 2 (right) with Sustainable Urban Drainage systems and more detailed designs.

A relevant moment of aspern Seestadt is the change in ownership of Wien3420 to incorporate private stakeholders and add capital to the project in its early stages. In 2011, the City of Vienna sold part of its stake in Wien3420. As a result, Wien3420 was 75% owned by GELUP, a Special Purpose Vehicle formed by the Vienna Economic Agency (public body, 25% of total), Erste Bank (financial group, 25%) and Wiener Städtische (insurance group, 25%), while the other 25% remained under the Federal Real Estate Company's control.

In the development process, apart from the aforementioned "Bautragerwettbewerb" developer competition process, and allocation of plots based on the four-pillar model, another key element was used to ensure urban quality: the Quartierwerkstatte or Neighborhood workshops. These workshops are aimed at coordinating urban design and development decisions among different actors, as neighboring developers and different urban agencies.

The results of such process are visible in the development, where the dialogue of buildings and public space, especially at the ground floor level, is very carefully curated. In addition, given the scale of the development, aspern Seestadt is being implemented in different phases, which allow for an evolution of solutions and designs, from buildings to streetscapes as depicted in Figure 21.

Other developments as Nordbahnhof and Sonnwendviertel follow partially similar patterns: in both of these cases, the land was former railyards, and thus these are developed as consortiums between the City of Vienna and ÖBB, the Austrian Railway Company. In both cases, their location within the existing city has been leveraged to create large parks (see Figure 22) as the heart of each neighborhood, while providing higher end housing than in Seestadt.

9.1.3. LESSONS FROM VIENNA

In sum, Viennese developments provide examples of large, well connected and active urban spaces. In all of them, a mix of uses is present, and public spaces and facilities are carefully curated, leading to a sense of belonging and care of new neighborhoods.

Figure 22 Park and new buildings in Sonnwendviertel.

9.2. Prague

Prague is the capital city of the Czech Republic, hosting 1.3 million inhabitants, while in the Functional Urban Area at large there are 2.27 million residents. Prague has grown in the analyzed period, both within and outside city limits, as shown in Figure 23. At the metropolitan level, the Functional Urban Area's population grew 7%, while housing units grew 8.9%. In the city proper, population barely grew 2.6% yet housing units have grown 7.5%. In both cases, housing units are growing faster than population, yet in the city itself this growth surplus is more evident, which can be caused by non-resident population (Brabec 2022).

Equally as in Vienna, the governmental structure does not offer clear pathways to metropolitan coordination. Prague is a city-region, while all surrounding municipalities belong to the Central Bohemian region. The lack of planning coordination, paired with the lack of capacity of surrounding municipalities to plan and enforce new development, is leading to different development patterns across the city limit line.

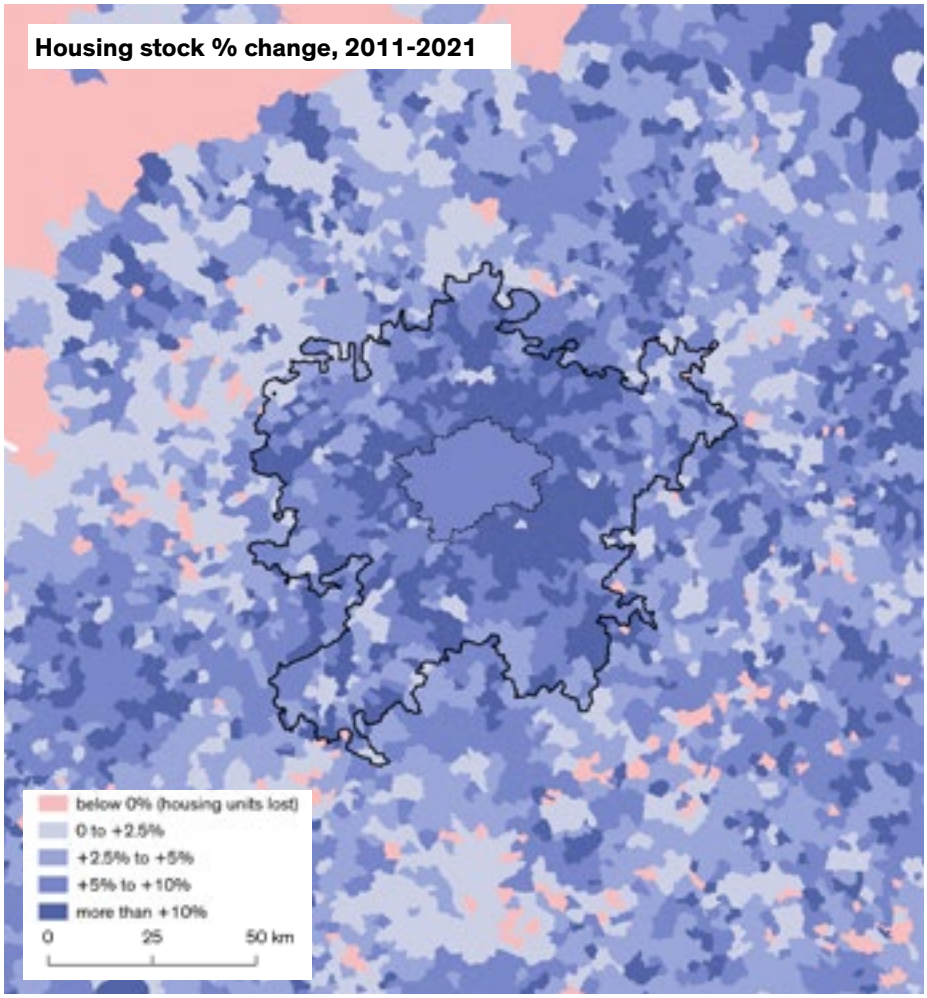
Figure 23 Basic figures and housing stock change between 2011 and 2021 in municipalities of the Functional Urban Area.

Prague

Czechia

Indicator	City	FUA
2011		
Population	1,268,796	2,122,669
Households	579,509	924,642
Housing units	671,246	1,075,719
Primary housing units	542,168	858,739
Pop / unit	1.89	1.973
HH / unit	0.863	0.86
New housing price	2550€/ m²	
2021		
Population	1,301,432	2,270,361
Households	656,812	1,071,164
Housing units	721,332	1,171,934
Primary housing units	627,705	1,006,399
Pop / unit	1.804	1.937
HH / unit	0.911	0.914
New housing price	4353€/ m²	
2011–2021 change		
Population change	32,636 (2.6%)	147,692 (7.0%)
Household change	77,303 (13.3%)	146,522 (15.8%)
Housing unit change	50,086 (7.5%)	96,215 (8.9%)
Sale price % change	70.7%	
Efficiency		
Housing / pop	1.048	1.019
Housing / HH	0.948	0.94

Context information (2011–2021 change)	
GDP per capita PPP % growth, FUA:	16.6%
Inflation %, national:	20.5%



9.2.1. POLICY BACKGROUND

Housing policy

Prague's housing policy is closely defined by the city and country's political history. The Czech Republic, as part of Czechoslovakia, remained under communist rule until 1992. In that period, the Czechoslovak housing policy was characterized by the construction and provision of mass prefabricated housing, also known as Panelák. Between 1959 and 1995, 1.17 million flats were built in the Czech Republic in Panelák buildings, and as of 2005, they housed about 3.5 million people (Reynolds 2005).

After the end of the communist rule, most of such units were sold to sitting tenants. In addition, housing policy remains mainly a country-level issue, with the Prague city council not taking action in this regard until recently. The Ministry for Regional Development does promote housing policy, yet its focus is in regulating the functioning of the housing market, and its actions in housing affordability are mainly limited to social benefits for lower income households.

Planning policy

Prague's urban planning is set by its Zoning Plan (1999), while additional plans as the Spatial Development Strategy (2009) and the Strategic Plan (2016), which has no spatial indications, complement the zoning plan.

The Zoning Plan approved in 1999 is currently the binding plan in Prague. It was the first post-revolution master plan of the city, and since its approval, it has undergone more than 3,000 amendments. The ethos behind the plan was to regulate both land use and density in each site, and by doing so, it aimed to build 110,000 new housing units by 2010, in order to host up to 1,265,000 people.

However, this existing zoning plan is seen by developers and planners alike as excessively complicated and deterring the delivery of new development. As a result, in 2013 the Prague City Council spearheaded the process to create a new Metropolitan plan (Capital City of Prague, n.d.). A first draft was published for discussion in 2018, and a second draft in 2022 continued the drafting process (Capital City of Prague 2021). Currently, the approval process is stalled in political discussions.

The concept of the Metropolitan Plan is based on four principles defined as a return to the center, a stratified city, environmental stability, potential and new possibilities. To do so, the plan opts for foregoing land use regulations, and establishing height regulations across the city. Through being mainly dependent on height regulations and not on land uses, the city expects to ease the development process and the delivery of housing.

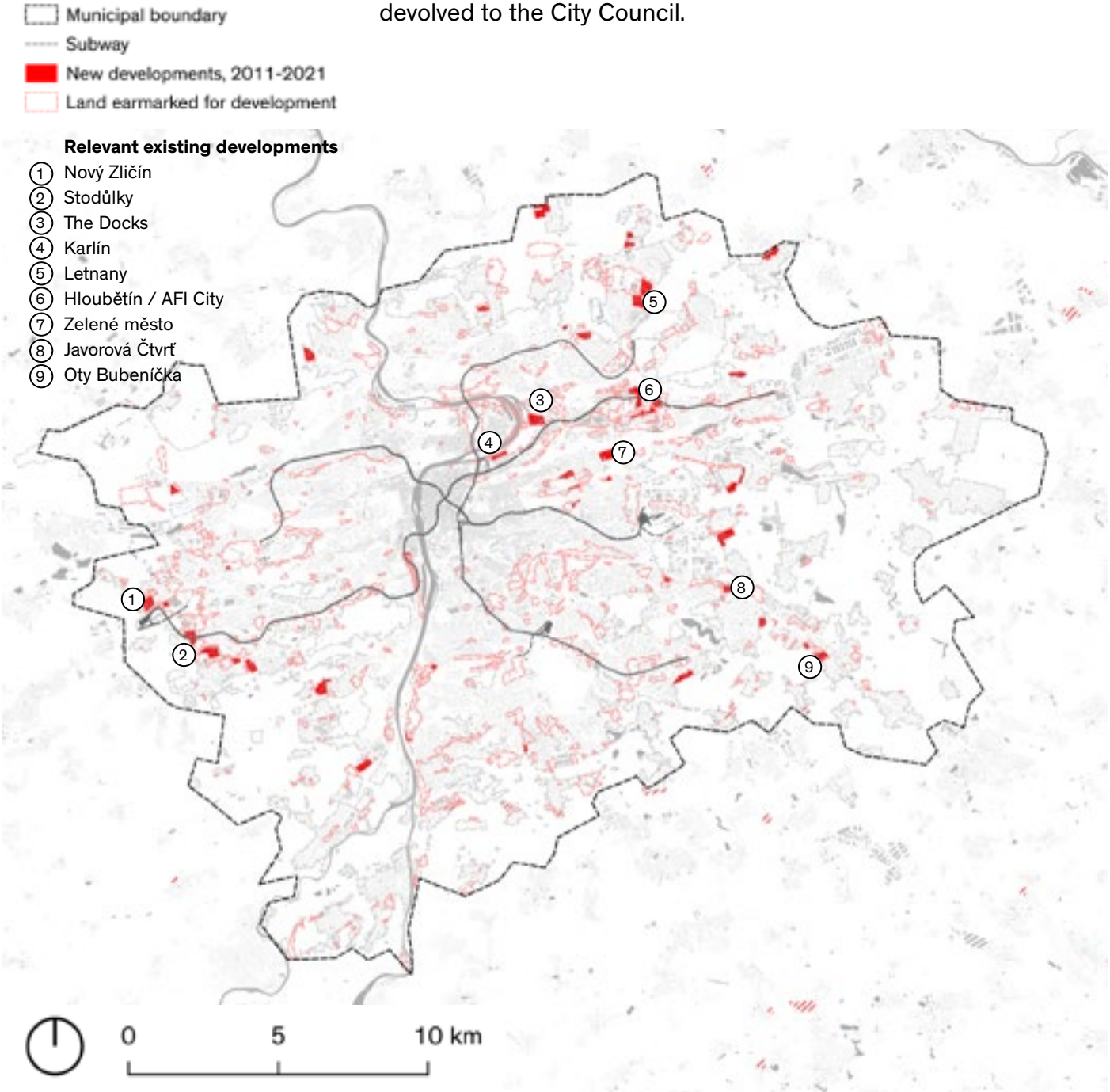
9.2.2. URBAN DEVELOPMENT

Process

Urban development processes in the city are mainly led by private actors. Currently, a handful of developers (FINEP, SEKYRA Group, Central Group…) have several projects in progress. To pursue such projects, developers must usually proposed amendments to the zoning plan.

Apart from the private initiative, the public sector is now taking upon the role of urban developer. To do so, the City Council created the Prague Development Company (PDS, in Czech: Pražská developerská společnost) in 2020, and transferred the management of municipally-owned land to it. As of August 2024, PDS manages a portfolio of 757,000 m² of land, and has applied to its first building permits. The aim of PDS is to manage the design and construction of the new developments – once built, the ownership of housing units will be devolved to the City Council.

Figure 24 Map of new developments (2011-2021) and areas earmarked for future development at the city level in Prague.



Projects

Within city limits, Prague's new development between 2011 and 2021 has happened in a fragmented manner, with up to 50 new sites developed across the city (mapped in Figure 24), and further development happening outside city limits. New development is also mainly happening in the city fringes, by developing greenfields into multifamily housing. However, there are some select cases of inner-city development, mainly through the transformation of former railyards or industrial areas. Outside city limits, though, the development of greenfields into single-family housing areas is the most usual pattern.

The development of new urban areas in the city fringe results in poorly connected areas, as new development is seldom placed alongside existing transportation lines, or accompanied by new investments. Very few of the new city fringe developments are easily reachable via mass transit (Stodůlky, in Figure 26, or AFI City are notable exceptions), and even developments in close vicinity to metro stations, as Nový Zličín, have poor pedestrian access to transit, as shown in Figure 25.

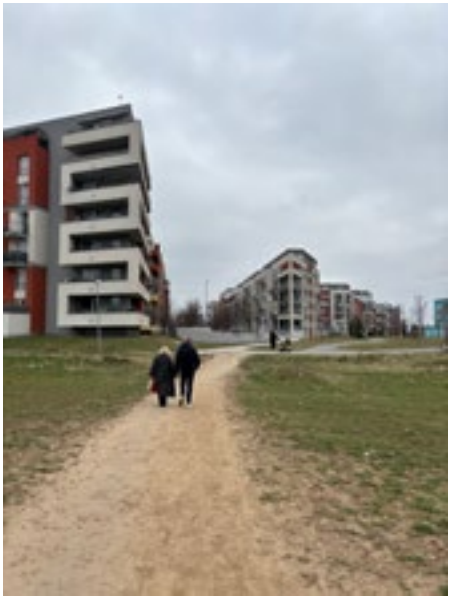
The smaller scale and lack of centrality of such new developments also leads to a lack of mix of uses: residential uses are highly predominant, while public facilities or commercial uses are anecdotal in such new developments. The monofunctional approach, together with poor alternatives to cars, results in a lack of vitality of spaces in new developments where parking is king, as exemplified by Figure 27.

However, many of such new developments do provide spatial quality in their architectural and public space design: New Javorová Čtvrť in Figure 28 is one in many examples of appealing design in new developments. Despite differing ranges to construction quality, with developments closer to the center being more higher-end, urban layouts and spaces are remarkable in developments both in inner-city developments and in city fringes.

Figure 25 (left) Unpaved access from metro station to Nový Zličín.

Figure 26 (center) Central public space leading to metro station in Stodůlky.

Figure 27 (right) Car-dominated public space in Oty Bubeníčka.



9.2.3. LESSONS FROM PRAGUE

In sum, Prague offers an example of what the outcomes are when public authorities do not have a clear, enforceable plan or resources to promote urban development. Housing provision happens in small pieces, disconnected from the existing city, and using greenfields. And despite careful urban layouts, the resulting neighborhoods are car-oriented, almost exclusively residential areas, where services are scarce.

Still, this is what happens within city limits – the results outside city limits are even more sprawling, low density and disconnected, setting the foundations for a metropolitan layout that might cause social, environmental and mobility complexities in the future.

Figure 28 New Javorová Čtvrť development in the foreground, and panel buildings in the background.

9.3. Discussion

After observing development patterns in Vienna and Prague, and their policy background and recent changes, both cities lay a different pathway to urban growth. Still, it is relevant to remark that in both cases, be it publicly led or privately driven, urban development and provision of housing units is possible. In addition, both urban areas also show that, if there is no coordination among metropolitan municipalities, very different patterns may arise inside and outside the limits of the central city, leading to more suburbanization.

However, in terms of the city proper, both cities show different models and are following diverging trajectories. In Vienna, where a majority of housing units in the city is subsidized, the public sector is central to the ownership and coordination of new developments, and this proactive role has been on the increase: through the reactivation of Gemeindebau developments, the higher requirements for subsidized housing, and the increased coordination role in coordination through Quartierwerkstatte. The combination of an established tradition and increasing participation of the public sector is leading to well-located and well-connected developments, where there is a mix of uses, public facilities abound, and transportation options are varied.

In Prague, instead, the private sector has much larger leverage in the city's development, and the incoming 'Metropolitan Plan' will ease private development by eliminating red tape. In previous years, development has taken place in small plots, some of them easily accessible through mass transit while others disconnected from the transit system. In most of these developments, architectural quality and urban layout is remarkable, yet the car-centric environment and the lack of mixed uses or public facilities result in more dull developments. In coming years, it remains to be seen how development will unfold: the first deliveries of PDS, the newly created and publicly owned Prague Development Company, may establish new standards and promote development around transit, and the new Metropolitan Plan might ease development in more centrally located sites, through flexibility in zoning.

In light of the trends in Vienna and Prague, public participation might favor better developments, in more accessible locations and with a better mix of uses and amenities. However, given the very different contexts in both cities, observing new developments in other urban areas would enrich the research to better understand how public influence shapes urban development.

The research has aimed to better understand the complex nature of housing supply in Europe, and its alignment with demographics, affordability and planning. Through a predominantly quantitative methodology, it has been able to show the development dynamics of large European metropolises, the location of growth within metropolitan areas, its relationship with affordability, and whether planning aligns to development needs and determines trends.

10 Conclusions

10.1. Research outcomes

The research has shown that the European Union as a whole is building enough housing to host population and household growth, but in large metropolises housing supply is slightly above population growth and falls below household growth. In addition, the research has shown that in specific Functional Urban Areas both households and population are growing faster than housing units, in some cases leading to an increased crowding in households.

When it comes to observing differences within metropolitan areas, there is a clear trend towards both population and housing unit growth happening in metropolitan municipalities, rather than in central cities. This is a depiction of how housing issues happen at a metropolitan scale, and policy solutions should ensure that they cover the metropolitan nature of housing.

In terms of housing prices, the present research hints towards confirming the assumptions of academia, where more supply helps limit price increases. However, given the limitations in data and taking into account that the relationship is not statistically significative, this matter should be analyzed in further depth.

Even if housing is a predominantly metropolitan issue, it is mainly planned in the local sphere, where housing production goals are more often determined. By reviewing each metropolitan area's planning frameworks, we have been able to characterize how planning takes place, and to see how more frequent planning relates to more housing provision. In addition, goals tend to be more ambitious than what supply can provide for. Actually, in select cases where subsequent plans have set supply goals, these are getting more ambitious over time.

And finally, a local approximation to two specific cases, Vienna and Prague, allows us to know what it takes to build more housing. In one case, strong public power allows to create well-connected and coordinated new neighborhoods, while in the other, the predominance of the private sector allows for the creation of neighborhoods with great spatial layouts, but with a lack of mix of uses and transportation options.

10.2. Policy recommendations

Given the research process and outcomes, recommendations will not focus only on actionable strategies, but also in facilitating research for a better understanding of the housing phenomenon. To do so, public institutions should enforce the creation of reliable and comparable datasets for housing research – not only for housing supply, but especially for housing prices both for sale and rental. The current data availability results in an opaque housing market, where policymakers are blindfolded to make decisions. In addition, the creation of stable indicators, as the Housing to Household Efficiency and the Housing to Population Efficiency, might help better understand the balance between supply and demand, and help ensure that housing provision matches needs.

When it comes to research results specifically, the research has shown that the need for larger housing supply happens in most FUAs, but not at the same level of urgency. Therefore, fostering affordable supply in the urban areas where it is most needed will help alleviate affordability issues. Still, supply needs to be combined with other mechanisms, given that even in urban areas with ample housing supply, there are affordability issues.

As research has shown, more frequent planning tends to be related to more housing supply, while plans are still falling short on covering the metropolitan nature of housing. Consequently, there should be efforts to promote frequent metropolitan planning, especially given that the metropolitan sphere is often not officially recognized at the European institutions. Promoting metropolitan cooperation across all EU calls would help create alliances and ecosystems that allow for more metropolitan planning.

And last but not least, even if the small sample of two cities is not conclusive, enabling public participation in urban developments appears to be an effective tool to provide more livable, well-located and well-connected new communities. Given that the EU is slated to provide ample funding for new housing developments, it should ensure and facilitate public participation in such developments, both by making it a contributing factor when allocating funding, and ensuring that funding can also cover for the increased needs of personnel of public institutions.

10.3. Future lines of research

Housing will remain a vital issue for a generation of European citizens. Consequently, the European housing policy realm will need from continuous research efforts to provide data-based foundations to craft future policy. Vast as the housing realm is, below are some topics that can be a continuation of this research and can help create evidence for better decision-making.

On one hand, untapping data from each of the 27 EU countries can help more accurately showcase price changes across the European Union. Some countries as France or Austria provide ample informa-

tion about sale and rent prices, which could serve to create broad comparisons at municipal level.

On the other hand, a better analysis on how planning and housing policy affect affordability is needed. The Europe-level crisis needs from the best practices and policies from across the continent, and we must be able to evaluate such practices with regard to housing supply and affordability.

And lastly, housing needs not only from bold analysis and policies, but from bold politics and political structures. Therefore, a larger analysis of case studies of housing supply, where the stakeholder relationships and governance structures are clarified, would serve as a key resource for policymakers to improve their methods.

All in all, the large challenge housing represents will need the best of our efforts to create a better, fairer and more cohesive European society. May this work contribute to it, putting precedent work to use and sparring new avenues for research and policymaking.

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All tables and figures by the author.

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Housing in European Metropolises:
supply dynamics and planning frameworks in large Urban Areas of the EU

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