CAPSTONE PROJECT

MAPPING GREEN TRANSITION INITIATIVES AND HOUSING INEQUALITIES: A DOUBLE-SCALE APPROACH BETWEEN FRANCE AND EUROPE

FINAL REPORT

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TABLE OF CONTENT

INTRODUCTION

Cities stand at the frontline of the climate crisis, and are set to transform every aspect of urban life: from sustainable mobility and energy systems to food security, water management, and inclusive housing (Hughes, 2019). As places of both vulnerability and innovation, they offer great potential for redefining urban living by implementing bold, forward-looking solutions. Among them, housing has emerged as a critical focus, given its role as a highly climate-exposed and energy-consuming sector (The State of Housing in Europe, 2023).

Recent years have been marked by a multiplicity of crises that have further complicated the housing landscape. The Russian invasion of Ukraine has triggered an unprecedented refugee and energy crisis, while the lingering effects of the COVID-19 pandemic have exacerbated long-standing issues of housing affordability. Across Europe, housing markets have come under considerable pressure: average rents have increased by 19%, and house prices by 47% (The State of Housing in Europe, 2023). Regarding housing exclusion, the number of homeless people in the European Union increased by 70% between 2009 and 2019, reaching an estimated 700,000 people (Seventh Overview of Housing Exclusion in Europe, 2022). Despite the growing urgency of tackling housing needs, public investment in affordable housing has halved since 2001, while spending on housing allowances has risen slightly (OECD, 2021).

At the same time, the escalating climate crisis calls for an immediate and targeted response in the housing sector. As the European Environmental Agency (2024) recently highlighted, even if greenhouse gas emissions from buildings in the European Union fell by 34% between 2005 and 2022, a substantial acceleration in building renovation will be needed to reach EU 2030 targets. Beyond environmental considerations, the pandemic underscored the issue of social inequalities in cities. The distribution of green spaces and access to essential urban infrastructures are deeply uneven, with low-income urban residents being disproportionately vulnerable to climate change despite contributing the least to emissions. For the case of France, research on environmental inequalities shows that, on average, working-class neighborhoods experience higher levels of pollution, nuisance and energy insecurity than the rest of the metropolitan country (Comby & Malier, 2022). Yet, 78% of low-income residents consider ecological transition a priority for improving their neighborhoods, compared to 73% of the general French population (The State of Housing in Europe, 2023). This highlights the need to integrate ecological transition into a broader urban planning strategy that prioritizes inclusivity.

As cities strive to balance green initiatives with housing equity, the intersection of environmental policy and urban development must be examined closely. Nearly 80% of the French population lives in urban areas (INSEE, 2020), making it essential to integrate housing affordability into climate policies.

Our project seeks to answer the following overarching research questions: **What conflicts and synergies emerge between Environmental and Energy Policies (EEPs), with the focus on nature-based solutions, energy retrofitting, and densification, and housing issues in different urban contexts? What strategies can promote a socially equitable urban ecological transition?**

These research questions emerge from the identification of research gaps and are based on an overview of the literature on our studied topics that is detailed in a dedicated part below.

These questions lie at the intersection of two urgent challenges: the need to decarbonize cities and the imperative combat housing inequalities. To address these questions, we explore three interrelated statements adopting a double scale approach and stating that:

- It is necessary to understand housing conditions in different urban contexts, distinguishing between different housing tenure (social rental, private rental, and homeownership);
- It is important to explore the orientations of recent and current energy and environmental policies, considering both their stated objectives and the extent to which they account for impacts on housing;
- It is relevant to carry out in-depth studies of specific areas that may be emblematic of the dynamics at play at the intersection of energy/environmental policies and housing

This project serves three objectives. (**1**) It seeks to map EEPs alongside socio-economic indicators to assess the current state of Paris, its socio-demographic evolution, its housing market and the potential for socio-economic exclusion because of greening policies. (**2**) It aims to analyze and compare green transition initiatives both at the national level (Paris, Orléans and Sens), and at the European level (Paris, Milan, and London), focusing on their impact on housing inequalities. Paris, London, and Milan, as major European cities with distinct dynamics, provide valuable case studies for understanding how green transitions influence housing disparities across diverse urban contexts. At the national level, the comparison between Paris (a large city), Orléans (a mid-sized city), and Sens (a small city) sheds light on the situation in France, revealing that the impacts of green transitions vary significantly depending on the city's size and characteristics. (**3**) It intends to develop targeted policy recommendations in order to promote greater equity in urban development.

The originality of our work therefore lies in:

- Examining trade-offs and relationships between Environmental and Energy Policies (EEPs), and housing inequalities, through a comparative and multi-scale approach that combines both national and international perspectives;
- Adopting a methodology that brings together different layers of inquiry at the intersection of socio-economic, housing, and environmental-energy issues. This interdisciplinary approach allows us to explore the complex trade-offs and synergies in diverse cities;
- Grounding in empirical material collected a diversity of urban and territorial contexts across France and Europe, providing a nuanced understanding of how national policies are translated into local dynamics and shaped by contextual trajectories.

As such, our work not only contributes to the academic discourse on equitable urban transitions, but also provides practical insights for policyma-

kers to build both greener and fairer cities.

Presentation of the project

We are a group of five students from the master's programme Governing Ecological Transitions in Cities at the Urban School of Sciences Po Paris. This capstone project, on which we worked from October 2024 to June 2025, is part of the Urban School's broader goal of equipping students with professional experience through an intensive, practice-oriented module. The project will conclude with a presentation of the final deliverable to the partner during the Urban Lab Day, scheduled on June 10, 2025 at the Sciences-Po Paris campus. It is also likely that we will present our research through the creation of a poster at the AESOP Annual Congress, which will take place in Istanbul, Turkey, from July 7 to 11, 2025.

Presentation of the partners

This capstone project has been carried out in partnership with the Association of European Schools of Planning (AESOP), a non-profit association registered under Belgian law in 1992. Its primary goal is to contribute its expertise to ongoing discussions and initiatives related to planning education and the qualifications of future planning professionals. In addition, our work is conducted in the context of the European research project ReHousIn (short for ReHousIn - Reducing housing inequalities in the green and digital transition), funded by the Horizon Europe programme, that gathers eleven teams from nine countries to investigate the complex relationship between green transition initiatives and housing inequalities across various urban and rural contexts in Europe), including the Centre d'études européennes et de politique comparée (CEE) at Sciences Po.

Questions that were asked by our partners

The project stems from a series of questions raised by our partners, which have been central to shaping its direction. It is important to revisit them now in order to provide context and better understand the underlying motivations guiding the project's development. These questions are the following:

- **How do green transition initiatives affect housing inequalities in different urban settings?**
- **What are the trade-offs between environmental sustainability and social equity in the context of urban housing?**
- **How can urban planning, policy, and civic initiatives better address the socio-spatial challenges of the green transition?**
- **What lessons can be learned from comparing Paris, Milan, and London to inform more inclusive and sustainable housing policies?**

The rest of the report is structured as follows: we first delve into Section I on Contextualization, in which we define more precisely the theoretical framework and methodology we used to collect data. In Section II, we develop the analysis and assessment of our five case studies individually, before comparing them in Section 3 at both national and European levels. We also provide policy guidelines based on these comparisons. Finally, we address the limitations of the research.

STRUCTURE OF THE REPORT

This research is guided by a structured approach split in three steps: (1) contextualization, (2) analysis and assessment, (3) comparison and proposal.

The study adopts a multi-scalar geographical perspective, with a primary focus on Paris, the capital city of France. At the national level, we compare Paris with Orléans, the capital of the Centre-Val de Loire region, and Sens, a smaller city and subprefecture of the Yonne department, to examine how city size and context influence the intersection of energy and environmental policies (EEPs) and housing inequalities. These three cases were selected because they illustrate contrasting urban dynamics: Paris, where ambitious EEPs risk intensifying housing exclusion; Orléans, where mid-scale city municipal policies may better balance environmental goals and affordability; and Sens, where limited resources could be a factor of the limited inclusion of EEP-related municipal action into social broader concerns but that may also highlight the presence of significant grassroots initiatives or adaptive strategies.

At the European level, the analysis extends to London, the capital of England and the United Kingdom, and Milan, the capital of the Lombardy region in Italy, providing a broader comparative framework. These cases were chosen because they reflect different governance models and housing regimes: London, where market-driven EEPs often exacerbate socio-spatial inequalities; and Milan, where efforts to integrate social objectives into climate policies offer a contrasting approach. The selection of these five cities was guided by the ReHousIn consortium's research design, which aims to compare cities of different sizes and dynamics at the national level, and to examine three major European cities with comparable challenges related to climate policy, urban development, and social inequality. The temporal scope of the research spans the last twenty-five years, beginning in the 2000s, a period marked by the growing recognition of climate change and its implications for urban policy.

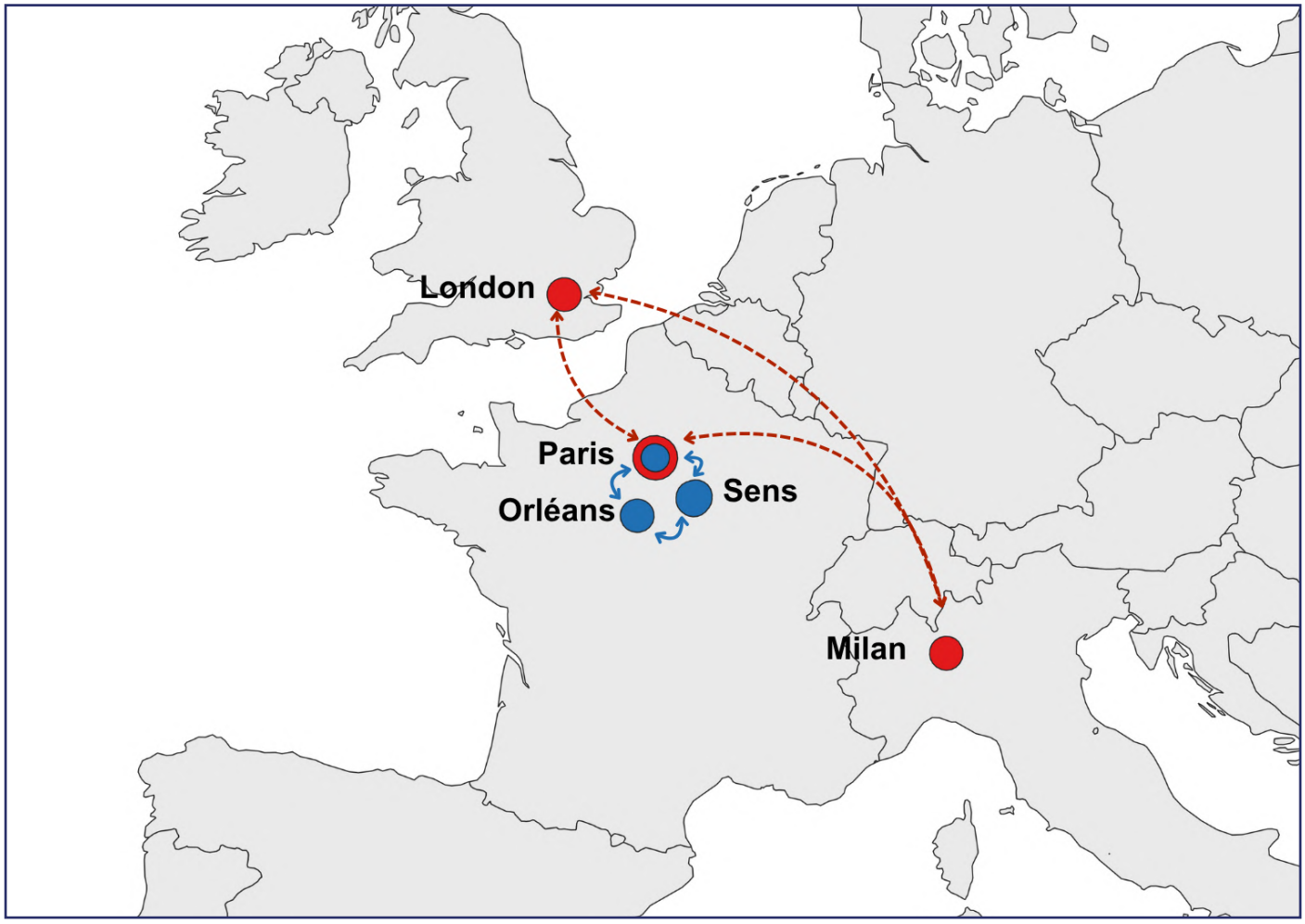

Fig. 0.1 European map situating the five municipalities being analysed in this report : Paris, Orléans, Sens, Milan and London.
(Source: Authors' own, 2025)

Contextualization

The first phase of our research, dedicated to contextualization, involves the overview of the existing literature and an analysis of transition policies related to housing issues in the cities under study. This allows for a later comprehensive and informed mapping and comparison process of the five case studies, seeking to contribute to and complement the pre-existing literature on housing inequalities and EEPs.

The overview of the existing literature on the topic includes examining both academic sources identified through our own research and materials provided by our tutor. Its aim is to understand the key issues and controversies raised by contemporary academic discussions on the topic, while also identifying gaps that need further exploration. According to the frame of the ReHousIn research project, by energy and environmental policies (EEPs), we refer specifically to three key policy areas: energy retrofitting, nature-based solutions (NbS), and urban densification. To complement the literature review, we constructed timelines for each of the EEPs in the city of Paris based on official legal documents, allowing us to provide a chronological framework for understanding policy development over time.

Analysis and assessment

The second phase of our research, focused on analysis and assessment, aims to deter-

mine whether local realities align with the literature or reveal distinct dynamics. In order to do so, we established a common analytical framework to be applied on the five case studies of the research project.

This analytical framework includes:

- An overview of the city's main dynamics;
- The municipal landscape of housing inequalities;
- The analysis of environmental and energy policies at the urban scale;
- A focus on specific districts;
- The role of grassroots organisations;
- The first observed trade-offs and relations between green transition initiatives and housing inequalities.

Therefore, for this part, we decided to structure this report 's narrative in six sections for each city, following the above-detailed analytical framework. In that sense, the first section of this narrative is devoted to the depiction of the city's main dynamics through the main use of spatialized data representation and raw figures issued from national databases to illustrate the state of key indicators in the city such as demographic evolution, median income and political context. The second section focuses rather on highlighting the state of the housing market and related inequalities in each city, mobilizing other indicators such as housing occupation breakdown, main residences tenure types, social housing type repartition and geographical concentration in the city, as well as, when available, rent price by m2. The third section introduces a deeper analysis of the EEPs, summarizing through the use of spatialized data and timelines, in the case of Paris, the significant locally led and implemented initiatives concerning Densification, Nature-based Solutions or Energy Retrofitting. Drawing on the observed initiatives and policy depicted in the third section for each city, the fourth one aims at identifying and justifying areas and districts in each of them to further conduct the analysis and assessment of the city. These neighborhoods concentrate one or more areas of interest for the project and/or are the sites of grassroots movements we identified for each city in Section 5. This section therefore explains the role of the grassroots movements and initiatives we encountered and interviewed, as well as their impact on and proposals regarding housing access inequalities related to local green planning projects (EEPs). As such, this section draws primarily on excerpts from interviews and field visits. Finally, the last section of this common grid seeks to reflect on the 5 previous ones in order to elaborate some first insights of interrelations between all the cases studied in a city, therefore interacting interviews with spatialized key data, raw figures and indicators, as well as previously conducted policy document reviews. This structure allows us to maintain a standardized framework while tailoring specific questions to each actor's role and context. In total, we conducted sixteen semi-structured interviews, supplemented by informal conversations with local residents during our visits on site. Though not part of our formal methodology, these unstructured exchanges also offered valuable insights into how housing issues are experienced on the ground, enriching our analysis with everyday perspectives.

Nonetheless, it is important to note here that the Parisian case differs somewhat from the four other cities studied, due to its status as a reference case within both axes of comparison : national and European. In order to serve as a solid empirical basis for our comparative analysis, the Paris case was therefore subject to more detailed mapping and

policy review work than the other cases. This was notably supported by remarkably comprehensive and detailed databases (opendata.paris.fr, APUR, INSEE, among others). The other case studies were depicted through the production of synthetic contextual maps (e.g. areas under study, average housing prices, land use and social housing distribution) based on available data and to support comparison.

Building on insights from both academic and grey literature, we identified projects that have emerged as particularly influential in shaping the urban and socio-political landscapes of each city. The selection of field visits is guided by our research question, with an emphasis on projects that exemplify the tensions or trade-offs between EEPs and housing affordability in urban renewal and development contexts. Specifically, we conduct site visits in neighborhoods that have undergone rehabilitation, as well as in newly developed areas designated as ecodistricts. Studying neighborhoods in the midst of green redevelopment and collecting testimonials from their inhabitants enables us to closely examine ongoing gentrification processes, while interviews with grassroots organizations and visits of community-based urban initiatives provide a foundation for developing informed policy recommendations.

We first addressed the national scale by dividing our group: Etienne ELINE and Achille RIBEYRON conducted fieldwork in Orléans, while Alice DUBOIS, Rebekka GODSKESEN, and Arthur JEANDENAND visited Sens on March 21, 2025. In both cities, we engaged with grassroot organizations—detailed further below—that actively combat housing inequalities and contribute to improving local housing conditions within their cities. Following the national case studies, we expanded our scope to the European level. From April 2 to 6, 2025, Alice DUBOIS, Etienne ELINE and Arthur JEANDENAND conducted fieldwork in Milan, while Rebekka GODSKESEN and Achille RIBEYRON went to London. Finally, we conducted further in-person interviews for the case of Paris before transitioning to the fourth and final stage of our methodology, dedicated to proposing solutions and recommendations.

Comparison and proposal

The final phase of our methodology centers on comparison and policy proposal. Building on insights from the previous phases, we identify key trends and patterns across the different urban contexts under study in order to evaluate how each city's dynamics align with or differ from our initial hypotheses. We analyze the interactions of three core EEPs (energy retrofitting, nature-based solutions, and urban densification) across two scales: nationally, by discussing Paris, Orléans, and Sens; and at the European level, by examining Paris, London, and Milan. Based on this analysis, we formulate targeted policy recommendations aimed at promoting sustainable urban development while ensuring equitable access to housing. This phase is designed to provide policymakers with a clear understanding of the potential benefits, challenges, and trade-offs associated with implementing EEPs, thereby bridging the gap between academic research and practical urban governance.

PART 1 - CONTEXTUALIZATION AND METHODOLOGY

In this section, we begin by defining the key terms central to the project: housing inequalities, nature-based solutions (NbS), energy retrofitting, and urban densification. Following this, we provide an academic overview by reviewing the literature on green gentrification, identifying a research gap in the intersection of these themes. We then contextualize the five cities under study (Paris, Milan, London, Sens, and Orléans) by providing basic demographic, economic, social and cultural characteristics.

1.1 DEFINITIONS OF KEY TERMS

Drawing on the methodological note compiled by the French team of the ReHousIn Project based on other teams' contributions (ReHousIn research consortium, 2024 [Unpublished]), we understand housing inequalities as a multidimensional concept (e.g. Ulman et. al, 2020; Bergamaschi, 2022; Tayefi Nasrabadi, 2024) that refers to: (1) housing burden (or housing affordability per se), often operationalized as the share of total housing expenses, including energy bills, in households' budgets; (2) patterns of housing segmentation operationalized as shares of tenures (homeownership, rental) and especially the amount of council/public/social housing as a substitute for policies that could elevate people out of poverty in specific areas; (3) differences in housing quality, operationalized by the indicator of access to running water and flush toilets in a house/apartment; and also considering the energy performance of buildings; (4) unequal levels of housing consumption, often operationalized by the usable floor space per capita ratio, as a fundamental indicator of potential housing over-crowdedness (ReHousIn research consortium, 2024 [Unpublished]).

Our maps are built around the three types of EEPs: Nature-based Solutions, Energy Retrofitting, and Urban Densification, which we define as follows.

Nature-based Solutions (NbS) is a term commonly used in policy and academic circles to promote ideas of urban sustainability. NbS are defined usually as actions that are inspired by, supported by, or copied from nature (European Commission 2015; Anguelovski et al 2021). They are conceptualized as a collection of approaches aimed to improve the sustainability of (eco)systems while providing "ecosystem services" and resilience for humans and biodiversity: they often aim to address climate change mitigation and/or adaptation, as well as combat biodiversity loss. This implies the protection, restoration, and/or management of natural and semi-natural ecosystems, management of productive land and coastal areas, and the creation of new "green" or "blue" infrastructures. The IUCN (International Union for Conservation of Nature) and the European Commission rely on different definitions of nature-based solutions (NbS), while sharing common elements (Hanson et al. 2020). The European Commission associates

this concept with the three pillars of sustainable development and places a higher priority on innovation and economic dimensions, whereas the IUCN emphasizes more the well-being of humans, the use of existing ecosystems, and biodiversity conservation (ibid.).

Energy retrofitting of the residential building stock includes the building envelope as well as the engineering system, including heating, cooling and ventilation and the instalment of renewable energy sources onsite. It does not however include the renovation of the energy systems outside of the building, like modernization of the district heating systems or electricity grids, only if coupled with the renovation of the residential building stock. The energy efficient renovation applies to all tenures of the housing stock, including the public rental, private rental and the owner-occupied housing stock (ReHousIn research consortium, 2024 [Unpublished]).

Densification – initially an ecological concept that has been normatively positioned as response to global environmental debates of the 1960s and 70s – aims to transform urban settlements with the objective to increase environmental sustainability (e.g., limiting land uptake and reducing need to travel by car). The authors of relevant studies argued that compactness of the built environment – generally defined as "an increase in density of units in a given area" (Bokyo & Cooper, 2011) – would slow down urban sprawl in order to limit settlement expansion and to ensure sustainable urban growth. In some contexts, densification can also reduce unequal accessibility to urban facilities, having thus a positive impact on social equity (Burton, 2000). Two popular densification definitions are found in contemporary urban (re)development literature (see i.a., Burton, 2000; Debrunner, 2024).: (i) use density, i,e,. the increase in the number of inhabitants per m2; (ii) building density, i.e., the increase in the number of buildings, apartments, office spaces, etc. per m2 (ReHousIn research consortium, 2024 [Unpublished]). A further distinction is often made between vertical densification, which refers to the addition of floors or taller buildings, and horizontal densification, which involves filling in gaps between structures or developing previously unused land (Karen Chen et. al 2020). Besides, as Touati-Morel (2015) did for the Paris City-Region, a distinction should be made between soft and hard densification. Soft densification refers to incentive policies that do not radically transform the urban landscape. It consists of: subdivisions, conversions, or (internal or external) renovations of existing buildings, leading to e.g., more apartments/units ; re-use of vacant buildings (e.g., transforming vacant office space to residential buildings) and adaptive re-use of existing buildings (e.g., transforming a factory to housing) (ReHousIn research consortium, 2024 [Unpublished]). This type of policy is generally observed in small municipalities (around 10,000 inhabitants). On the opposite, hard densification policies are more interventionist with construction projects that result in a radical morphological transformation of the urban fabric (Touati-Morel, 2015). It encompasses measures like the development of vacant, derelict open land or brownfield within or outside the city boundaries, the total replacement of houses by apartments units, or addition of floors (ReHousIn research consortium, 2024 [Unpublished]).

1.2 OVERVIEW OF THE LITERATURE AND RESEARCH GAPS

The theoretical framework and research methodology on the trade-offs and relationships between the green transition and housing inequalities are built upon a diverse body of literature from urban sociology, urban economics, urban political ecology, and political sciences, which examines how environmental objectives intersect with housing dynamics. One strand of research focuses on green gentrification caused by greening of the city and its implications for housing inequalities. Another body of work investigates the effects of energy efficiency policies and building renovations on housing stability, including phenomena such as "renovictions." A third strand of literature investigates the process of densification in the city and its link to social sustainability. Together, these studies shed light on the complex interactions between green transition initiatives and housing equity, providing a broader and intersecting understanding of the topic, beyond single explanatory lenses.

This literature review aims to introduce the key authors that investigate the relation between green policies and housing inequalities, thereby outlining the research gap that allows and motivates the formulation of our research question. Firstly, we briefly introduce the concept of the just transition and some authors' definitions of green gentrification. This is followed by selected literature linking housing inequalities with nature-based solutions, energy retrofitting, and densification. Lastly, the review zooms in at the parisian scale, introducing some main authors on housing inequalities in Paris along with the concept of non-metropolitan gentrification, followed by our research question.

Just transition and green gentrification

In 1987, the Brundtland Commission defined sustainable development as the balance between three pillars: economic growth, social equity, and environmental protection. If the economic-social and economic-environmental links have been explored in great detail in recent years, the social-environmental link remains more obscure (Laurent, 2020). The notion of just transition originated in the 1980s within the U.S. labor movement, which promoted the development of new energy industries that would not be harmful to communities and livelihoods (McCauley & Heffron, 2018). Just Urban Transitions are therefore deeply intertwined with the concept of environmental justice, which refers to the fair treatment of all people regardless of race, color, origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (U.S. Environmental Protection Agency, 1992). As urban greening initiatives have gained momentum in response to climate change, ensuring that these efforts do not inadvertently exacerbate social inequalities is vital. The environmental justice movement demands that the benefits of greening (e.g., cleaner air, better health outcomes, and enhanced urban resilience) are equitably distributed in order to avoid the displacement and exclusion of certain groups, often associated with green gentrification.

The term "gentrification" alone was first defined in 1964 by Glass as the displacement of working-class individuals by the middle-class (the "gentry") as well as the associated changes in the social character of some London neighborhoods. In the 1970s and 1980s, the phenomenon ex-

panded into a broader process of urban change, marked by the widespread gentrification of metropolitan areas across North America, Australia, and Europe. The concept was then exported and popularized worldwide, and became a central theme in urban studies. In France, it began to enter academic discourse in the early 2000s, notably through the work of scholars such as Authier (2001), Bacqué & Fijalkow (2006), Clerval (2013).

The notion of "environmental gentrification" was first introduced by Sieg et al. in 2004 to describe the implementation of an environmental planning agenda related to public green spaces that results in the displacement or exclusion of the most economically vulnerable populations, such as homeless individuals, while promoting an environmental ethic. This concept was later taken up by Dooling (2009) and Anguelovski (2014) under the name of "ecological gentrification" or "green gentrification" to refer more specifically to the phenomenon whereby urban greening projects, such as the creation of parks and community gardens, can lead to an increase in property values, causing the displacement of low-income residents in favor of more affluent populations, thus altering the socio-economic dynamics of neighborhoods. Green gentrification is therefore a relatively new concept that has been highlighted as the latest front in the environmental justice movement (Anguelovski & Pearsall, 2016). Interests in this new phenomenon have proliferated and eventually expanded beyond its original North American context (Ali et al., 2020; Anguelovski et al., 2017; Kwon et al., 2017).

Nature-based Solutions

Previous research in the field of green gentrification has focused extensively on the effect of nature-based solutions, such as building green corridors and parks in the city. This includes Anguelovski et al. (2018) researching green gentrification in Barcelona through a longitudinal spatial analysis. They find that parks created in old neighborhoods have a stronger gentrifying effect than when created in impoverished neighborhoods. They further argue the need for more research on case studies outside North America and emphasize the importance of a critical discourse when implementing green infrastructure to avoid technocratic planning. Another European study on the topic was led by Friesenecker et al. (2023), as they attempted to assess the strength of the green gentrification process in Vienna through policy evaluation and found that the long tradition of social housing in Vienna creates a barrier against green gentrification. They also found that recent deregulation had weakened the current guardrails and that current policy was not taking into account the risks of green gentrification in the future.

Previous studies have also taken a quantitative approach to analyzing green gentrification using regression analysis across multiple cities. These include Rigolon et al. (2020), who find that park function and location are predictors of gentrification in American cities, but that park size is not, using a logistic regression model. Anguelovski et al. (2022) analyze green gentrification using a larger sample of both European and North American cities and find that city GDP growth is correlated with gentrification, and that the effect of greening on gentrification in different cities can be divided into clusters. In some cities, greening does not seem to have a direct effect on gentrification, and in others, greening is a driver of gentrification on its own. The third cluster consists of cities where greening works on parks with new transit and development.

Energy retrofitting

Questions around energy poverty and "renoviction" are central to understanding the interplay between housing inequalities and energy retrofitting. Baeten et al. (2017) are particularly relevant to our approach, as they examine how renovation processes in Swedish cities often serve profit-driven motives, leading to rent increases and displacement pressures. They also call for a broader conception of displacement that goes beyond rent hikes alone. These findings are echoed in the 2022 FEANTSA report, which warns of a potential wave of "renovictions" across Europe as large-scale retrofitting policies are implemented. This tension between urgently needed energy renovations and the risk of deepening housing inequalities is at the heart of our research. While nearly 8% of Europeans face energy poverty, the social consequences of poorly designed retrofitting policies could be significant (FAENSTA, 2022). FAENSTA (2022) recommends focusing renovation efforts on the most substandard housing stock and reinforcing the right to housing to avoid exclusionary outcomes.

Densification

Numerous studies that have examined the interaction between densification and housing inequalities exist as well. Cavicchia et al. (2023) notably explored the relationship between access to housing and environmental policy instruments through a comparative analysis of Milan, Vienna, and Oslo. Their research focused on how energy retrofitting, densification strategies, and energy performance standards influence the supply and accessibility of affordable housing. They found that the effects of these environmental measures vary widely depending on the configuration of local housing systems, the institutional capacity to implement social housing policies, and the socio-spatial orientation of urban planning. In cities where strong public housing sectors and redistributive planning tools are in place, densification efforts tend to align more closely with social inclusion goals. By contrast, in more market-oriented contexts, densification policies often exacerbate housing inequalities. Cavicchia et al. thus advocate for a context-sensitive analysis of green gentrification and call for further comparative research that can account for institutional and spatial specificities.

Debrunner (2024) complemented this perspective by investigating densification through the lens of governance and political regulation. Focusing on Swiss cities, she analyzed how local authorities navigate the trade-offs between increasing urban density and preserving social diversity. Her study showed that while densification is often framed as a sustainable urban strategy, its social impacts are deeply shaped by the presence or absence of robust tenant protections and rent regulation mechanisms. She highlighted that in the Swiss context, federal constraints often limit the ability of cities to implement effective protections for vulnerable tenants, thereby making densification a potential driver of displacement. Debrunner emphasizes that the social sustainability of densification is not intrinsic to the policy itself but is contingent on how it is governed. Her work strengthened the case for adopting a qualitative, governance-centered approach to understanding the social outcomes of ecological urban policies, an approach we follow in our analysis of green gentrification.

Housing inequalities in Paris

The report develops more extensively on Paris, as it is the cornerstone of the comparison both nationally and internationally. Anne Clerval's Paris sans le peuple (2016) provides our work with

solid research and a framework to study gentrification in Paris. Through an in-depth analysis of the evolution of demographics, housing, and housing policies, the author takes the assumption that the French capital has gentrified since the 1980s, which has been relatively late compared to other global cities like New York and London. New, wealthier households are investing in poorer neighborhoods of the North and East of the city, a process that the municipality tried, with limited success, to mitigate through social housing and territorial equity.

Machline et al. (2018) have specifically studied green gentrification in Paris through its creation of eco-quartiers. The eco-quartiers have been placed in low-income neighborhoods and are generally built for the middle class. One purpose of the eco-quartier policy is to generate more social diversity, but the authors argue that reaching this goal through introducing eco-quartiers includes pushing out poor people in favor of creating housing for the middle class and thereby hiding gentrification strategies behind social policies.

Preteceille (2007) also analyzes gentrification in the Parisian metropolitan area, but argues that gentrification has mainly taken place in the areas around central Paris, the Banlieue, and not within the city center. He identifies three different kinds of processes adjacent to gentrification around Paris, and goes about separating the different processes by analyzing the situations depending on demographic groups. Our analysis in Paris includes a specific focus on the newly developed neighborhood Clichy-Batignolles, which has included the integration of a railway into its development. Adisson (2017) is essential to understand this context, as his article looks into the intermediation of public land ownership in French cities and examines how the processes and outcomes shape the relationship. This is key to understanding the implications on the development of public land ownership. Piganiol (2021) additionally digs more into the spatial segregation that is the rule in the newly built housing units of Clichy-Batignolles. While emphasizing on the strong share of social housing and the environmental benefits of the neighborhood, she identifies that private developers mostly designed the new buildings and the park to attract wealthy, young and environmentally conscious households that can enjoy entre-soi.

Although gentrification has been extensively documented since its emergence in the 1980s, the scholarly literature has primarily concentrated on what Rérat and Lees (2011) refer to as "metropolitan gentrification," especially in the context of the Global North (Kubeš and Kovács, 2025). However, mid-sized cities have received considerably less attention in gentrification studies. Only recently have researchers such as Kubeš and Kovács (2025) begun to explore this overlooked dimension. Their work highlights the distinct features and diversity of inner-city gentrification in provincial contexts within the Global North, focusing particularly on the demand side, that is, the gentrifiers themselves. They note that the speed and intensity of gentrification in provincial cities tend to be lower than in major metropolitan areas. Moreover, they identify alternative forms of gentrification in metropolitan peripheries, driven by marginal gentrifiers, those who struggle to afford the cost of living in central urban areas, young, transient urbanites migrating from smaller towns in search of employment, and university students. In addition, other types of controlled gentrification are becoming visible in provincial cities, such as new-build gentrification, green gentrification, and tourism-in-

duced gentrification Kubeš and Kovács (2025).

Research question

Reading the existing literature, we identify a clear gap in terms of including the three energy and environmental policies (nature-based solutions, energy retrofitting, and densification) when analyzing potential green gentrification. There is also a lack in terms of mixed-method approaches, including both policy analysis and quantitative spatialized data. Thirdly, we identify a need for studies that also include non-metropolitan cities to grasp national differences between smaller and larger cities. This research seeks to contribute to this emerging field by addressing the existing gap, which has ultimately led us to our research question:

What conflicts and synergies emerge between Environmental and Energy Policies (EEPs) and housing issues in different urban contexts? What strategies can promote a socially equitable urban ecological transition?

The progression of the project has led us to formulate hypotheses rooted in existing literature, which will be validated or refined as our research unfolds and new findings emerge. These hypotheses are the following:

H1: Environmental and energy policies implementation is highly context-dependent, i.e., the success of these policies vary significantly based on local socio-political, economic, and environmental conditions.

H2: While climate adaptation projects are intended to make cities more sustainable, they can be distributed unevenly among individuals in society and/or lead to social exclusion, thus exacerbating housing inequalities.

H3: Certain green solutions can be implemented with minimal negative social impacts by adopting inclusive planning strategies—such as participatory processes that engage marginalized communities, prioritize affordability and accessibility, and embed social equity goals into project design and implementation.

H4: Urban greening initiatives can lead to long-term economic benefits for low-income communities, provided that local residents are involved in decision-making processes.

1.3 DATA COLLECTION METHODS

Interviews

Semi-structured interviews are employed as a primary qualitative research method to explore the perspectives and experiences of grassroots organizations engaged with issues at the intersection of environmental and energy policies and housing inequalities. This method allows for a flexible yet focused dialogue, guided by a set of core questions while leaving room for interviewees to elaborate on topics they deem significant. Participants were selected among associations involved in advocacy, service provision, knowledge-sharing or community mobilization in the five cities under study. The interviews provide in-depth, context-rich insights into how policies and more generally urban dynamics are interpreted, contested, and enacted at the local level, as well as the challenges and strategies encountered by these organizations in addressing socio-environmental disparities. The data generated contribute to a grounded understanding of grassroots engagement and policy impacts from a bottom-up perspective.

In total, we conduct sixteen interviews, supplemented by informal conversations with local residents during our visits on site. Though not part of our formal methodology, these unstructured exchanges also offer valuable insights into how housing issues are experienced on the ground, enriching our analysis with everyday perspectives.

Details of the interviews conducted

Itw n°	Case study	Date	Place	Role of the interviewee
1	Paris	17/04/2025	Paris 17th	CSR expert, President of the association "Les Jardins Suspendus des Batignolles".
2	Paris	25/04/2025	Online	Climate and housing advocacy officer at the "Fondation pour le logement des défavorisés".
3	Paris	02/05/2025	Paris 12th	Founder and spokesman of the association "Droit au Logement".
4	Orléans	21/03/2025	Orléans	Volunteer at Habitat et Humanisme Loiret.
5	Orléans	21/03/2025	Online	Deputy Director and Director of Studies at TOPOS (Urban Planning Agency of the Orléanais Territories).
6	Orléans	28/03/2025	Online	Project Officer at Union Sociale pour l'Habitat.
7	Sens	21/03/2025	Sens	Architect and head member of S4E.
8	Sens	28/03/2025	Online	IT professional, public housing resident and tenant association representative, member of S4E.
9	Milan	03/04/2025	Milan	Engineer in biodynamic agriculture and founding member of Giardini Isola Pepe Verde.
10	Milan	04/04/2025	Milan	Architect and founding member of Giardini Lea Garofalo.
11	Milan	04/04/2025	Milan	Social worker and board member of Dar=Casa.
12	Milan	04/04/2025	Milan	Manager of Mare Culturale Urbano.
13	London	05/04/2025	London	Founding Activist of Alton Action.
14	London	04/04/2025	London	Founder of WECH.
15	London	04/04/2025	London	Coordinator and media worker for Just Space.
16	London	06/04/2025	London	Part of a panel discussion about the documentary "Occupy Tottenham – Screening and Community Housing Discussion".

Fig. 1.3.1 Table presenting the details of the interviews conducted.

Workshop participant observation

Additionally, we took part in the Policy Lab Day organized by the ReHousIn French team on March 25, 2025 and produced a synthesis of the discussion that took place. This event brought together institutions[1], focusing only on the French context and working at the intersection of ecological transition and housing issues to discuss two key themes: (1) the synergies and tensions between environmental and social goals, and (2) the forms of cooperation and friction, both horizontal and vertical, across different territories. Together, these elements allow us to better understand the key challenges surrounding the topic, engage critically with existing knowledge, and develop initial research questions and hypotheses to guide the next stages of our work.

Site visits

Site visits were conducted as a qualitative research method to gain contextual insights into the physical and operational environments relevant to the study. These visits involve direct observation and documentation of site-specific features and practices. The primary objective is to corroborate information obtained through other data sources, such as interviews, datasets and policy documents, while capturing real-time dynamics, spatial arrangements, and contextual factors that may influence the phenomena under investigation. Sites are selected based on their relevance to the research questions and their representativeness of broader patterns within the study area. The observational data collected during site visits enrich the analysis by providing context-sensitive perspectives that complement findings from other methodological components.

1 Policymakers: Minister of Ecological Transition and of Planning and Devolution (also responsible for Housing), City of Paris (planning, NBS)
National agencies: Agence nationale pour l'amélioration de l'habitat (ANAH)
Social housing: Fédération des offices publics de l'habitat (FOPH), L'Union Sociale pour l'Habitat (USH)
Experts: Institut de la Transition Foncière, Institut des Hautes Etudes pour l'Action dans le Logement (IDHEAL), GIP Europe des projets architecturaux et urbains (EPAU), Observatoire Immobilier Durable, Plan Urbanisme Construction Architecture (PUCA), École polytechnique fédérale de Lausanne (EPFL)
Advocacy groups on housing needs: Fondation pour le Logement des Défavorisés (ex- Fondation Abbé Pierre, FAP)

Site visit n°	Case Study	Place	Date
1	Quartier de Clichy-Batignolles	Paris 17th	17.04.2025
2	Quartier Bourgogne	Orléans	21.03.2025
3	Quartier La Source	Orléans	21.03.2025
4	Quartier Chaillots	Sens	21.03.2025
5	City center	Sens	21.03.2025
6	Porta Nuova	Milan	03.04.2025
7	Bovisa La Goccia	Milan	04.04.2025
8	The Queen Elizabeth Olympic Park	London	03.04.2025
9	Elephant and Castle	London	03.04.2025

Fig. 1.3.2 Table presenting our site visits.

Policy document review

A policy document review is employed as a qualitative research method to examine relevant governmental and institutional policies and communications pertinent to the study's focus. This method enables the identification, analysis, and interpretation of key themes, regulatory frameworks, and strategic priorities embedded within official documents. The review includes documents such as urban plans, legislative texts, grey literature reports, and implementation reports, which are selected based on their relevance, credibility, and adequation with the studied themes. By analyzing these documents, the study seeks to contextualize the research problem, trace policy developments over time, and uncover implicit assumptions and values guiding decision-making processes. This approach provides a robust foundation for understanding the policy environment and informing subsequent stages of data analysis.

Cartographical approach and tools

To give a spatial representation to the dynamics observed, we engage in an extensive mapping of the city of Paris and provide some maps of the other studied cities. We design the following map (Figure 0.4) as a base map on which we place a series of layers to spatialize variables.

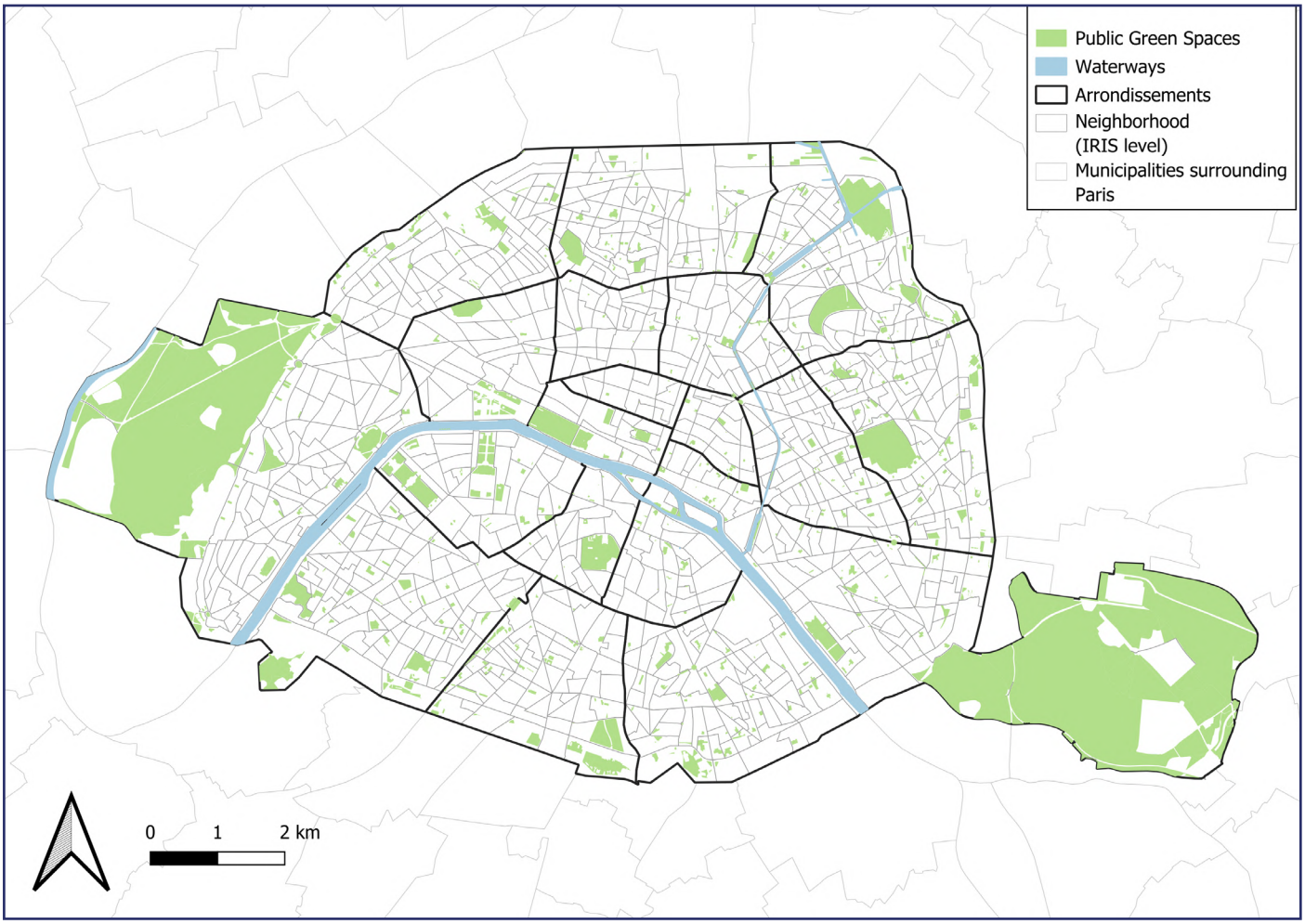

Fig. 1.3.3 Base map of Paris.
(Sources: Paris Data, 2025; IGN, 2024; INSEE, 2024; Région Île de France, 2025)

Our base map takes data from the Paris Open Data platform to draw the limits of Parisian arrondissements, the layout of waterways in Paris and from the Ile-de-France Region for location of green spaces. To draw the boundaries of cities neighboring Paris, we use a data set from the data.gouv platform. We consider the IRIS (Ilot Regroupé pour l'Information Statistique) segmentation (the basic building block used by INSEE for disseminating sub-municipal data) as unit of reference drawn from the data set produced by INSEE (the French national institute for statistics). IRIS is the smallest segmentation provided by the INSEE, which helps us to observe elements at the finest level available. As Paris is a relatively small city in terms of surface area compared with the other European metropolis under study, such type of local precision is important for detailed observations. It also allows us to analyze patterns that go below and across the arrondissement level helping for a deeper understanding.

Concerning the scale of our maps, we use a 1:650 000 representation in order to show the entire city of Paris on one map while comparing it with surrounding municipalities.

Finally, colors are given a specific significance in order to make our maps clearer and more identifiable. Red represents both population and building density, green identifies green spaces (as defined in the region's open dataset) and vegetation projects, blue represents waterways and NbS that use water, orange refers to energy-linked va-

riables, and purple highlights socio-economic as well as housing inequalities.

Based on the "Population en 2021", "Logement en 2021" and Filosofi 2021, we also provide maps of Orléans and Sens illustrating certain dynamics at stake at the IRIS level. The strong availability of spatialized data has been particularly beneficial for the French cases, especially the Parisian one as Paris benefits from an extensive Open Data platform. However, the gathering of data for the Milanese and Londonese case has been more limited, explaining the lesser supply of cartographical representation for these two cities.

Variable	Source	Date	Link
Arrondissements	Paris Data	2025	Link
Delimitation of the IRIS	Géoservices (IGN and INSEE)	2024	Link
Waterways	Paris Data	2025	Link
Public Green Spaces	Région Ile-de-France	2025	Link
Municipalities	data.gouv	2022	Link
Density of Population (IRIS level)	INSEE, "Population en 2021"	2021	Link
Number of resident per socio-professional classes (IRIS level)	INSEE, "Population en 2021"	2021	Link
Percentage of residents living in social housing building (IRIS level)	INSEE, "Logement en 2021"	2021	Link
Level of diploma (IRIS level)	INSEE, "Diplômes - Formation en 2020"	2020	Link
Median income (IRIS level)	INSEE, "Fichier localisé social et fiscal (Filosofi) en 2021"	2021	Link
Du Vert Près de Chez moi interventions	Paris Data	2017	Deleted webpage
Median rent (administrative district level)	Observatoire des loyers	2023	Link

Fig. 1.3.4 Table summarizing the datasets we used for our maps.

PART 2- ANALYSIS AND ASSESSMENT

The second part of the report provides an analysis and assessment of the housing dynamics influenced by the energy and environmental policies operating at the urban scale. For each city, we apply a common framework to ensure consistency in the assessment, going from the national context (with Paris, Orléans and Sens respectively) to the European one (with Milan and London). We begin by providing an overview of the city's main socio-economic, political, and administrative characteristics (1), before delving into the patterns of housing inequalities (2). Next, we examine local environmental and energy policies, focusing on nature-based solutions, energy retrofitting, and urban densification (3). We then present the grassroots organizations chosen for study, highlighting their role in addressing housing exclusion (5). Finally, we assess how green transition initiatives may intersect with housing inequalities based on the material provided in the previous sections (6), thereby identifying key relationships, tensions and trade-offs specific to the city under study (4).

2.1. PARIS

2.1.1 Overview of the city's main dynamics

A General Overview of Paris

Paris is the capital of France, located in the northern half of the country. It is crossed by the Seine in a crescent shape and reaches its highest point at 130 meters above sea level in Montmartre. Paris proper has an area of 105 km^2 and a population of 2,113,705 as of January 1st, 2022 (INSEE, 2021), making it the most populous city in France and the fifth most populous in Europe (after, in order, London, Berlin, Madrid, and Rome). It is also an extremely dense city, with an average of 20,238 inhabitants per square kilometer (by comparison, Milan has 7,800 inhabitants per square kilometer). However, the population of Paris has been declining since 2010, falling from 2,243,833 in 2010 to 2,133,111 in 2021 (before a slight increase in 2022), representing a decrease of around 5 percentage points over 11 years. The main hypothesis concerning this decrease is the tense housing market and its high prices that make people, especially young parents, leave the city to obtain a larger housing surface elsewhere (Bekmezian, 2024).

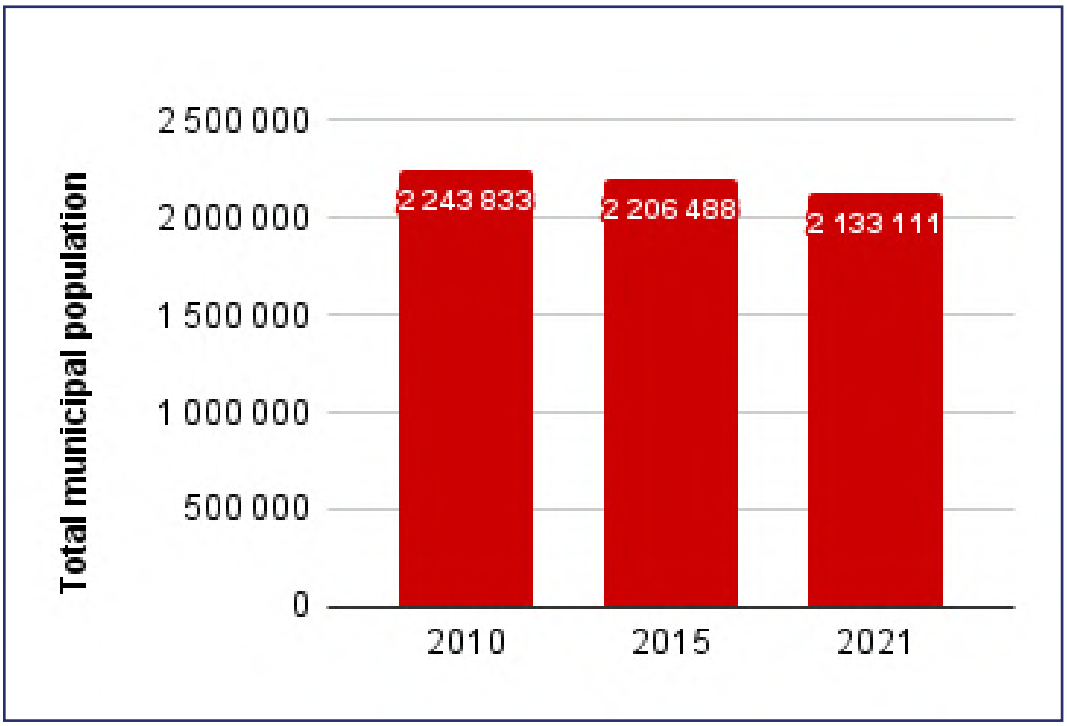

Fig. 2.1.1.1 Evolution of Paris' total population in 2010, 2015 & 2021.
(Source: INSEE, 2021)

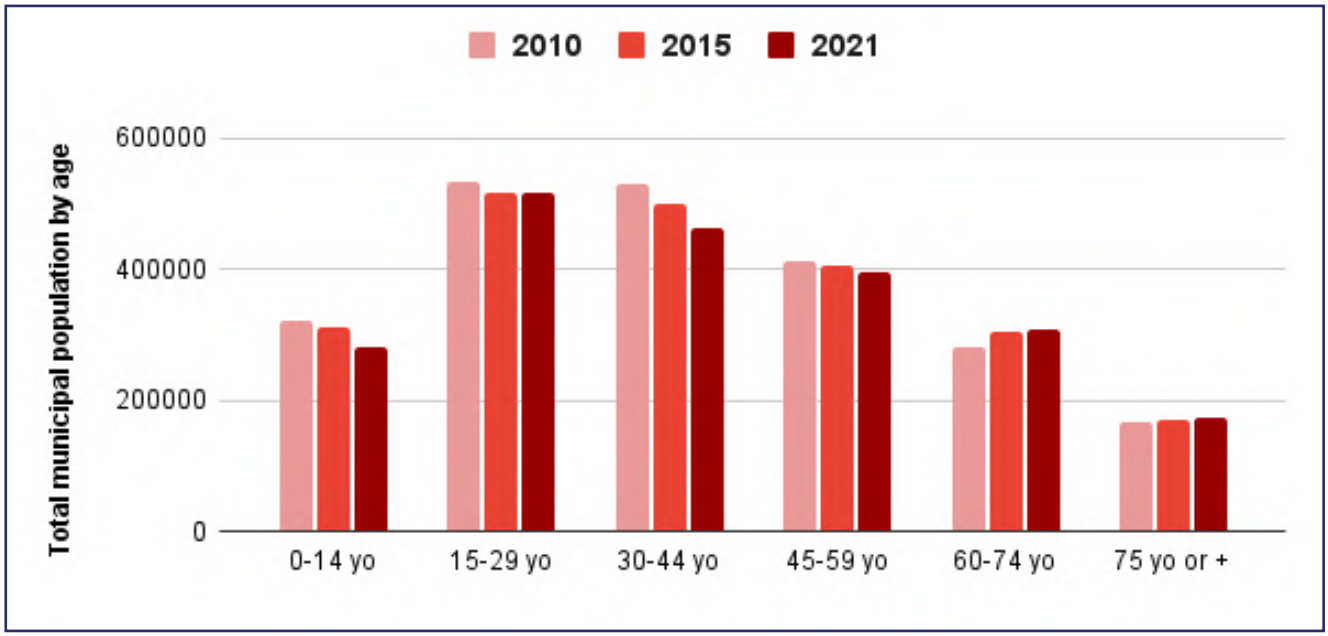

Fig. 2.1.1.2 Evolution of Paris' population by age repartition in 2010, 2015 & 2021.
(Source: INSEE, 2021)

In 2025, 14.6% of Paris's surface area is covered by a public green space (INSEE, 2025), but a large part of this area (1,840 ha) is located in the Bois de Vincennes and Bois de Boulogne, situated respectively to the east and west of the capital. The rest of the greened hectares are mainly concentrated in Parisian landscaped cemeteries (113 ha) and in the 730 public parks and gardens (520 ha). 76% of greenery in Paris is located in green spaces larger than 10 hectares (INSEE, 2025). In addition, there are 600 ha of private gardens, 44 ha of embankments bordering the ring road, 31 ha of urban agriculture, 5 ha of shared gardens, as well as 50 ha of green roofs and 30 ha of green walls (Ville de Paris, n.d.).

Paris and the Île-de-France region in which it is located are the main contributors to French Gross Domestic Product (GDP), with 31% of national wealth produced in the region, representing 5.3% of the European Union's GDP (Région Ile-de-France, 2023). The concentration of national and international institutions, headquarters of large companies, and renowned cultural institutions, makes it one of the most influential cities at both the European and global levels. It is also one of the cities that attracts the most international tourists each year :17.4 million in 2024 (Statista, 2025).
This important production of wealth nonetheless shall not hide the fact that Paris and more generally the Ile-de-France region concentrates inequalities. As shown on the map below (Figure 2.1.1.3), certain areas of Paris, especially the central and western neighborhoods are the one where one can find the highest incomes and some of them have a median income three times higher than in the poorest areas of Paris (the term "consumption unit" in the legend corresponds to income shared between the different members of a household).

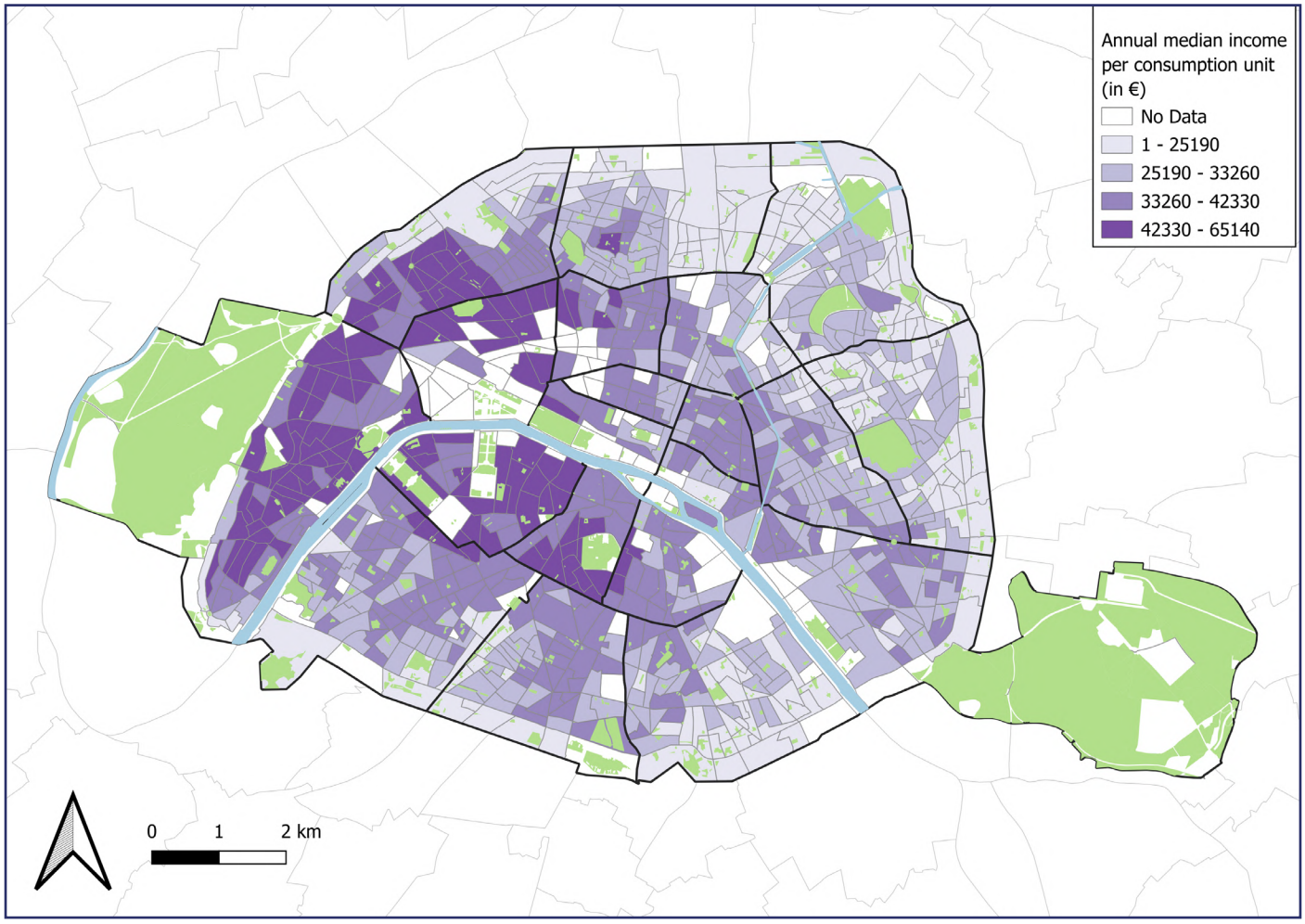

Fig. 2.1.1.3 Repartition of the annual median income per consumption unit in Paris by IRIS.
(Source: INSEE, 2021)

This representation of Paris, with central and western areas being the one concentrating wealthier and higher-class households while North and East, as well as the peripheral areas concentrates more working class and precarious households is a common depiction of the city that can be seen using other variables. See, for instance the map below (Figure 2.1.1.4), indicating the percentage of the population with at least a college degree.

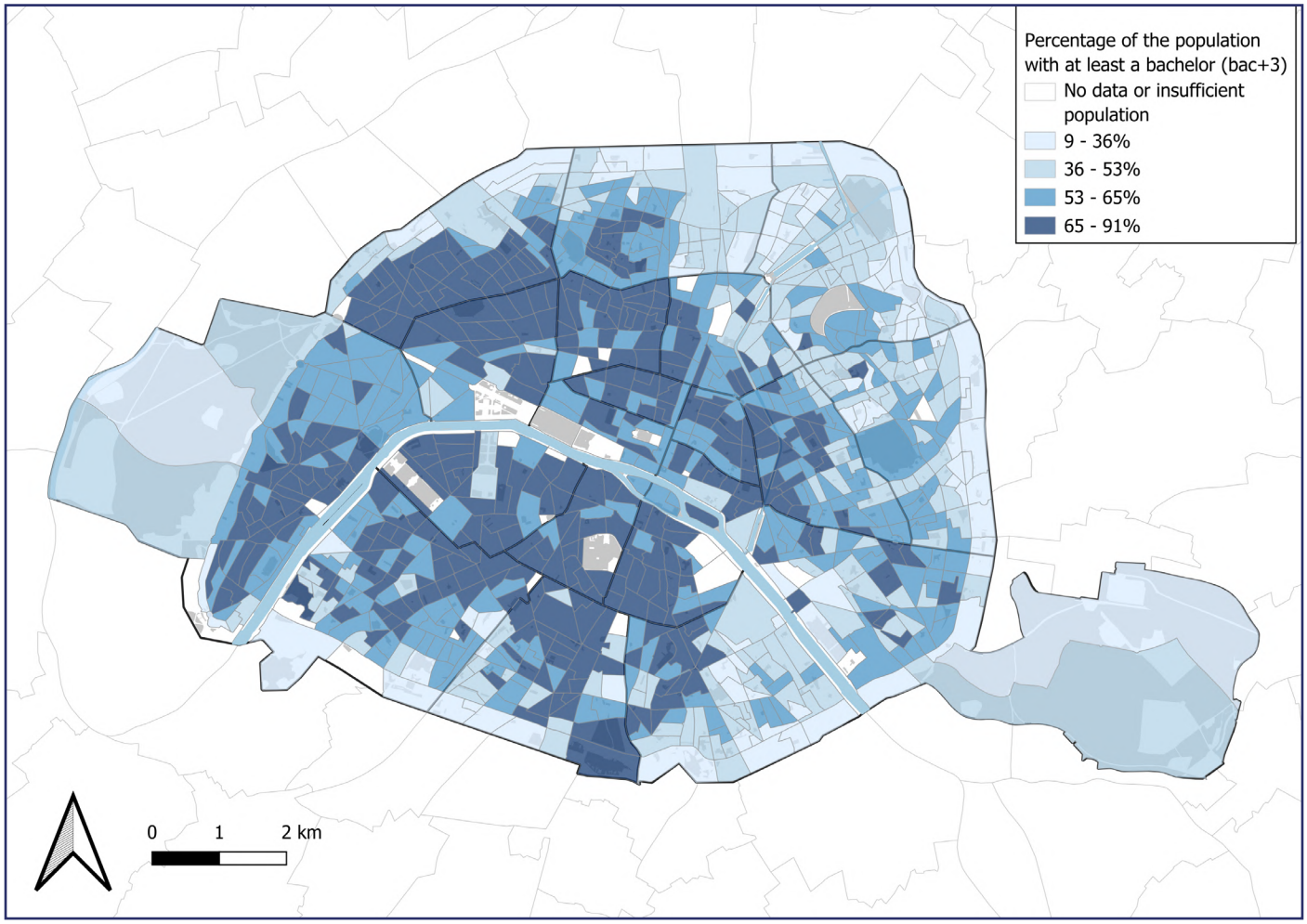

Fig. 2.1.1.4 Percentage of the adult population with at least a bachelor (bac +3) in Paris by IRIS.
(Source: INSEE, 2021)

Political and administrative system

The political system of the city of Paris is unique in France, as the city is both a municipality and a department. It therefore brings together powers that are normally split between two levels of administration. Local power rests primarily with the Paris Council, a deliberative assembly made up of 163 councillors elected every six years by direct universal suffrage. This Council plays a dual role: it exercises both the functions of a municipal council and a departmental council. It votes on local laws (resolutions), adopts the budget and oversees the actions of the municipal executive. As a municipal council, the Council of Paris manages communal affairs such as primary schools, local roads as well as urban planning, through the creation of a Plan Local d'Urbanisme (PLU - Urban Local Plan) and a Programme Local de l'Habitat (PLH - Local Housing Program). The latter defines the objectives to be achieved and an agenda, in terms of new supply for housing, rehabilitation and typology of the housing to be built or renovated. A delegation of authority from the State to the City of Paris enables the city to allocate subsidies for the renovation of private housing on behalf of the State (Ville de Paris, 2024). The city also participates in social housing allocation commissions (Ville de Paris, n.d). Furthermore, it is in charge of managing green spaces and signs a delegation document with energy suppliers for the distribution of gas, electricity and heating and cooling networks. The city also provides grants to owners

willing to engage in the energy retrofitting of their housing (Agence Parisienne du Climat, n.d).
As a departmental council, the City of Paris also deals with certain welfare benefits, extensive prerogatives on roads and the management of middle schools.

The executive is led by the Mayor of Paris, elected by the Paris councilors. The mayor is responsible for implementing the Council's decisions, for the daily administration of the city, and for its representation. The mayor relies on deputy mayors and a municipal team to manage the capital's affairs. Since 2014, the mayor of Paris has been Anne Hidalgo, re-elected in 2020, from the Socialist Party, leading a left-wing coalition. New elections are planned in 2026 and Anne Hidalgo already stated that she would not run for mayor again, leaving the door open for a new mayor in the years to come.

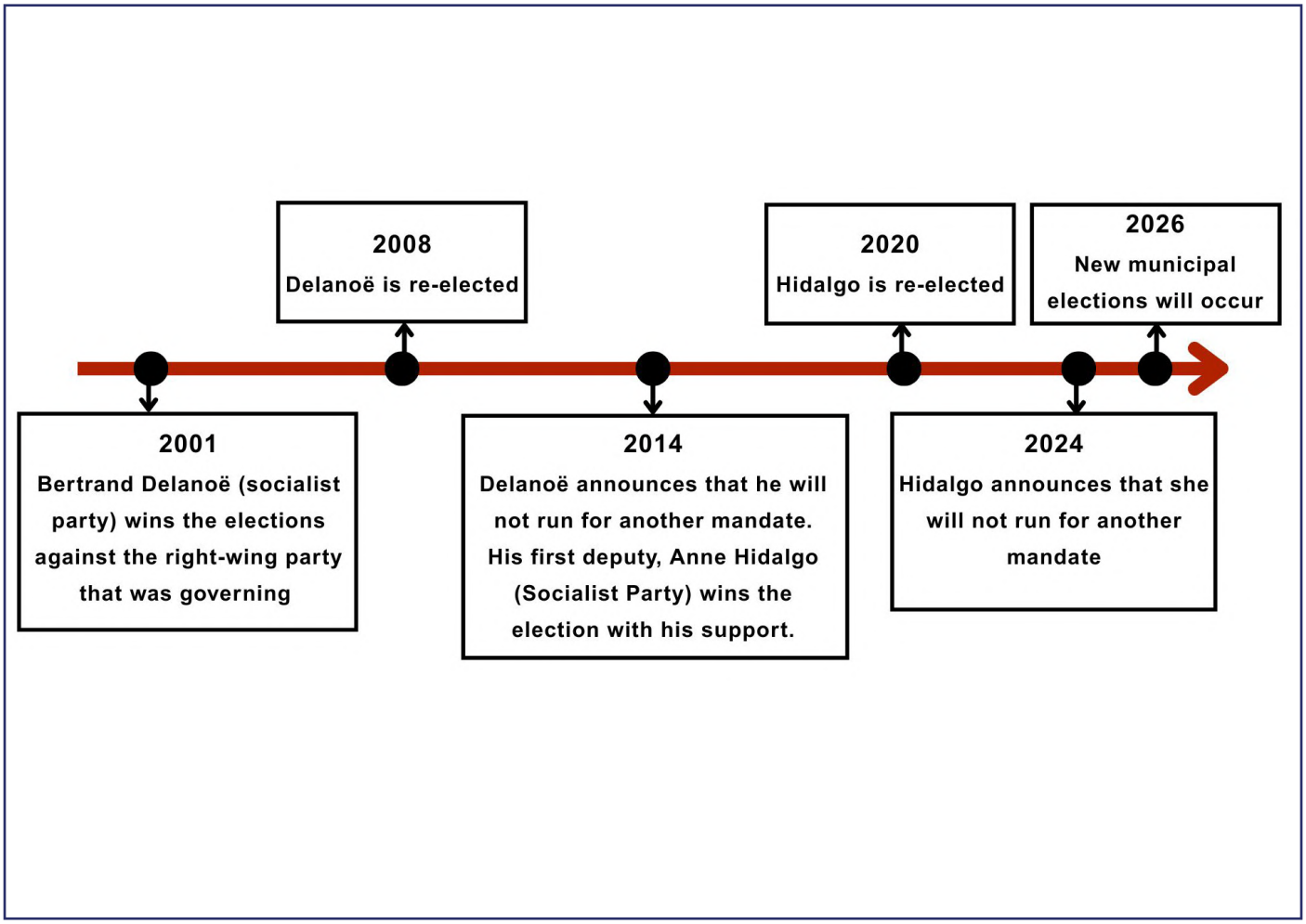

Fig. 2.1.1.5 Timeline of the municipal elections in Paris (2001-2026).
(Source; Authors' own, 2025)

Paris is also divided into twenty districts (arrondissements), each with its own district mayor and council. These local bodies have powers as well as economic resources delegated by the central town hall, particularly in areas such as culture, schools, or local urban planning. They act as intermediaries between residents and the central city administration.

In Paris, like in the rest of France, the municipa-

lity elaborates zoning plans called PLU (Plan Local d'Urbanisme, "Local Urban Plan"). This document establishes a planning project, setting land-use rules in the city territory (or at the broader scale of the metropolitan area in certain cases). It is divided between a report on the past situation and a series of objectives and rules for the municipality in the year to come. The PLU is subject to an environmental assessment and can be modified to improve its sustainability. In 2024, Paris adopted a new PLU known as "bioclimatic", aiming for a more integrated approach of ecological questions in the development of the city while generally improving its resilience. Its subtitle "vers un Paris plus vert et plus solidaire" ("towards a greener, more inclusive Paris") indicates two main pillars for its action: social and ecological. Its three stated objectives : "Reducing carbon footprint and adapting to climate change", "Affordable housing for all" and "lively 15-minutes neighbourhoods" put the emphasis on the differents topics under study: more green spaces accessibility, densify activities to allow active mobilities, retrofitting buildings as well as ensuring affordable housing (especially through the development of social housing).

Finally, beyond the municipality, Paris is part of the Greater Paris Metropolis (Métropole du Grand Paris), created in 2016, which includes Paris and 130 surrounding municipalities. This intermunicipal structure aims to better coordinate public policies at the metropolitan scale, particularly in terms of housing, transport, environment, and economic development. It is led by Patrick Ollier, also mayor of the municipality of Rueil-Malmaison, located within the metropolis, and a member of the party Les Républicains (right-wing). The fragmentation of actors and competences, the preponderance of the Parisian municipality in it, and its lack of clear governance makes the Métropole du Grand Paris quite unclear in its impact on public action (Le Galès and Artioli, 2023).

2.1.2 The landscape of housing inequalities

Paris is facing a housing crisis (Clerval, 2016; Fondation pour le logement, 2024, Fondation Jean Jaurès, 2025) linked to the sharp increase in housing prices, even though the city's population is not increasing. According to the INSEE (2021), 80.8% of housing in Paris consists of primary residences, while 9.7% are second homes or occasional housing. 9.5% of dwellings are vacant. Nearly all of the housing stock consists of apartments (96.9%).

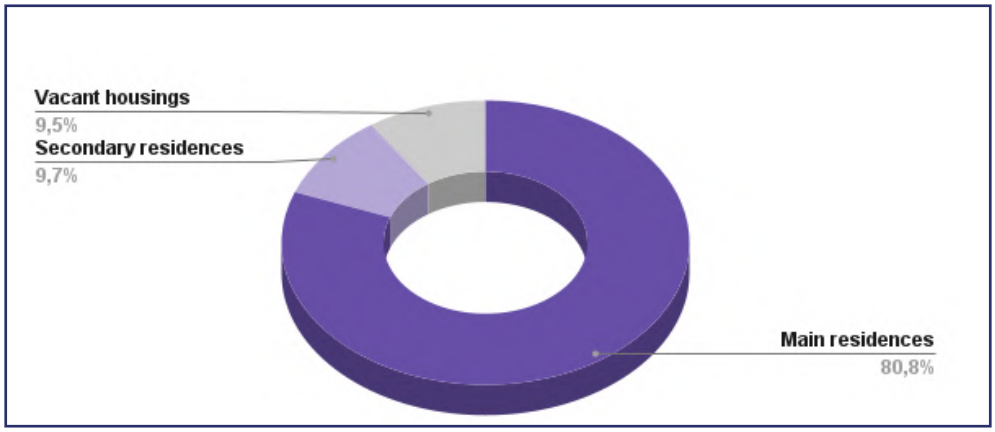

Fig. 2.1.2.1 Paris' housing stock breakdown by status of occupancy in 2021.
(Sources: INSEE, 2021; APUR, 2023)

In 2021, 33.4% of dwellings were occupied by their owners and 61.9% by tenants. 18.1% of the housing stock is rented on the public market. Paris is an exception compared to the national level, where 57.5% of dwellings are owner-occupied, 24.8% are part of the private rented stock, and 17% part of the social rented stock. The higher proportion of owner-occupied housing at the national level is explained by the very high price per square meter in Paris. In 2024, the average rent in Paris was €25.5 per square meter per month.

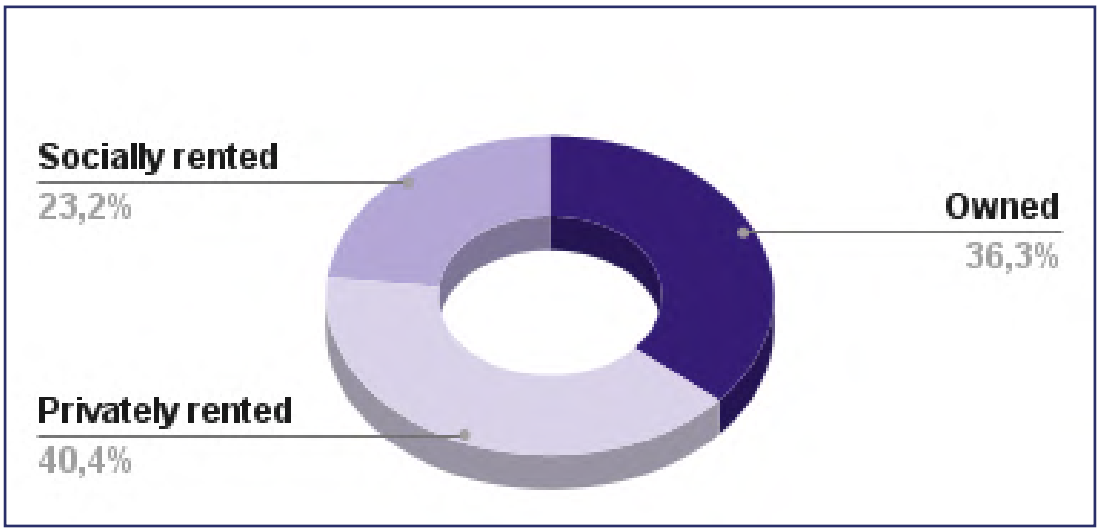

Fig. 2.1.2.2 Paris' main residences by tenure type in 2021.
(Source: INSEE, 2021)

A strong municipal investment in social housing

It is important to note that in France, since 2000 and the passing of the law "Solidarité et Renouvellement Urbain" (Solidarity and Urban Renewal or SRU in French), every city with more than 3,500 inhabitants (1,500 inhabitants in the Paris conurbation) belonging to conurbations or intercommunal bodies with more than 50,000 inhabitants and including at least one commune with more than 15,000 inhabitants, has to provide at least 20% of its housing stock as social housing and 25% in certain tense zones like Paris.[1]

The share of social housing in the city of Paris has been steadily increasing since the early 2000s. According to APUR, between 2001 and 2023, the number of social housing units more than doubled with 123,868 new units, reaching 269,080 dwellings on the 1st of January 2023. In 2001, right after the vote of the SRU law, only 13,44% of the housing stock were considered as social housing (APUR, 2019). An increase in the number of social housing units was perceived as necessary due to the constantly increasing demand and a low turnover rate of only 5% in 2022 (APUR, 2023) when the national score is at 8.7%.

Social housing created since 2001 is produced in three different ways: the construction of new

1 The accounting for social housing in this law differs from the counting method of the INSEE numbers presented above (notably, only primary residences are accounted as part of the housing stock). According to the Atelier Parisien d'Urbanisme (APUR), Paris counts 23,7% of SRU-law social housing in 2023 and could pass the 25% threshold simply on the social dwellings already funded by 2023 but not yet built.

buildings (44% of the stock), the complete rehabilitation of previously vacated buildings (18%) and the purchase of housing buildings sold on the real estate market (38%) (APUR, 2023). For the latter two, the Parisian municipality has a pre-emption right that allows it to constrain owners to sell their goods directly to the city.

These new built or converted units (between 2001 and 2023) fall into three categories from most to least social (that is, progressively closer to market prices) distributed as so in 2024 in Paris (APUR, 2024):

- 27% PLAI (Prêt Locatif Aidé d'Intégration), with a rent cap of 6,71€/m^2/month
- 42% PLUS (Prêt Locatif à Usage Social), with a rent cap of 7,52€/m^2/month
- 31% PLS (Prêt Locatif Social) with a rent cap of 14,68€/m^2/month.

To compare, in 2023, the average rent in Paris was €25.5 per square meter per month. Each of the categories presents different income ceilings to get access to it (only the poorest can get access to a PLAI, and the ceiling is higher for the PLUS and higher again for PLS).

The action in terms of social housing by the municipality in the last few years has been marked by a will to equilibrate the share of social housing among the different areas of Paris. 30% (36,216 units) of social housing financed between 2001 and 2023 is located in the central and western arrondissements (1st to 8th and 15th to 17th), while historically it is the peripheral arrondissements, especially in the North-east of the city that accounts for the most social housing. The 13th, 19th and 20th, currently the most concentrated in social housing, continue this role with 34% (41,987 units) of social housing financed between 2001 and 2023 (APUR, 2023).

As shown in the map below (Figure 2.1.2.3), social housing residents are still vastly underrepresented in central and western areas of the cities and mostly located in the periphery of the city, not far from the Boulevard Périphérique, a pattern that correlates with the repartition of incomes in Paris. That is explained by historical reasons: the construction of social housing in Paris has been historically concentrated where unbuilt land could be easily accessible i.e. in the periphery of the city. While attempts have been made to rebalance the share of social housing in the different parts of the city, inherited path dependency is still strong, undermining the social balance in the wealthiest parts of Paris (Clerval, 2016).

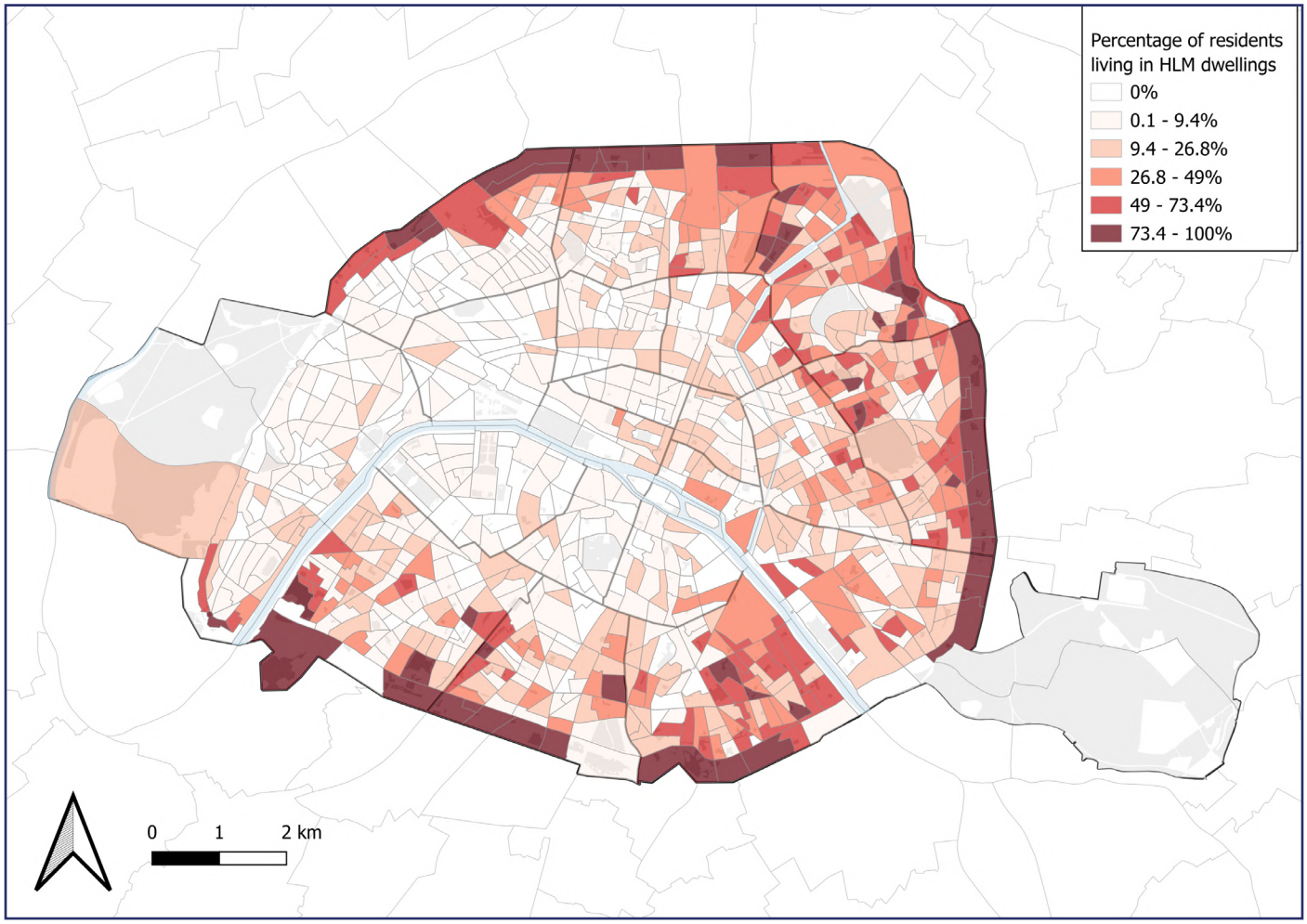

Fig. 2.1.2.3 Percentage of residents living in a social housing in Paris by IRIS.
(Source: INSEE, 2021)

Yet, this investment toward social housing does not seem sufficient in regard to the demand for it (Région Ile-de-France, 2023), strengthened by the strong and increasing market prices in Paris (APUR, 2024). 277,000 households were registered as applicants for housing in Paris by the end of 2023, which represents an 8,9% increase compared to 2022 on a steadily growing number in Paris since 2000 (with a short break during the COVID period). This important number of applicants also reveals a relative mismatch between the distribution of PLAI, PLUS and PLS and the actual demand. 70% of households registered as housing applicants in Paris have income below the PLAI ceiling, 21% have an income for PLUS and only 9% can ask for no more than PLS. In sum, almost three-quarters of the applicants will aim for a PLAI while this represents only one-quarter of the total social housing stock.

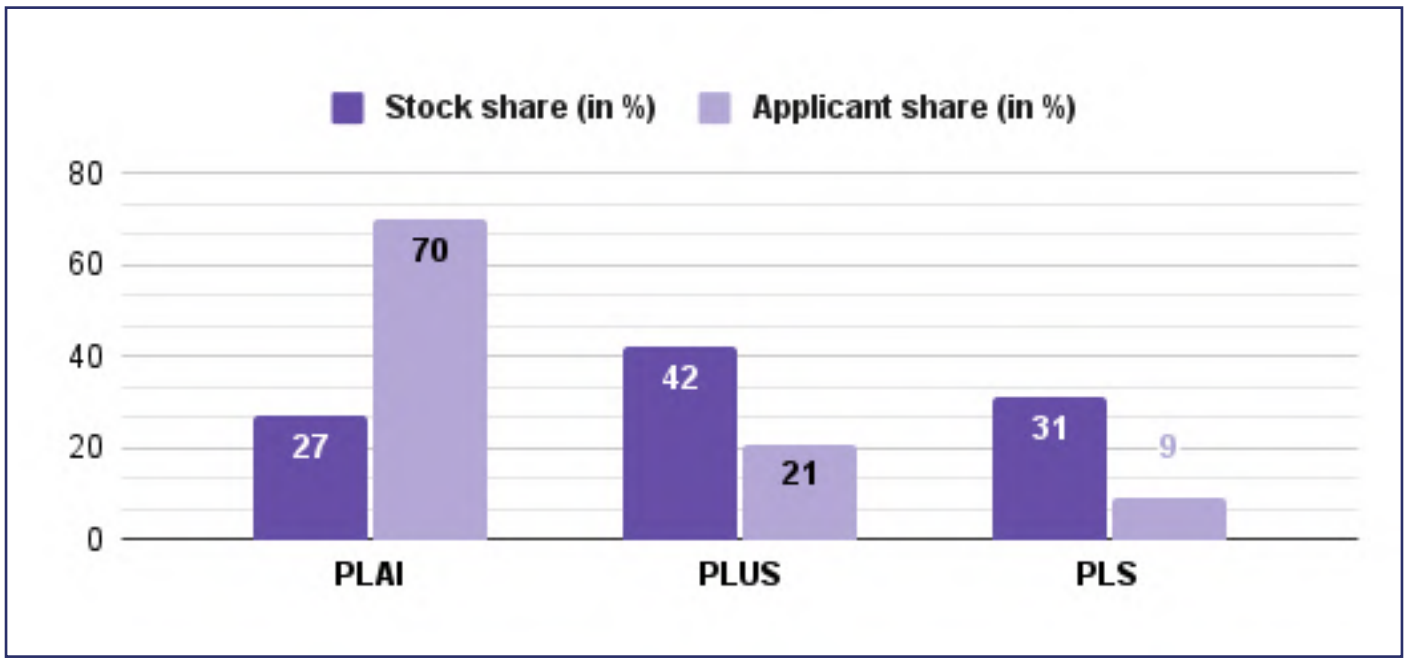

Fig. 2.1.2.4 Stock and applicant share by social housing category in Paris.
(Source: Apur, 2023)

The latest Local Urban Plan aims to achieve 30% social housing in Paris by 2035, though it does not specify the categories concerned. This target is to be met by converting existing buildings and requiring that 50% of units in new developments include social housing in neighborhoods classified as being in 'extreme shortage'.

Attempts at limiting private market prices

Given the fact that rent prices have increased by 75% in twenty years in the private market in Paris, the private market is a topic of attention to solve the housing crisis (APUR 2024). Since the ALUR law of 2014, French cities can fix a rent cap under certain conditions. Paris' first attempt to put a rent cap in 2015 was nonetheless a failure as it was judged illegal by the administrative tribunal of Paris in 2017. The passing of the new ELAN law in 2018, as well as the breaking of the verdict in the same year allowed the municipality of Paris to be a pilot territory for the experimentation of a newly designed rent cap (APUR, 2024). Thus, from 2019, when a lease is signed, the proposed rent (excluding charges and rent supplement) may not exceed a maximum amount per square meter.

This cap is fixed by the prefecture based on a series of elements, including the location of the neighborhood, the construction date of the building and the size of the dwellings. TThus, the rent cap takes into account preexisting rent inequalities in the different neighborhoods of Paris (see Figure 2.1.2.5 for a repartition of median rent prices). Based on a calculator on the website of the municipality, tenants can see if their rents exceed the cap and ask for their case to be treated by the municipality which takes care of the legal procedure.

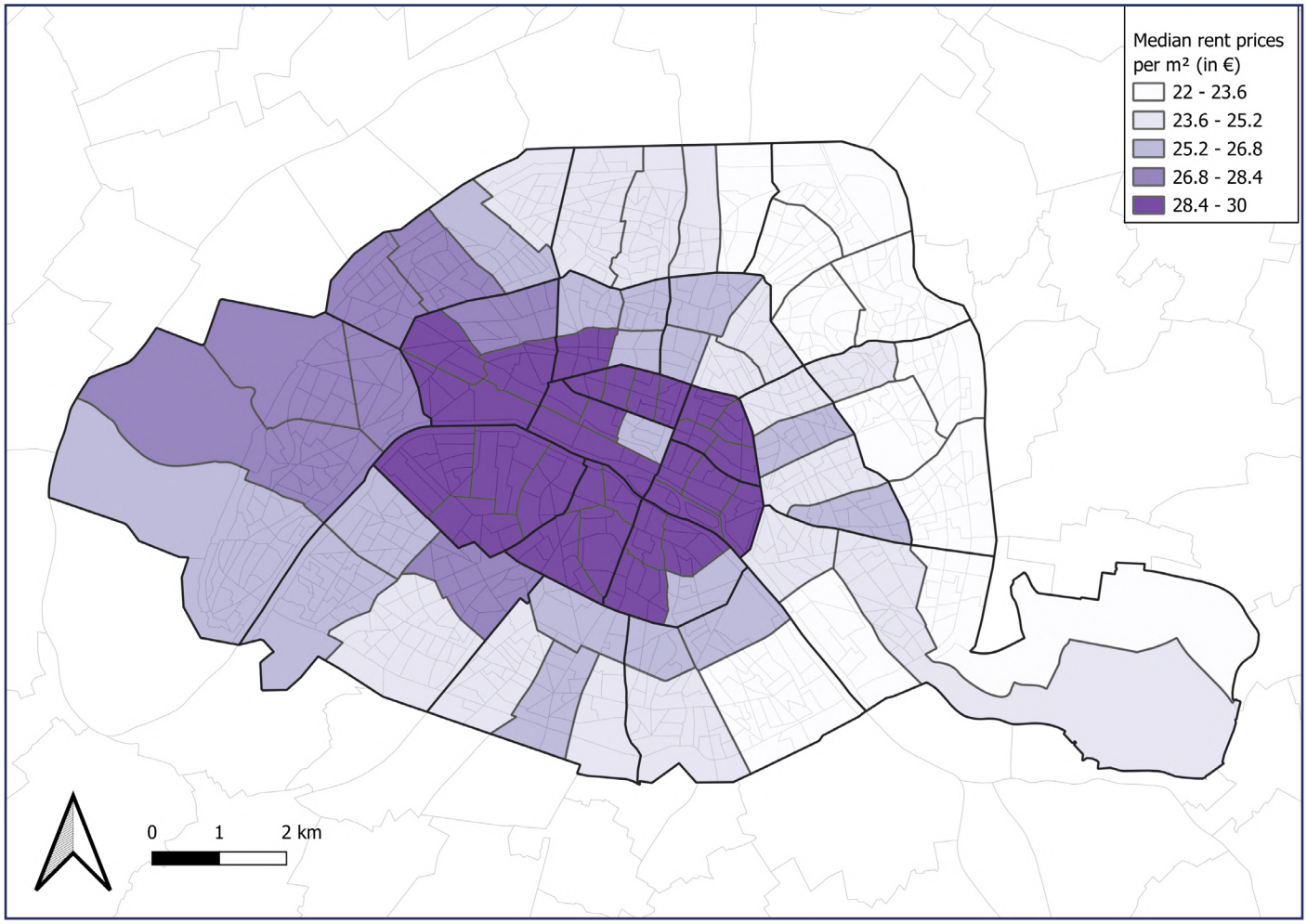

Fig. 2.1.2.5 Median rent prices per m² by administrative district in Paris.
(Source: Observatoire des Loyers, 2023)

Despite the legal obligation of respecting the cap, the thousands of signaling by tenants and the hundreds of formal demands by the municipality, the APUR (2024) observes that four out of ten rental offers do not present a rent that respects the cap in 2023, four years after the first application of the decree. This is particularly significant for furnished and small apartments with 48,2 % of the rent offers for furnished flats that exceed the cap, 60.6% for units under 18m², 41.4% for units between 18 and 24m² and "only" 32.4% for units over 24m² (APUR, 2024). These small surfaces, usually rented by poorer, younger people, students and immigrants who cannot afford more than a studio in Paris are thus particularly concerned by illegal rents (Clerval, 2016). The weight of illegally high rents will then be disproportionately borne by people struggling to accommodate in Paris, which tends to reinforce housing inequalities.

This generalized disrespect of the law shows a limit to public action that simply cannot enforce itself against such a number of illegal practices. The fact that tenants have to be aware of the rent caps, evaluate their rents by themselves and then file a complaint on the municipality's website may also explain the lack of application of a badly known dispositive. The high turnover in the small surface apartments (Le Monde 2024) also reinforces the lack of resources against non-respect of the rent cap as people may not stay long enough to engage in the process and see their complaint succeed.

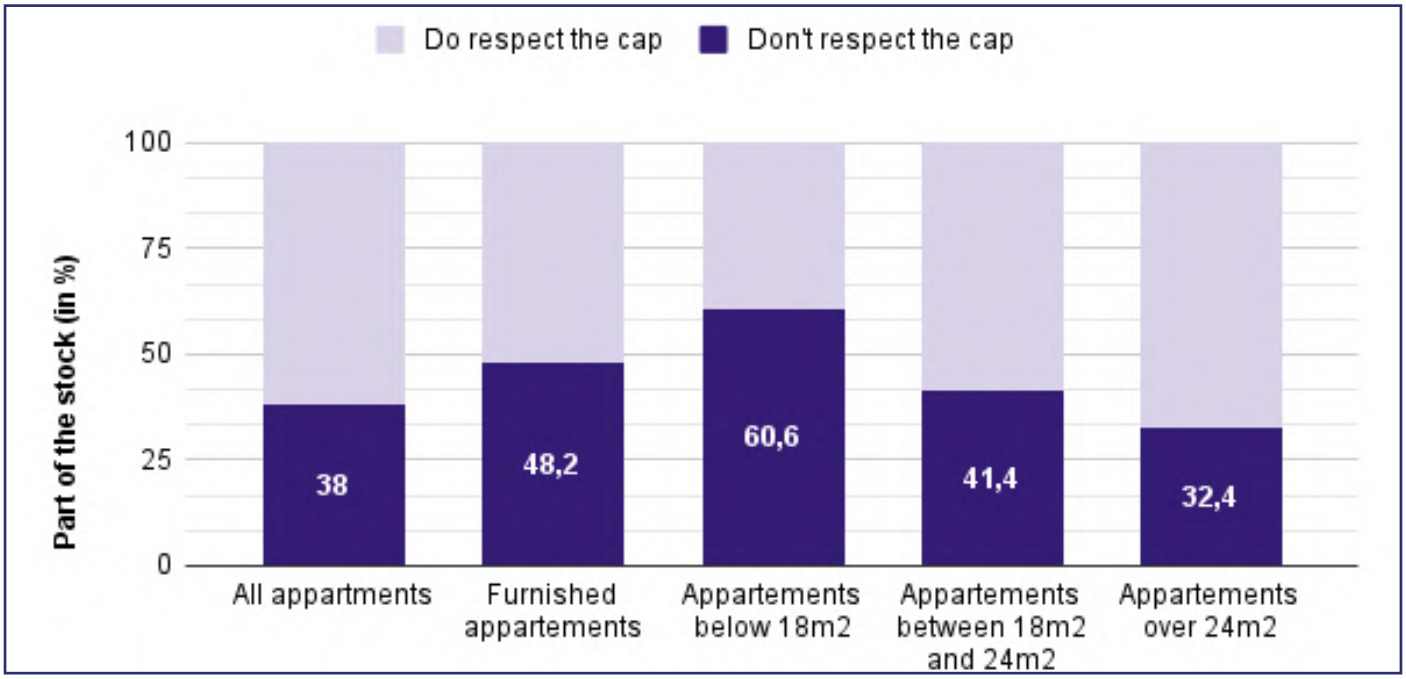

Fig. 2.1.2.6 Part of rent offers for apartments that do not respect the rent cap in Paris.
(Source: APUR, 2024)

2.1.3 Environmental and energy policies at the urban scale

Nature-based solutions

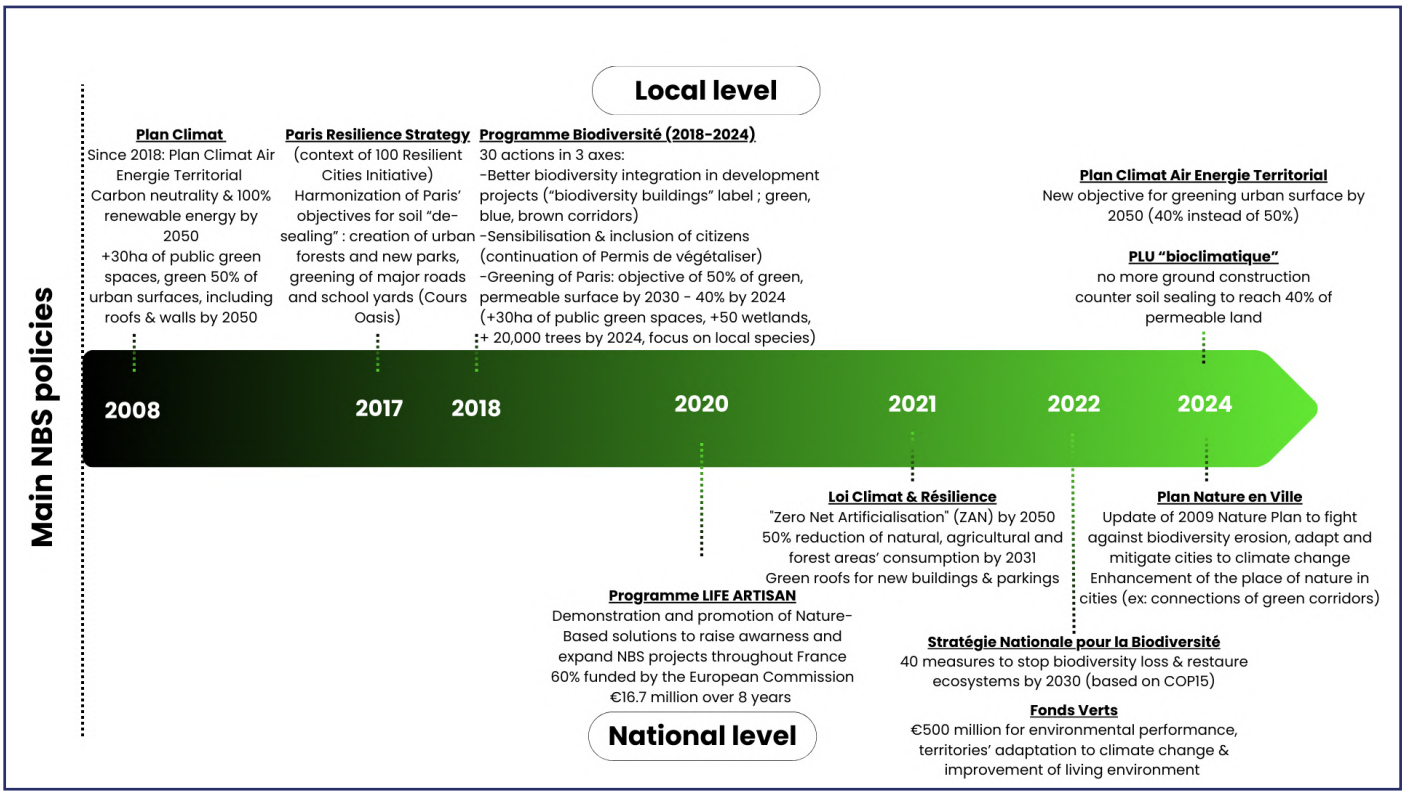

Fig. 2.1.3.1 Timeline of noteworthy policies related to NbS at the Parisian and national levels.
(Source: Authors' own, 2025)

The reconquest of green spaces in the very dense city of Paris is a particularly emphasized priority of the municipality. In 2011, Paris had 9.3 m^2 of green space per inhabitant, but only 3.9 m^2 when excluding the Bois de Vincennes and Bois de Boulogne, which are not easily accessible from the city center. The mandates of Bertrand Delanoë (former mayor of Paris from 2001 to 2014 and from Socialist Party), and then Anne Hidalgo highlighted the need to reclaim green spaces within the city to combat air pollution, improve water management, and fight the urban heat island effect (Deschamps, 2024).. This policy led to the creation of new parks within the city (notably Martin Luther King Park in the Clichy-Batignolles area).
The new "PLU bioclimatique" passed in 2024 defines objectives and guidelines for urban planning within the municipality. It includes the creation of 300 hectares of green spaces in Paris by 2040 and the depaving of surfaces in order to reach 40% of depaved territory by 2050. The city also adopted a Biodiversity Plan in 2018, aiming to ensure the sustainability of vegetal and animal life in Paris, notably through the increase of green areas.
Prior to that, a notable example of citizen-led greening initiatives named "Du vert près de chez moi" (greening near my place) was also conducted, starting from 2014. With a dedicated smartphone app or on Paris municipality's website, citizens could report to the municipality certain areas where greening operations could be conducted. The city would then be in charge of checking technical and financial capabilities to see if the operation could be conducted. Despite its short lifespan

(from 2014 to 2017), this initiative is of a particular interest for us, illustrating a possible process of green gentrification (Anguelovski et al., 2022). As shown on the maps below (Figure 2.1.3.2 and Figure 2.1.3.3), Du Vert Près de Chez Moi interventions tend to concentrate in areas where the relative share of upper socio-professional classes has increased, especially in the historically working-class neighbourhoods of the North and East. It may also be noted that the same share tends to increase around parks of the city, again, especially in the North and East. However, the cause-to-effect relationship, stays unclear: it is difficult to establish if it is the newcomers that engaged into this citizen-led policy to green their neighborhood; or if, conversely, it is because greening had happened that new, wealthier and more professionally high-profiled arrived in the neighborhood.

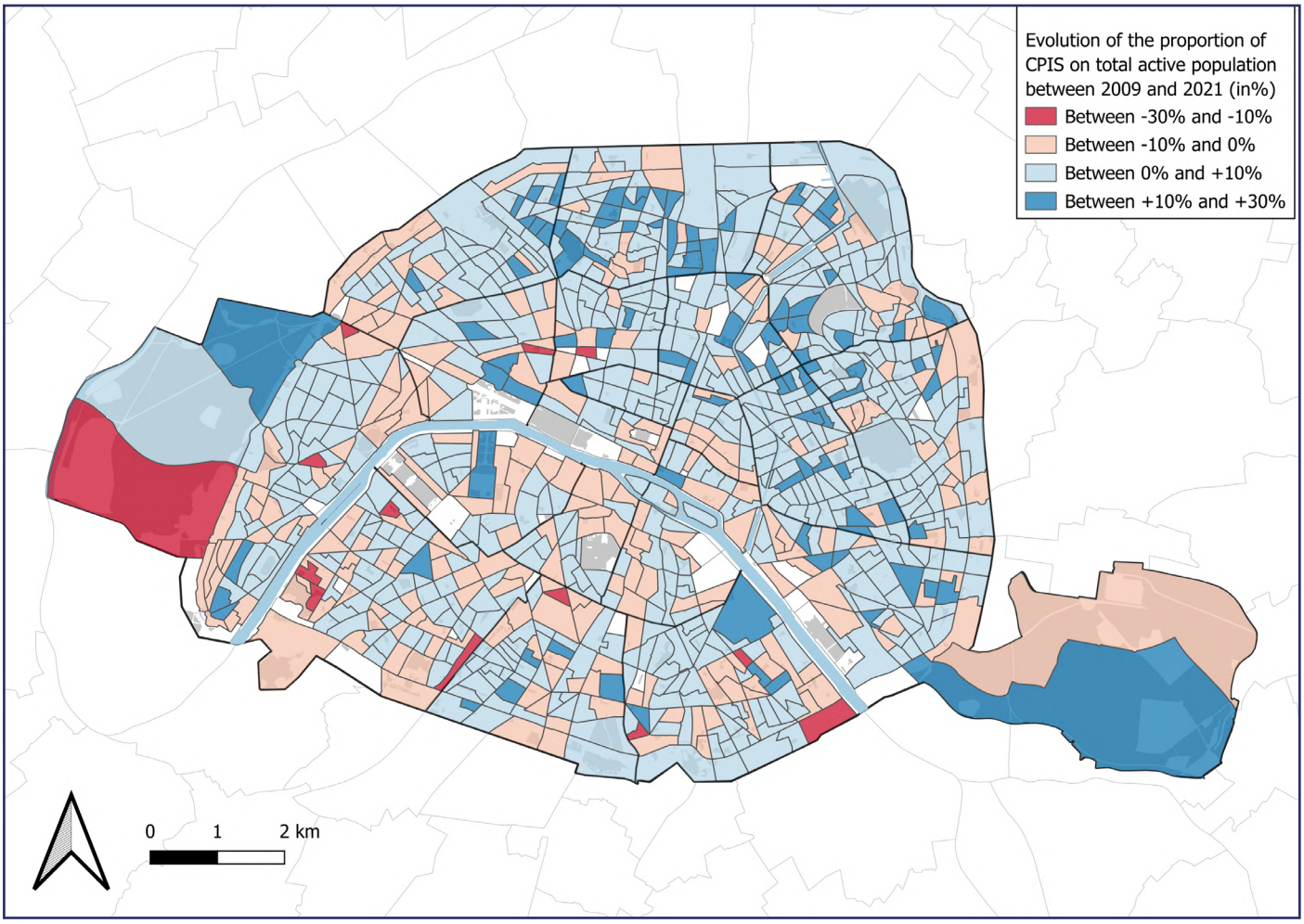

Fig. 2.1.3.2 Evolution of the number of Cadre et Professions Intellectuelles Supérieures (CPIS - managers and professionals) between 2009 and 2021.
(Sources: INSEE, 2009, 2021)

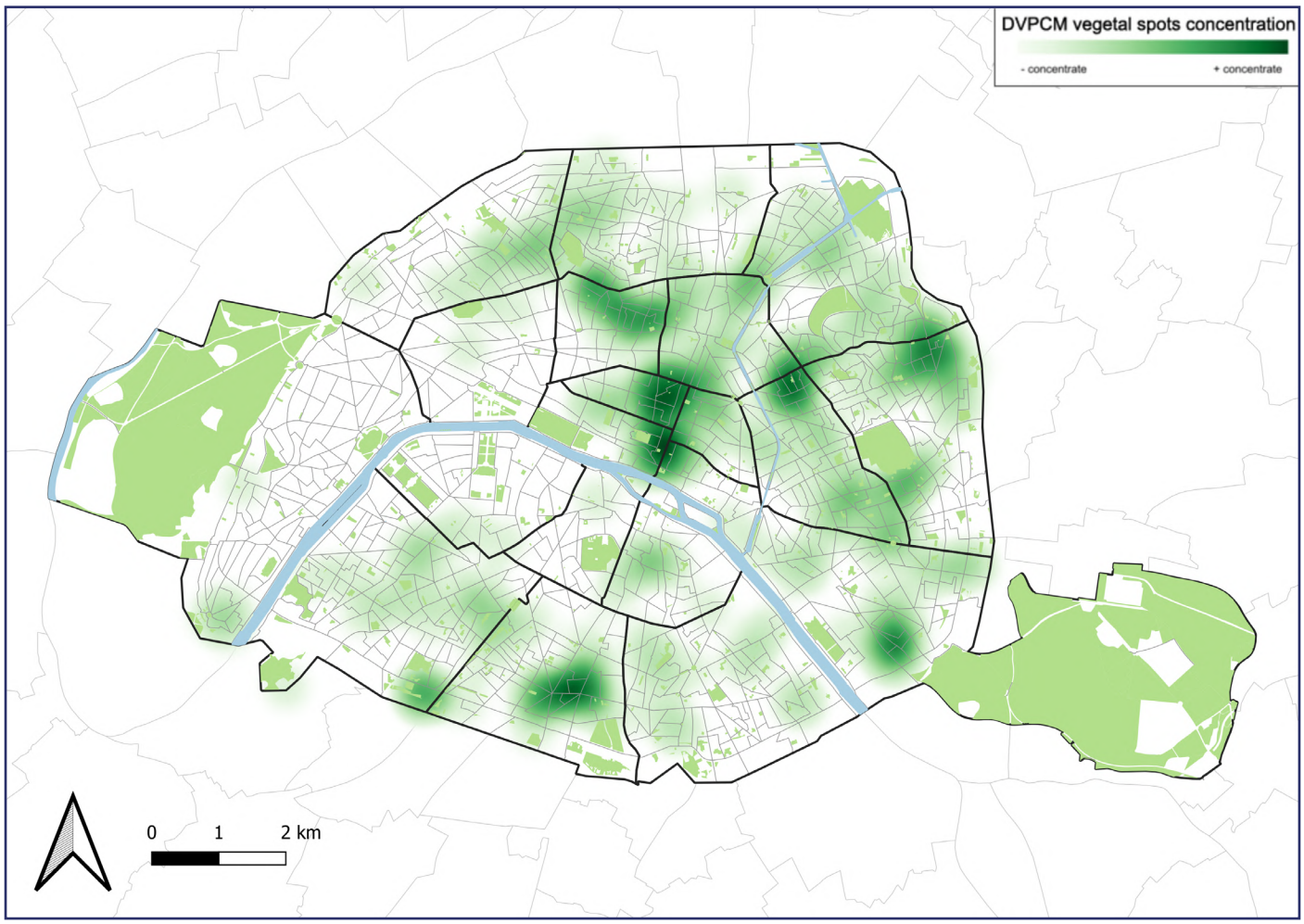

Fig. 2.1.3.3 Du Vert Près de Chez Moi (DVPCM) interventions heatmap.
(Source: Paris Data, 2017)

Such type of initiatives, alongside other forms of NbS, participates to the urban marketing of the city of Paris, as well as to the creation of a political image for the municipality (Deschamps, 2024) thus, public objectives in terms of greening and institutional advertising around NbS should be taken cautiously in the following of this report.

Energy retrofitting

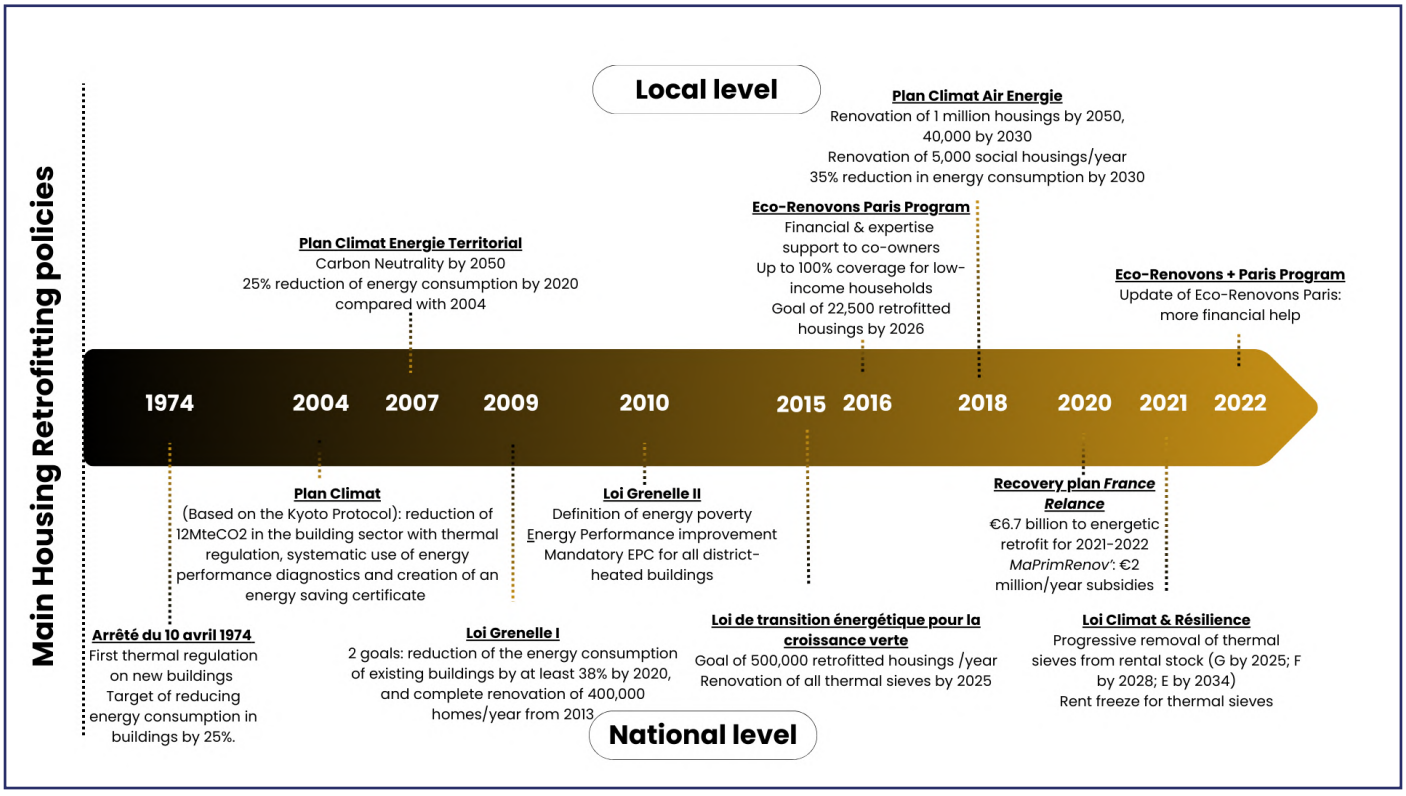

Fig. 2.1.3.4 Timeline of noteworthy policies related to energy retrofitting at the Parisian and national levels.
(Source: Authors' own, 2025)

Paris is known for its relatively old housing stock: almost 70% of primary residences in the city were built before 1970 (INSEE, 2021). This aging stock thus needs to be retrofitted for better energy efficiency, winter and summer comfort. Nevertheless, the extent of thermal sieves is still hard to determine in the city, as only one quarter of the stock has been through a Diagnostic de performance énergétique (DPE- energy performance diagnosis), an evaluation that attributes a grade from A (best insulation) to G (worst insulation) to a building.

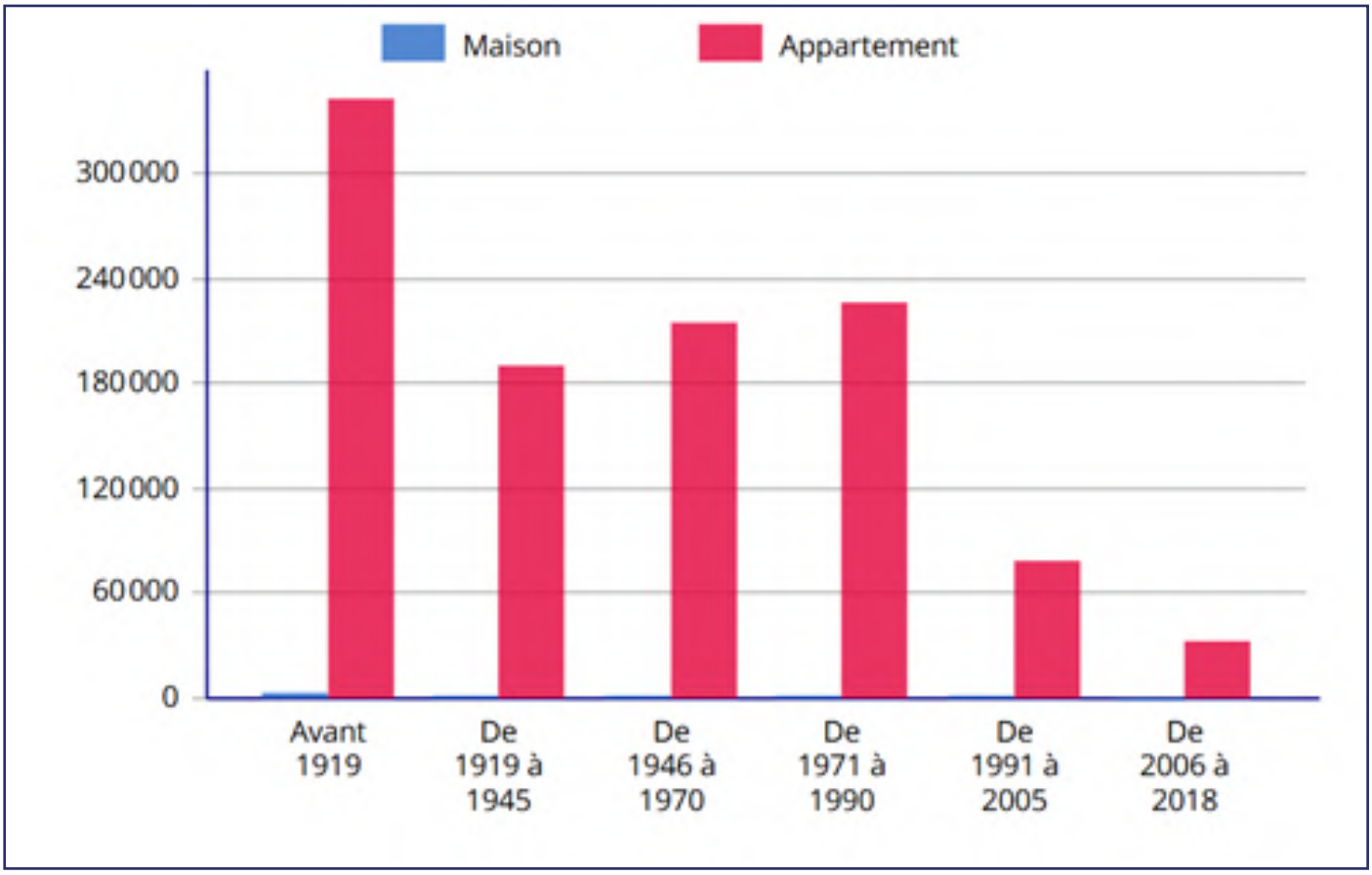

Fig. 2.1.3.5 Main residences repartition by period of construction and housing type in Paris.
(Source: INSEE, 2021)

The map below (Figure 2.1.3.6) shows the repartition of thermal sieves (diagnosed E,F,G) in the different arrondissements of Paris. We observe a relatively low share of thermal sieves in the wealthy neighborhoods of the 8th and 16th arrondissements. Yet, the distribution of thermal sieves in Paris do not closely follow a map of income (see Figure 2.1.1.3 above). If the 18th arrondissement is among the poorest of Paris, the 19th is observed as one of the better insulated. Furthermore, the center of the city counts a strong share of thermal sieves. We shall then introduce another factor which is the age of buildings: the 18th is way more oldly built than the 19th. We observe that the concentration of old buildings tends to create arrondissements with a high share of thermal sieves. The two main exceptions to this pattern being the 8th and 16th arrondissement which may be linked with the financial means that owners are able to engage in their homes in these areas.

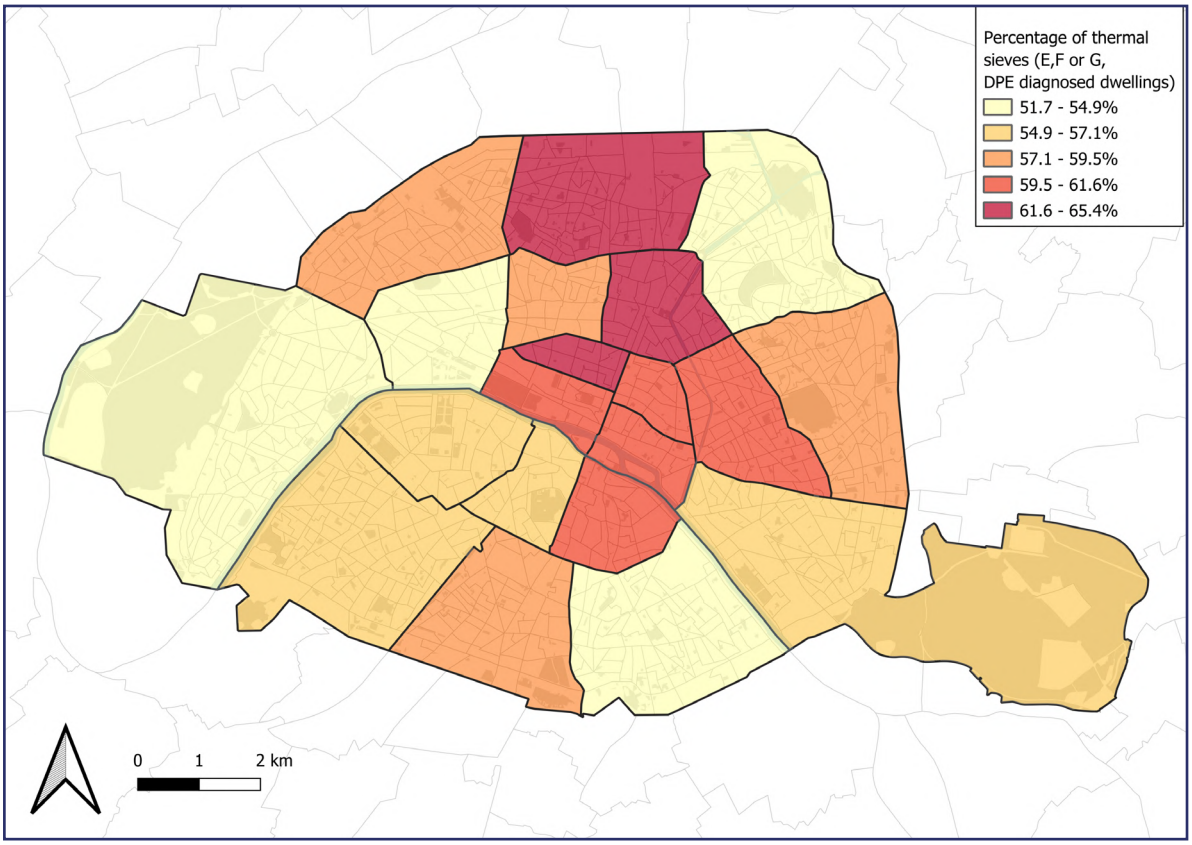

Fig. 2.1.3.6 Percentage of thermal sieves dwellings on total DPE diagnosed housing stock by arrondissement. (Source: APUR, 2024)

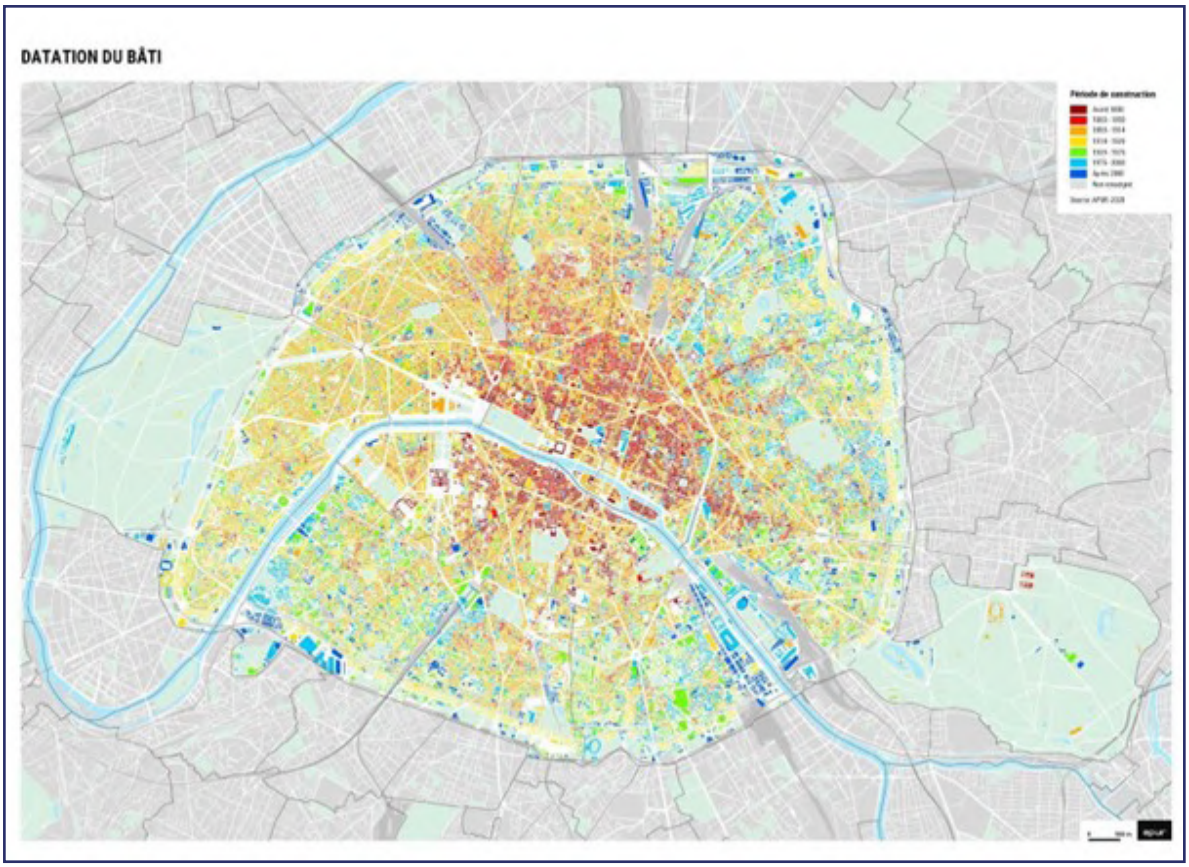

Fig. 2.1.3.7 Age of the buildings in Paris. (Source: APUR, 2020)

To face the problem of energy retrofitting, in 2016, the city launched the Eco-Rénovons Paris plan, which has been replaced since 2024 by Eco-Rénovons Paris +, a subsidy scheme for co-owned buildings to improve their insulation. The initial Eco-Rénovons plan targeted 22,500 buildings to be renovated by 2026. The City's Climate Air Energy Plan, adopted in 2018, has set targets for the renovation of 40,000 buildings by 2030, the renovation of 5,000 social housing units per year, and the renovation of one million housing units by 2050.

Grants can be awarded to homeowners for work on the private areas of their homes, or to condominium associations for comprehensive renovation work on the common areas of a building. The amount of the grant depends on a number of factors (income, nature of the work, scope of the project). To harmonize the different procedures to access grants from the municipality and the national state, a dedicated and independent agency was established in 2011 under the form of a non-profit association: the Agence Parisienne du Climat (Parisian Agency for Climate). This association acts as a single point of contact for homeowners. The agency also provides technical expertise for applicants with free support throughout the design and implementation of the project by an eco-renovation advisor appointed by the City of Paris. There is, as of now, no recourse for renters to directly benefit from grants for the renovation of the dwellings they live in. Current policies are aimed at homeowners which may create housing inequalities for renters if owners do not want to engage in retrofitting works.

The main difficulty that emerges in retrofitting work in Paris is the ownership pattern in the city. As Paris is very densely populated and mostly composed of apartments, multifamily buildings are the norm. If these buildings have historically been owned by single landlords such as institutional investors (insurance companies, banks, foncières, etc.), these have, over time, sold their housing to individuals and social housing providers (Guironnet et al., 2023), ending up with fragmented ownerships of buildings, usually under the form of a condominium.

As retrofitting works are usually engaged at the scale of a building, an agreement must be found between the different owners of the condominium to engage in such works. This raises many legal questions and technical issues as the financial means of some of the owners may not allow them to engage in works while the rest of shared property may. This appears to be a trade-off between density of the urban form and energy retrofitting, as retrofitting works in single ownerships do not raise these problems.

Densification

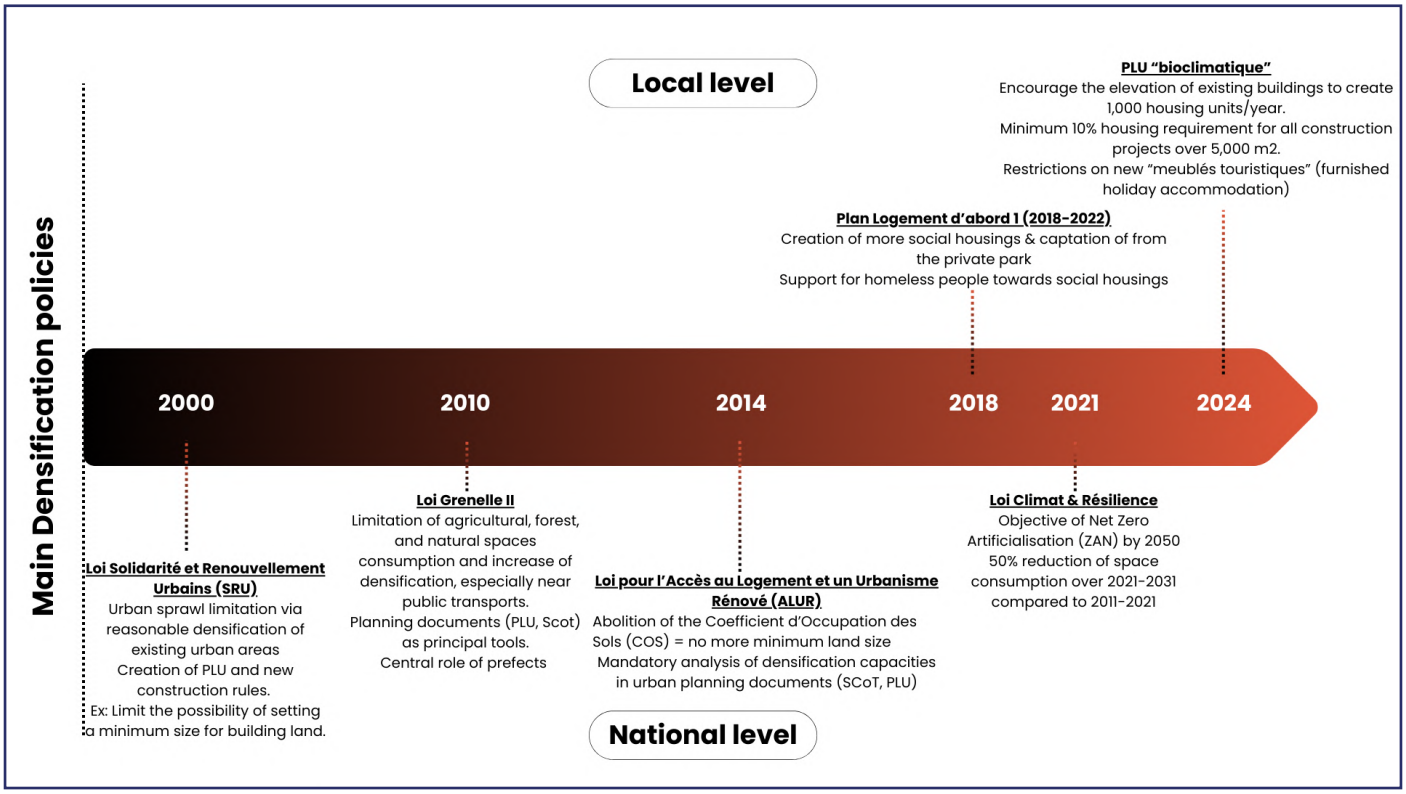

Fig. 2.1.3.8 Timeline of noteworthy policies related to densification at the Parisian and national levels.
(Source: Authors' own, 2025)

As the city of Paris is already very dense, few public policies aim at more intense construction within the city. Most densification policies therefore focus on repurposing already built land to accommodate more housing. However, it is noteworthy that population density is unequally distributed among the different areas of Paris, usually concentrated in poorer areas of the city, to the exception of the most peripheral ones, near the Boulevard Périphérique that concentrates social housing. It appears then, that there is a trade-off between the implementation of social housing and density of population.

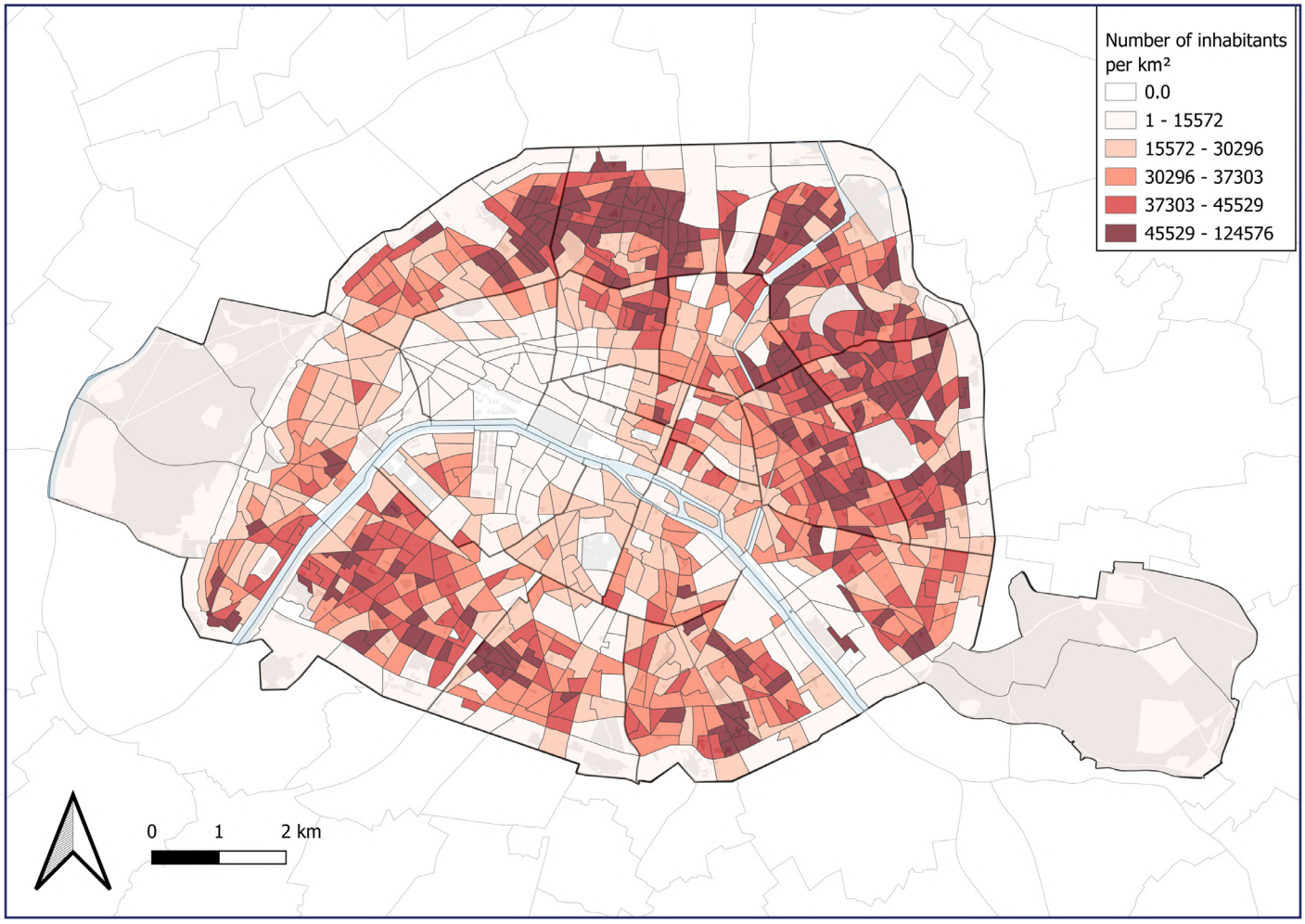

Fig. 2.1.3.9 Population density (number of inhabitants per km^2) by IRIS in Paris.
(Source: INSEE, 2021)

The latest bioclimatic PLU requires at least 10% of the surface area to be dedicated to housing for any construction project exceeding 5,000 m^2, indicating a will to increase the total housing stock whenever a massive urban project is realized. Rooftop extensions of eligible buildings are also promoted, with the plan aiming to create 1,000 housing units per year using this method. Finally, the city prohibits the creation of new furnished tourist rentals in areas where their number is deemed too high (notably in central Paris), in order to encourage owners to rent on the traditional private market.

However, urban densification in Paris is limited by the extreme scarcity of undeveloped land, the desire to create new green spaces (and thus reserve land for that use), and by land use regulations that prohibit the construction of buildings above a certain height (which varies by neighborhood). Thus, densification policies occur more at the metropolitan level, especially in link with the future stations of the Grand Paris Express (Touati, 2015). Paris is nonetheless recognized for its implementation of the "15-minute city" concept, promoted by the municipality.

Densification policies concentrate in Paris into the different ZACs (Zone d'Aménagement Concertée – Concerted Development Zones) in Paris. ZACs are "areas in which a public authority or a public institution with a right to do so decides to interve-

ne in order to develop the land or have it developed and equipped", they aim at concreting more efficiently public authorities and private developer, as well as focusing technical and financial resources around an urban planning project, based on a precise construction and public facilities program (housing, activities, facilities …) (Cerema, 2022). ZACs tend to count among the rare areas on which the population density has increased in Paris. Among these, Clichy-Batignolles, an ancient SNCF wasteland serves as a flagship for a densification policy, mobilizing some unused land to create a densely populated neighborhood. The map below shows the evolution of population density in Paris between 2009 and 2021 and we can observe on it that, if Paris generally lost in density, ZACs tend to be areas where population density has increased.

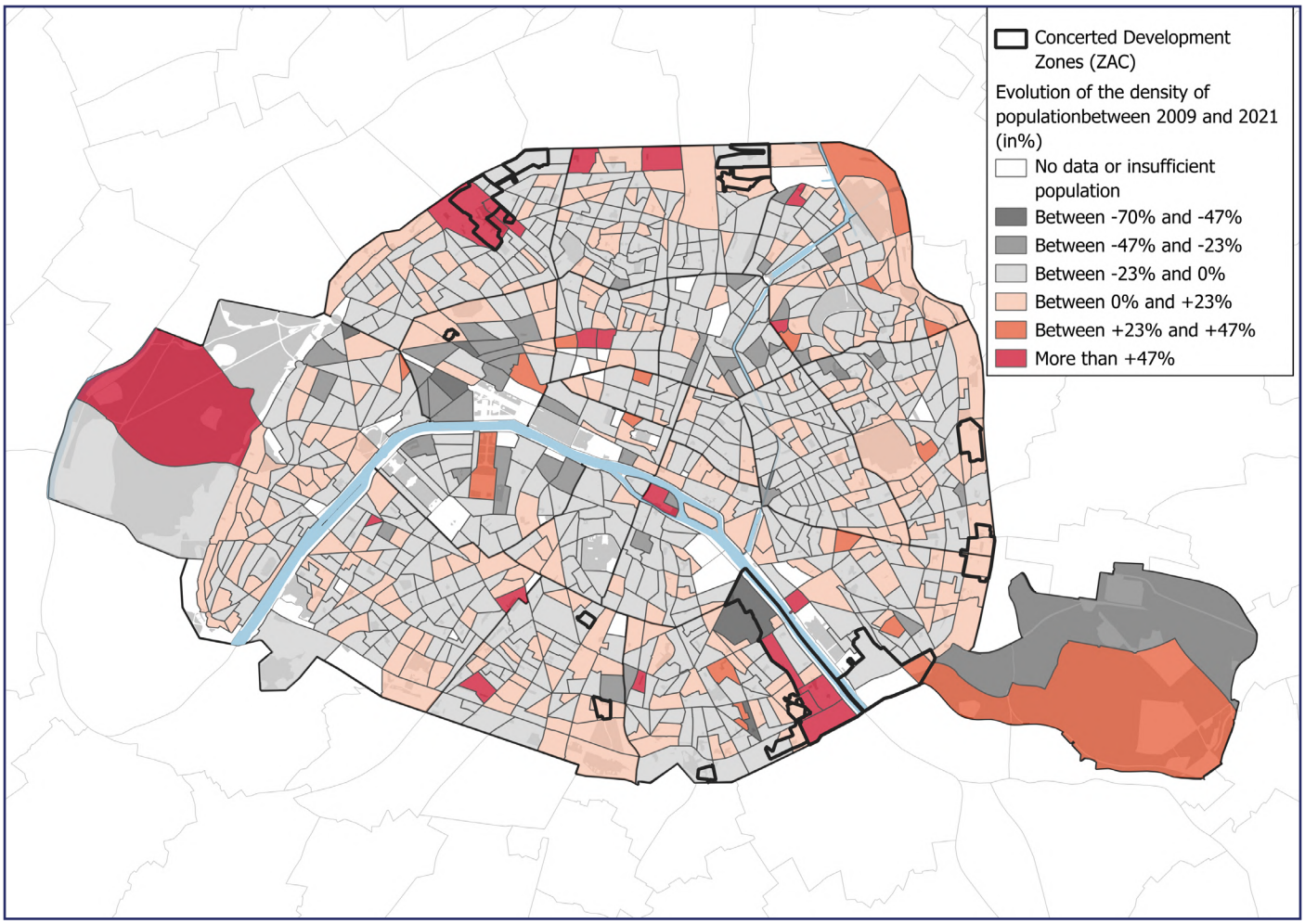

Fig. 2.1.3.10 Evolution of population density (number of inhabitants per km^2) by IRIS in Paris between 2009 and 2021. ZAC represented as in 2022.
(Sources: INSEE, 2009, 2021, Paris Data 2022)

2.1.4 A focus on specific districts

The case of Clichy-Batignolles is relevant for analyzing how a municipal project can address the four key themes of our research: nature-based solutions (NbS), energy retrofitting, densification, and housing inequalities. It is significant because it serves as a flagship example of an eco-district in Paris, illustrating the complex trade-offs that arise when trying to meet environmental goals while ensuring social inclusion. The project combines high-density development, ambitious energy performance, and substantial social housing provision, all within a constrained urban site. However, it reveals contradictions in achieving social mix and spatial equity, making it a rich case for examining how urban sustainability policies interact with housing inequalities. This strategic and emblematic nature of the project makes its analysis particularly interesting to draw a more general conclusion on the nature of urban projects in Paris.

DISTRICTS	CLICHY-BATIGNOLLES
Name of the project	*ZAC Clichy-Batignolles*
Time frame	2007-2024
EEPs involved	- Nature-based Solutions - Densification
Actors involved	- Paris Métropole & Aménagement - Urban Planning Agency TVK - Jacqueline Osty (landscapist of the park) - Many private developers

Fig. 2.1.4.1 Summary table of fieldwork in Paris.

Located in the 17th arrondissement of Paris, Clichy-Batignolles spans 54 hectares on the site of a former SNCF rail yard. It is framed by major transport infrastructure: train lines departing from Gare Saint-Lazare to the south and the périphérique ring road to the north. Such types of urban development plans over unused railway yards are a common use of land in modern urbanism and structured by the fact that land, here, is publicly owned, then easily mobilized by the municipality (Adisson, 2017). As phrased by Adisson: "On the one hand, local governments perceive these sites as underused spaces that splinter the urban fabric and need to be 'regenerated' and connected to their urban environment. On the other hand, such properties are seen as land resources that can contribute to multifarious policy objectives, from economic development to local welfare, social diversity, sustainable development and mobility, etc." (2017, p.8).

The location's strategic potential became apparent at the end of the 1990s, as the availability of large tracts of land and the decline of railway could allow the building of an entire neighborhood (Cremaschi, 2019). Envisioned in the early 2000s and officially established by a municipal council resolution in 2007, the ZAC of Clichy-Batignolles was initially intended to host the Olympic Village, should Paris win its bid for the 2012 Games. Although London was ultimately selected, the project continued.

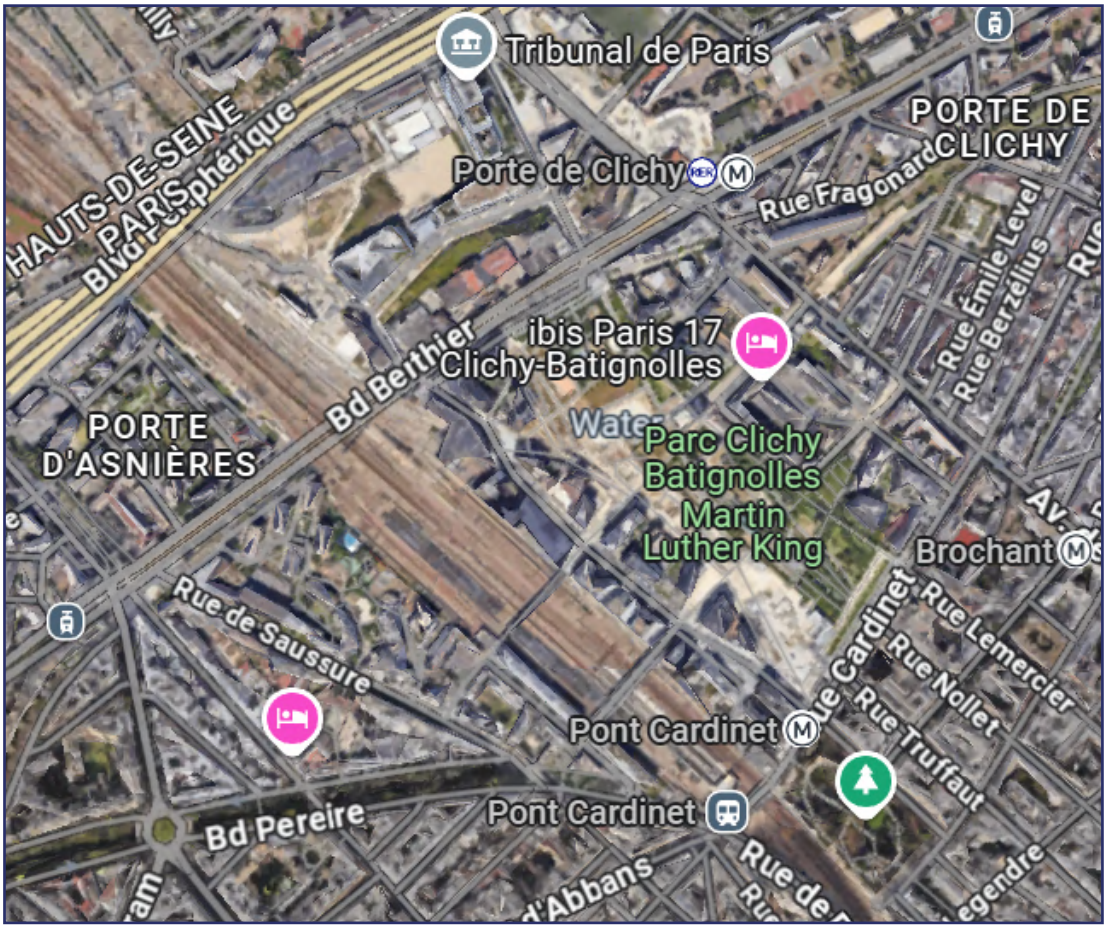

Fig. 2.1.4.2 Satellite view of Clichy-Batignolles.
(Source: Google Maps, 2025)

Fig. 2.1.4.3 The Clichy-Batignolles neighborhood.
(Source: Personal archives, 2025)

Designed from the start as an eco-district, it had to balance the constraint of a tightly bounded site with the ambition of high-density residential development around a 10-hectare green space: the future Martin Luther King Park. The choice of articulating the neighborhood around a park was one of the design features that became part of the strategic dimension as an object of attractiveness for the whole metropolitan area (Cremaschi, 2019).
Completed in 2025, the district now includes 3,400 housing units (50% social housing, 30% homeownership, and 20% intermediate housing), accommodating around 7,500 residents, as well as 140,000 m^2 of office space concentrated in high-rise towers surrounding the park. The height of buildings, and thus, their density in this area could only be achieved through a derogation to planning regulations, granted by the municipality in 2009 (Cremaschi, 2019). It then appears that densification of the area could only be done via trade-offs with other elements most notably landscape and architectural harmonization.

The project was initiated by the municipality of Paris who bought the land to the SNCF and created a dedicated société publique locale (SPL), Paris & Métropole Aménagement that was tasked with ensuring the conduct of the project. A SPL is a public limited company owned exclusively by French local authorities whose purpose is to carry out the tasks entrusted to it by the latter under a public procurement contract. Paris & Métropole Aménagement then became in charge of selecting the private developers, architects and landscapists that would be building the neighborhood. The company also chose the urban planning agency TVK to create the masterplan for the area.
Labelled EcoQuartier Level 4 certification, the neighborhood is recognized for its energy performance, insulation quality, and photovoltaic production, which covers 40% of its energy needs. The municipality highlights that the district's energy consumption is significantly lower than the rest of the city: just 15 kWh/m^2/year compared to a Paris average of 167 kWh/m^2/year (APUR, 2007). These results are promoted both as an ecological (by reducing resource consumption) and a social policy (by lowering energy bills for the many social housing residents). From the outset, the project was framed around energy excellence, with integrated planning and a focus on renewable energy sources (Tardieu, 2017). Low energy consumption is achieved through high-quality construction, renewable energy generation, and a high-density layout that allows for shared energy use at the building level.

The project is also a flagship for biodiversity with a rich fauna and flora developed around a wet ditch and a biotope basin in the park (Cremaschi, 2019), as well as densification in Paris. Built on former industrial land, it aimed to densify a previously uninhabited edge of the city. The municipality embraced both the residential density and the architectural break from traditional Parisian design, symbolized most notably by the 160-meter-high Cité judiciaire de Paris, designed by the architect Renzo Piano and partially vegetalized.

In a city where land is extremely scarce and the housing crisis acute, the municipality sought to maximize use of this already-artificialized site, well served by public transit (Metro lines 2, 3, 13, 14; RER C; line L of the Transilien; tram T3b). The inclusion of a large green space was intended to offset the negative externalities of densification and to respond to a broader lack of green areas in Paris.
Yet according to a local resident and president of the association Les Jardins Suspendus des Batignolles, the new Martin Luther King Park has

not made up for the area's green space deficit as it was planned (Piganiol, 2021) due to the simultaneous arrival of new residents. As she puts it: "Martin Luther King Park is packed." In this sense, the implementation of a new green space appears to be a zero-sum game: the additional population increases the need for green coverage, which the park helps meet, but without improving conditions on the larger scale of the arrondissement.

While the neighborhood's densification meets environmental goals (by limiting urban sprawl and enabling collective energy efficiency), it also contributes to the creation of a socially stratified urban space on a smaller scale. Parisian eco-districts are often promoted by the city as models for combining housing accessibility with high environmental standards, in part because of their large share of social housing: at least 50% in each project (Machline et al., 2018). In districts like the 17th, which historically have little social housing, this is often framed as a step toward stronger social mix (Clerval, 2016). But Clichy-Batignolles complicates that narrative by incorporating design features that undermine genuine social mix.

The 50% social housing target was a non-negotiable demand from the city, yet it was only accepted by developers in exchange for extremely high prices on the open-market units of the project, enabling them to preserve their profit margins (Piganiol, 2021). While social housing units offer below-market rents, the privately owned units are high-end properties targeting wealthy, environmentally conscious younger households, and thus are inaccessible to the area's working-class population. Moreover, the distribution of social housing types is questionable: while 71% of requests for social housing in the arrondissement correspond to PLAI (the most affordable category), only 20% of the units in Clichy-Batignolles meet this standard (Piganiol, 2021). By contrast, PLS units, aimed at middle-income households, make up 30% of the social housing stock, despite lower demand.
Design elements in the neighborhood also serve to reinforce social boundaries between high-income homeowners and residents of social housing. Although facades often appear identical, the interiors, materials, and shared services (entrances, elevators, parking) reveal persistent hierarchies beneath the surface. Social housing is also largely scattered across the neighborhood, either in distinct lots or in minority segments within mixed buildings. This dispersion is intended to avoid visible concentrations of poverty, distributing it more evenly across the district (Piganiol, 2021). Additionally, the most desirable plots (e.g., with park views or close to amenities) are often reserved for private housing even though the city has negotiated a few exceptions.

During our site visits, we also noted the strong segmentation within Martin Luther King Park itself: shaded, tranquil areas cater to relaxation, while more open, active zones (such as basketball and football courts) are frequented mainly by youth and associated with working-class groups. According to Piganiol, this layout helps maintain the illusion of a bourgeois neighborhood, by offering "public spaces that align with the aspirations of upper-class residents" (Piganiol, 2021).

The critical trade-offs between our three studied EEPs and housing inequalities in the case of Clichy-Batignolles then appear as such:

- The area is a flagship for densification in Paris as it successfully mobilized underused railway land to build a substantial number of housing. Nonetheless, this has only been done to the cost of sacrificing architectural and landscape

harmonization through derogatory measures.

- The implementation of a large park in the middle of the neighbourhood serves as a compensatory measure for the densification of the area, bringing easy access to green spaces in the neighbourhood. However, according to our interview with a local resident it did not suffice to compensate for the lack of green spaces at a larger scale of the arrondissement as new populations were installed, showing a trade-off between densification and NbS.
- Furthermore, despite some attempts by the municipality, the plots giving the easiest access to the park were reserved for the private market, showing a trade-off between NbS and housing inequality.
- The implementation of an important share of social housing in an eco-district marked by quality insulation is a success. Nonetheless, the distribution of plots and the general design of the neighborhood shows patterns of social segregation as developers would only build such a number of quality social housing if they can sell or rent the rest to high-income households. This pattern is also marked in the distribution of the different types of social housing that tends to avoid creating the "most social" housing (and the less profitable) despite a strong demand.
- The results of the neighborhood appear then as a place where more precarious households can find affordable and energetically efficient housing near a park in a densely populated area but with the trade-off of a socially separated neighborhood and an over-occupancy of certain areas of the park.

2.1.5 The role of grassroots organizations in tackling housing inequalities

Our work in Paris has led to interview representatives for three associative organizations: the Fondation pour le logement des défavorisés (ex-Fondation Abbé Pierre), the Droit au Logement association and the association Les Jardins Suspendus des Batignolles" but only the latter is acting solely at the district scale. The two other interviews we conducted in Paris will then be mobilized later in the report.

Les Jardins Suspendus des Batignolles

"Les Jardins Suspendus des Batignolles" is an association founded in 2021 and dedicated to the promotion of a greening project in the Batignolles neighborhood towards inhabitants and policymakers. The neighborhood is indeed split in two by a trench occupied by railways. The aim of the project is to cover this trench by putting three hectares wide vegetalized "roof" over them. The association engages in lobbying towards public authorities as well as technical expertise to prove the feasibility of the project.

We chose to interview with this association as it is a citizen-based organization ensuring advocacy for a vegetalization plan to counteract the lack of green spaces in the 17th arrondissement linking it with the densification that occurred with Clichy-Batignolles. Interviewing this association constituted an opportunity for us to dig more deeply into greening policies near the densified neighborhood of Clichy-Batignolles and observe dynamics at the larger scale of the arrondissement. Moreover, it provides us with an example of the effect that greening projects may have on the housing market, when they are envisioned but not yet realized.

The 17th arrondissement, especially the Batignolles area is crossed by an open air trench on which several train lines go through. This trench is seen by the president of the association as an "impassable border" that splits the neighborhood in two parts. The area used to have covered rails, until 1921, when an accident happened in the tunnel beneath it, leading the SNCF to demolish the roof above it. According to the association, such an accident could not occur again with new railway technologies, leading them to advocate in favor of a green coverage of the railway. Greening in that area would help tackle urban heat island effect in a dense zone and compensate for the lack of green spaces in the area. It is also emphasized by the association as a way to reduce noise pollution created by the trains, continuously circulating from 5AM to 1AM.

Thus, the association aims at tackling a certain form of housing inequality: the negative externalities of density and densification that creates limited access to green spaces, urban heat island, and, in this case, noise pollution. They promote the creation of a green space both as a way to connect the two sides of the neighborhood and as an object of urban justice which would distribute access to green areas more equally among the different neighborhoods of Paris.
This plan of covering the railway with 3 hectares of green space is largely supported on the political scene, with, according to our interviewee, a consensus between the parties (both left-wing and right-wing ones) since at least the 2001 municipal election. The main opposition then comes from the SNCF which argue that the project would be technically too difficult and too costly to be realized.

If the vegetalization plan supported by "Les Jardins Suspendus des Batignolles" is present in the Parisian PLU since 2001, the project does not progress and no deadline was proposed. The association then acts as citizen pressure to show the local support for the project. As the president of the association phrases it : "Politicians and decision-makers need to have the feeling of popular support to engage in such projects". They also emphasize their role as citizens rather than politicians, arguing for more citizen participation in the greening of Paris and, as the project, if conducted, should take between 15 and 20 years for its creation, aim to be a stable force for continuity across electoral cycles.

The association currently includes 25 active members (starting from 4 in 2021), with support from around 80 sympathizers and several urban greening experts. They act as advocates for the greening project over the railways towards policymakers and are present in local associations' gatherings to raise awareness about it. A petition they launched to ask for the realization of the green covering project has gathered 19,000 signatures, reflecting strong public interest.
Furthermore, the association also engaged in an independent project costing with an urban planner who estimated the total budget at 200 million euros. Catherine Jagu proposes to finance it with a public-private partnership involving biodiversity certificates and carbon credits.

It should be noted that the interviewee mentioned certain oppositions that were raised against the project by locals. The most eminent one being the fear of increased housing prices after the implementation of the project, with the risk of "green gentrification". She answers that problem by saying that prices already increased drastically under a process of gentrification around the railway

trench, notably because real estate agents would mention the project of green coverage to potential owners. She also emphasizes the fact that no buildings shall be constructed on the green roof, meaning no potential for profit-making over it as, according to her: "what makes a city profitable is concreting".

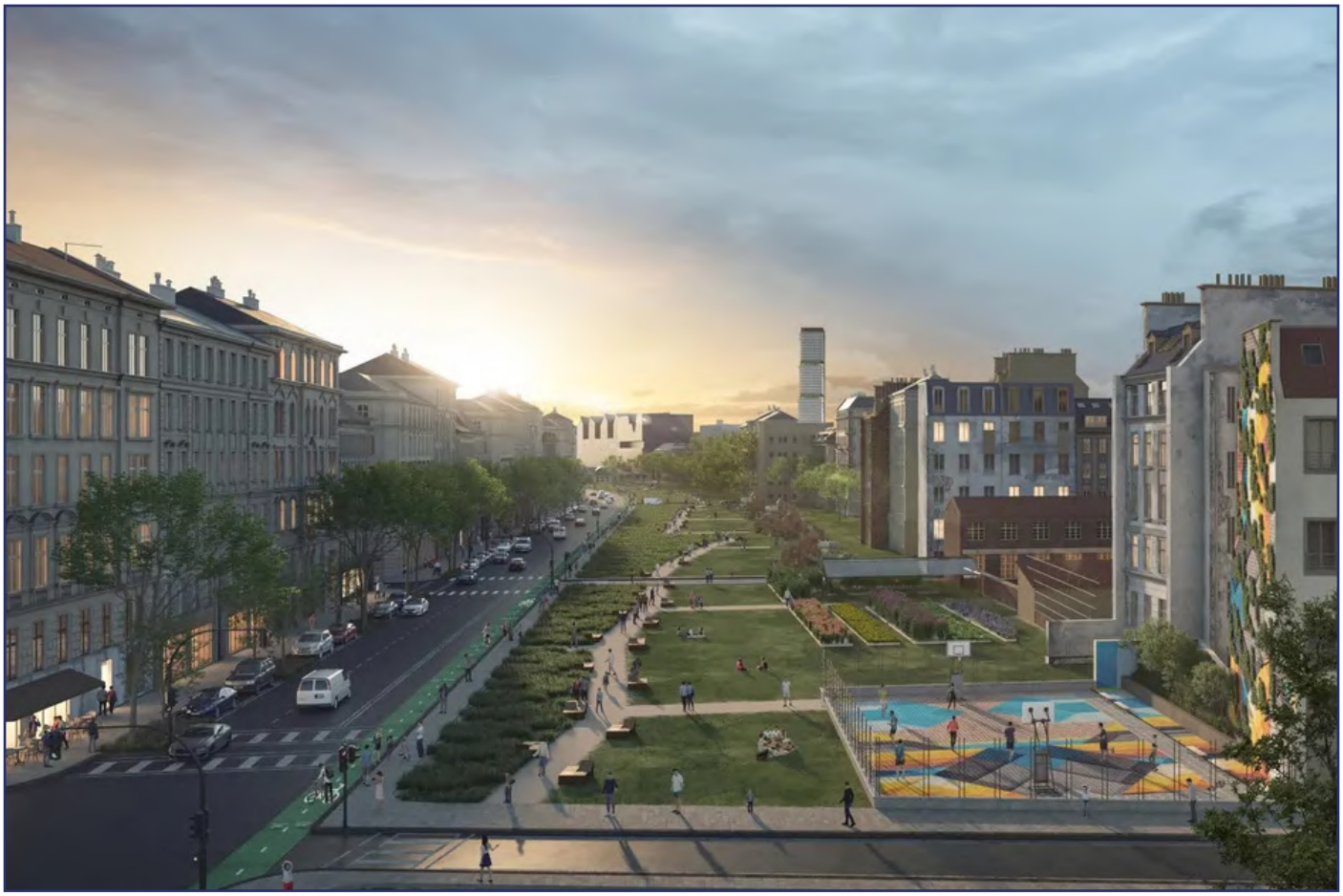

Fig. 2.1.5.1 Modeling of the project defend by Les Jardins Suspendus des Batignolles.
(Source: Les Jardins Suspendus des Batignolles' website, n.d.)

	Les Jardins Suspendus des Batignolles
Association	- Created in 2021 by a collective of citizens - Now counts around 25 active members and 80 sympathizers
Actions	- Advocacy in favor of a new green space over the railway trench in the Batignolles neighborhood - Discussion with policymakers and other associations to support the project - Community mobilization at the neighborhood scale - Provision of technical expertise around the project - Creation of a petition to show citizen support
Claims	- Greening is an important element in the struggle against climate change consequences (notably urban heat island) - The Batignolles neighborhood is very dense and in need of an accessible green space - The project they support is both technically and financially viable
Relationship to municipal authorities	- Good relationship with the mayor of the 17th arrondissement who support their claim - Interest in the project by the central municipality but the association has little influence on them and do not succeed to convince them to launch the project

Fig. 2.1.5.2 Summary table of grassroot initiative met in Paris and its actions.

2.1.6 Trade-offs and relationships between green transition initiatives and housing inequalities

Based on our overview of the city, its housing market and EEPs, case studies and interviews with grassroots, this part provide an analysis of the trade-offs and relationships at the municipal level between our studied EEPs and housing inequalities.

Social housing, but for whom: distributive inequalities and trade-offs in tackling housing affordability issues

The Parisian municipality has made social housing the cornerstone of their policy to fight against housing inequality (Clerval, 2016). This investment in social housing comes with successes in the number of units created and a development of a social stock outside of the neighborhoods that historically concentrates it. This goes along with a broader policy aiming at increasing social mix in Paris based on more equal access to urban amenities and central areas of the city.

Nonetheless, at a finer level, we observe lacks in this policy. The construction of social housing often happens through the renovation or demoli-

tion of de facto social housing in historically working-class areas of Paris (Clerval, 2016). De facto social housing is here understood as a private market rental housing that can be affordable for low-income due to their poor quality and the fact that they can be over-occupied. They play a de facto role of social housing, as they serve as housing for lower income people despite not being an institutional social housing.

Public social housing brings access to affordable housing for low-income, but they are usually larger than the de facto social housing, well insulated and cannot be legally over-occupied[1], meaning that the total population that can live in a building converted to social housing usually decreases when the comfort increases, which appears as a trade-off between density (in this case undesired and unplanned by public authorities) and housing inequality.

This is reinforced by the inadequate relationships between PLAI demands and offers which creates an exclusion from poorer people that would need this type of "strongly social housing" to live in Paris. Lower income people cannot access PLAI housing because of the lack of stock while being excluded from higher levels of social housing (PLUS and PLS) because dwellers must ensure they will be able to pay the rent. In sum, the social housing policy cannot succeed in maintaining very low incomes inside the Parisian territory. At the same time, the municipality has tried to attract middle-class people through the implementation of PLS in historically poor neighborhoods to ensure social mix, leading to what have been analyzed as gentrification by several researchers (Clerval, 2016).

An unequal access to EEPs initiatives in Paris

The issue of trade-offs and territorial inequality in the access to the co-benefits (i. e. the additional outcomes from ecological projects that benefit society more broadly such as, for instance, reduced heat and air pollution due to increased green coverage) of EEPs can also be seen in other topics. If, in general, most of the building stock of Paris is aging, certain areas are disproportionately affected by thermal sieves due to their particularly old building stock creating uncomfortable housings. Despite this need, energy retrofitting interventions are made difficult in Paris by its strong density and its form of shared ownership implying procedural complexities.

Furthermore, Paris is dense, and thus mineral, as it needs to accommodate such a number of inhabitants on a relatively small surface (INSEE, 2025) in a trade-off between historic densification and NbS. The access to green space then becomes rare and desirable for many but also strongly needed by the populations to reduce urban heat island and air pollution. Nonetheless, the private market, with its high prices, still regulates most of the housing market, and thus access to urban amenities, including access to green areas, and nature-based solutions. We observe a concentration of higher income around the important parks of the capital and a reinforcement of the presence of higher classes around them in most cases as seen on Figure 2.1.6.1., showing the evolution of the share of professionals and managers by IRIS between 2009 and 2021. We also observe on this map that the historically working-class neighborhoods in Northern and Eastern areas of the city concentrate the IRIS where the increase is the most significant. We should keep in mind that the share of professionals and managers had already

1 However, more recent work from Clerval & Wojcik (2024) shows that this is increasingly the case, with people subrenting some rooms in social housing.

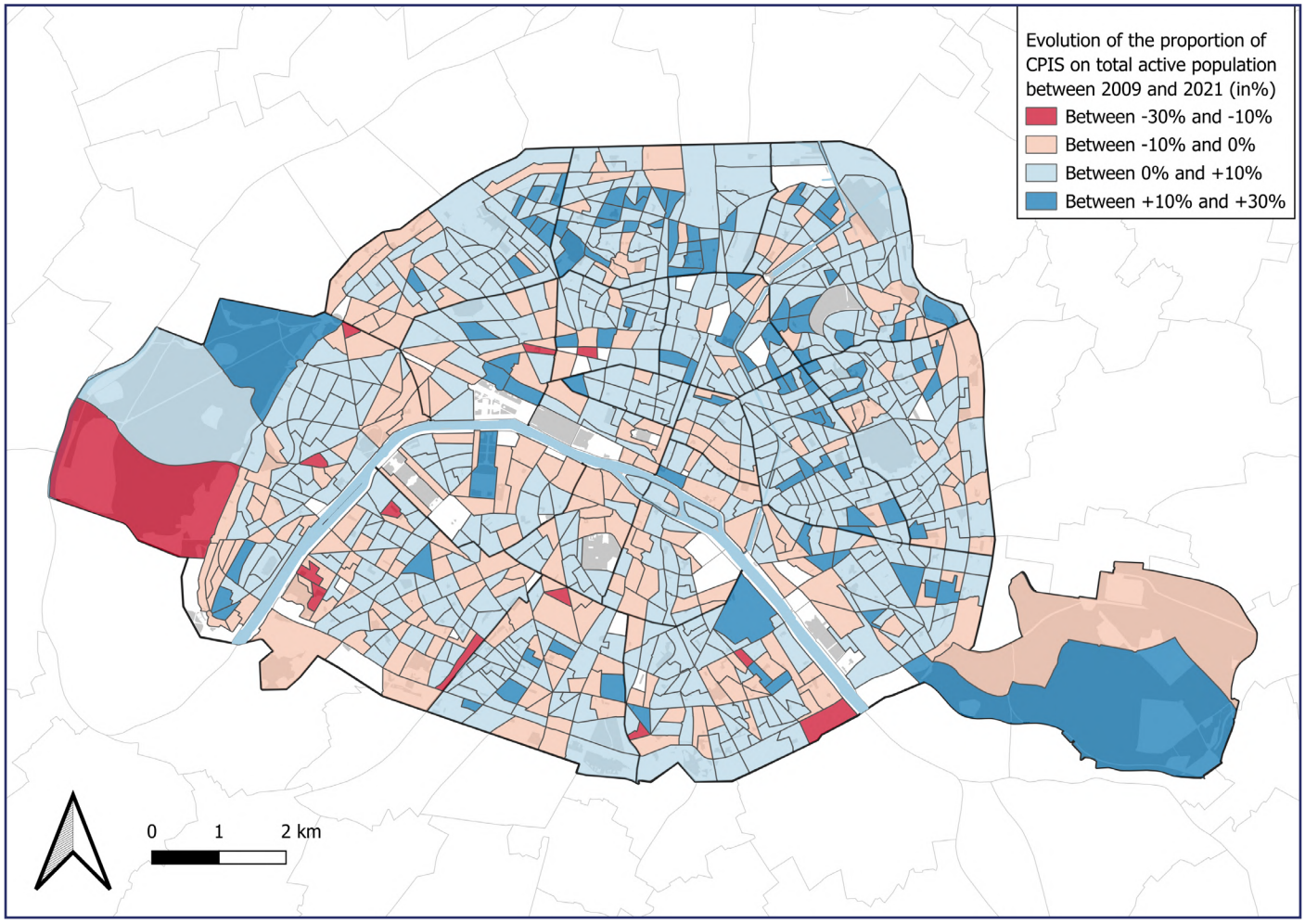

Fig. 2.1.6.1 Evolution of the number of Cadre et Professions Intellectuelles Supérieures (CPIS - managers and professionals) between 2009 and 2021.
(Sources: INSEE, 2009, 2021)

increased in Paris, especially in the North and East by 2009 compared to what it was in the 1980s (Clerval, 2016).

The same goes for citizen-led greening policy as illustrated by the "Du Vert Près de Chez Moi" initiative, which aims to encourage residents to identify and propose sites for greening interventions in their neighborhoods. The intervention tends to concentrate in areas where the proportion of higher-classes is increasing and are very scarce in the peripheral areas of the city where the proportion of social housing is very strong, which may be perceived as a form of housing inequality in the access to greening. Furthermore, our interviews tend to prove the strong reactivity of the private housing market to the implementation of nature-based solutions. In the case of the project of a green coverage over the railways in the Batignolles neighborhood pushed by Les Jardins Suspendus des Batignolles, and according to its president the mere potentiality of greening in the neighborhood has led to an increase in housing prices while the project is not even officially launched by the municipal government.

The case of Clichy-Batignolles also tends to prove that such types of urban projects attract wealthier households and create patterns of social exclusion in the newly built areas undermining housing equality even if the social housing share is strong. Furthermore, according to our interview with a lo-

cal resident, the implementation of a large park in the process can balance the arrival of an important number of new inhabitants but is insufficient to correct the lack of green spaces at a larger scale.

As a conclusion for the Parisian case, we then draw the following conclusions:

- The Parisian municipality has strong policy for social housing that still lacks integration with demand, and an ambitious regulation of the private market even though even though it is widely disregarded by owners
- The implementation of social housing often intervene as a form of de-densification with a demolition of affordable units for larger social housing dwellings
- The city is marked by a strong density that makes greening both very complex and very needed. Densification plans that add greening to their design allow for more livable neighborhoods but cannot correct the larger lack of green spaces in the city
- The old building stock needs an ambitious policy in favor of energy retrofitting. Yet, it is struggling with legal complexities, notably the share of co-ownerships of buildings in the city that is partly created by the density of housing.
- More generally, the private market seems very reactive to the implementation of EEPs in the city, usually creating social exclusion in the process as observed in the case of Clichy-Batignolles and with the project of green coverage above the railways nearby.

2.2 ORLÉANS

2.2.1 Overview of the city's main dynamics

A General Overview of Orléans

Orléans is a commune and the préfecture of the Loiret department of the Centre-Val-de-Loire region located approximately 120 km southwest of Paris. In 2021, 116,617 were living in the municipality (INSEE, 2021), making it the most populated city in the Loiret department behind Tours (see Figure 2.2.1.1). The city covers 27,48 km2 and is divided in two by the Loire river, resulting in a population density of 4,234 inhabitants per square kilometer. The population is predominantly aged between 15 and 29, although it has slightly aged compared to 2010 (see Figure 2.2.1.2).

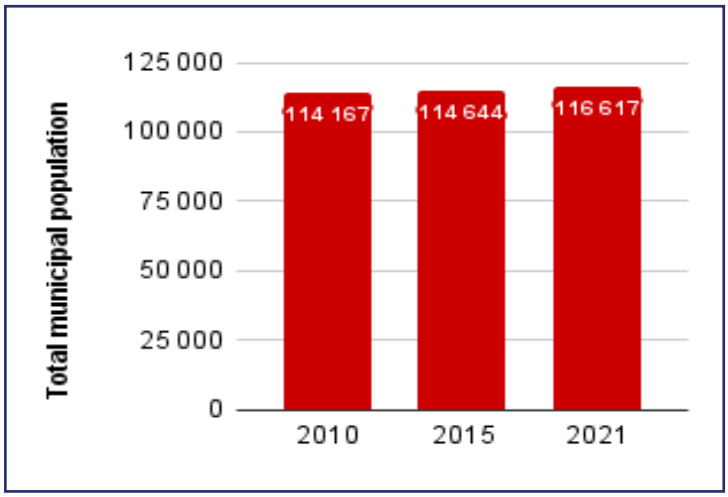

Fig. 2.2.1.1 Evolution of Orléans' total population in 2010, 2015 & 2021. (Source: INSEE, 2021)

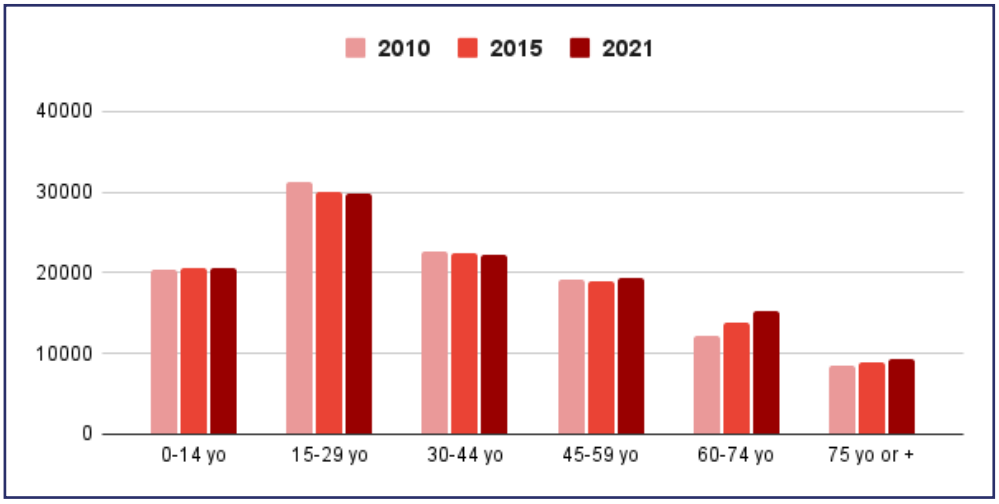

Fig. 2.2.1.2 Evolution of Orléans' population by age repartition in 2010, 2015 & 2021. (Source: INSEE, 2021)

The metropolitan area of Orléans gathers twenty-two cities (see Figure 2.2.1.4). The commune's land use, as revealed by the European biophysical land cover database Corine Land Cover (CLC), shows that 87.8% of soils were artificialized in 2018 (see Figure 2.2.1.3). The detailed breakdown in 2018 is as follows: urbanized areas (65.1%), industrial or commercial areas and communication networks (18.7%), artificial green spaces, non-agricultural (4%) inland waters (3.6%), arable land (3.2%), grass-land (2.2%), heterogeneous agricultural areas (1.9%), forests (0.7%), open spaces, with little or no vegetation (0.4%), permanent crops (0.2%).

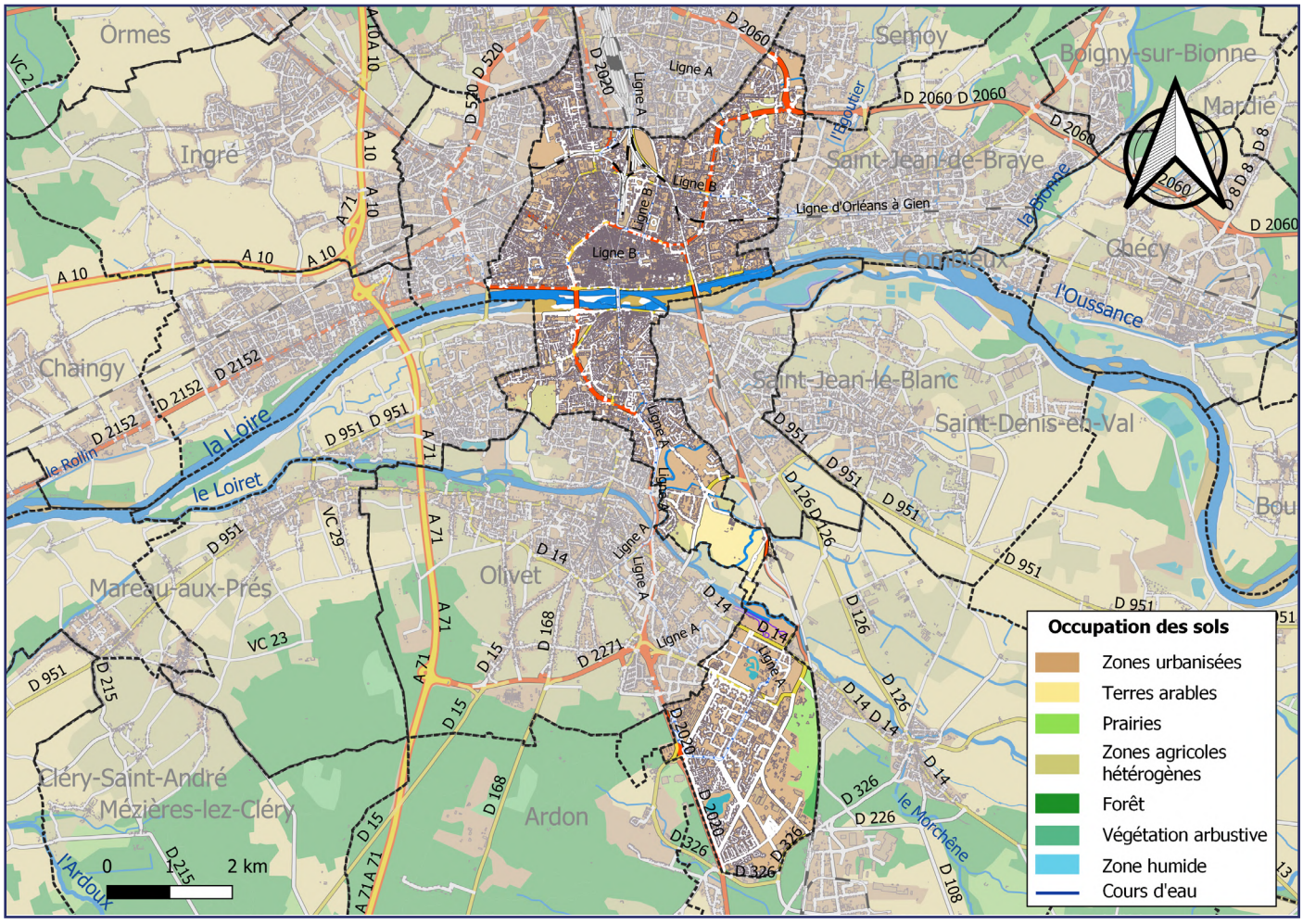

Fig. 2.2.1.3 Land use in Orléans in 2018.
(Source: Corine Land Cover, 2018)

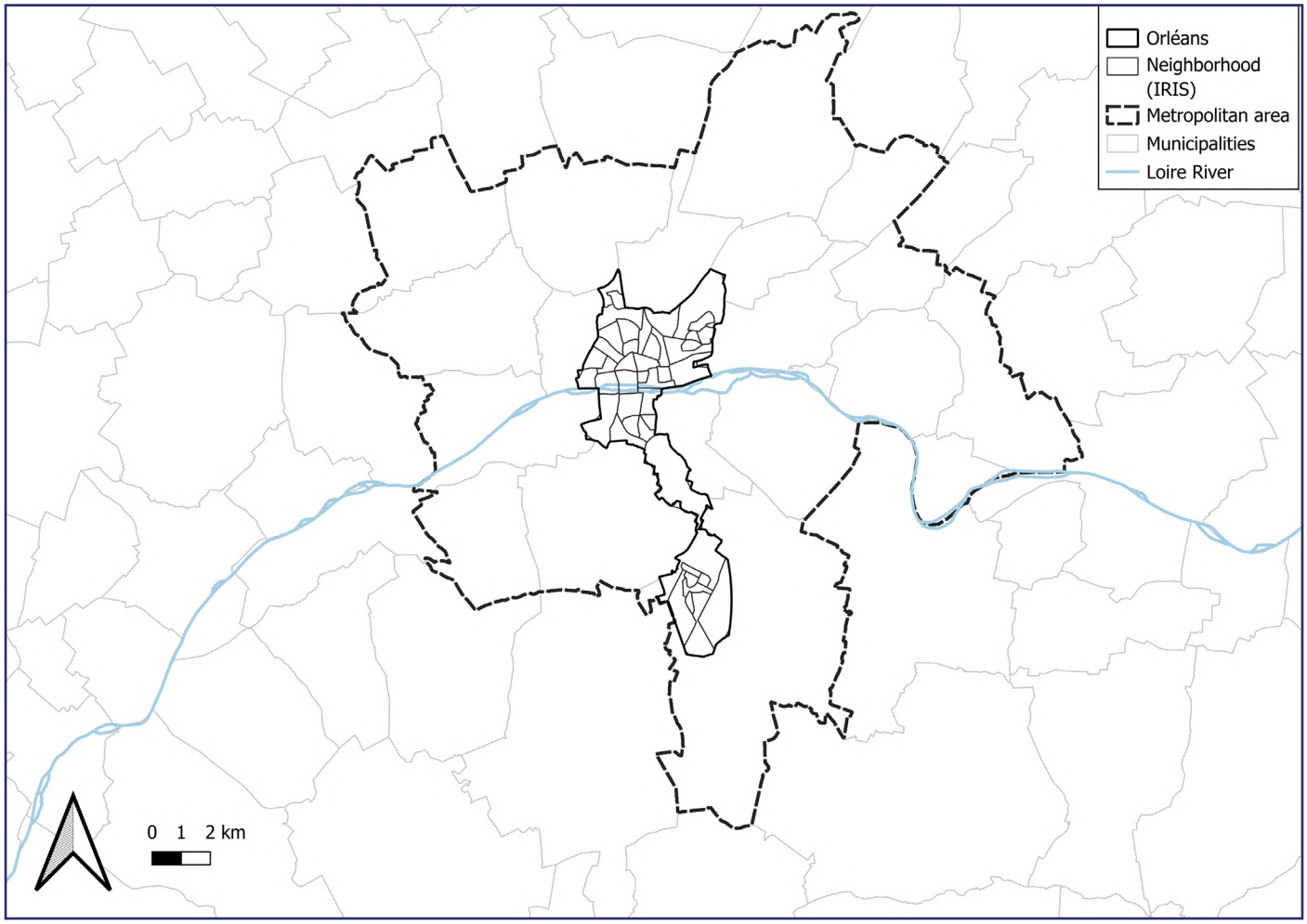

Fig. 2.2.1.4 Map of Orléans municipal borders, IRIS division.
(Source: INSEE, 2021; OpenStreetMap, 2025)

Political and administrative system

As of 2025, Orléans remains politically anchored to the centre-right. Since 2015, the city has been governed by Serge Grouard (Les Républicains, a right-wing political party), a former member of the National Assembly (2007-2017) and previously mayor from 2001 to 2015, before briefly stepping down for Olivier Carré (La République En Marche, a political party that positions itself as centrist). Grouard returned to office in 2020, winning the second round with 40,29% of the votes. This represented about 10% more than the two other competing lists in the second round. However, this result must be nuanced, as 40.29% corresponds to only 36.41% of registered voters who actually cast a ballot, meaning he was elected with the support of just 14.66% of the total electorate. He has since reinforced a conservative approach to urban policy, particularly on security and public spending. While the city of Orléans has a history of moderate political leadership, left-wing forces remain active locally, especially on issues related to housing and climate adaptation. They engage through concrete actions like opposing gentrifying urban projects and advocating for more social housing via municipal council proposals, grassroots organizations, and public campaigns against environmentally harmful developments.

Administratively, Orléans is the seat of the Orléans Métropole, an intercommunal structure of

twenty-two municipalities, tasked with managing transport, urban planning, and economic development at the metropolitan scale. The Métropole is responsible for strategic planning in areas like transport, urban development, housing, and climate adaptation across the entire metropolitan area, while the municipality focuses on putting these policies into action at the local level through permits, public works, and neighborhood-level projects.

At the national level, Orléans is part of three different constituencies: Orléans-Saint-Marceau for the first one (first constituency), where deputy Stephanie Rist from Ensemble pour la République (a political party that positions itself as centrist) was elected in 2022 and reelected in 2024, Orléans-Bannier for the second one (second constituency), where deputy Emmanuel Duplessy from Les Ecologistes (a left-wing political party) was elected in 2024, and Orléans-Bourgogne for the third one (sixth constituency) where Richard Ramos from Les Démocrates (a centrist political party) was elected in 2024. However, in the three other constituencies that make up the Loiret—excluding Orléans—the Rassemblement National (a far-right political party) achieved historic results. Although only one RN deputy was elected, the candidates in the other two constituencies came very close to winning, which highlights broader trends at the national level where inhabitants from urban areas tend to vote for far-right political parties more.

The Rise and Fall of Orléans' Urban Importance

Orléans has seen a significant decline in its political and economic importance throughout history. In 1801, it was the 12th largest city in France, but by 1914, it had dropped to 29th place, and today it ranks 34th (INSEE, 2023). To understand how the city developed and how its neighborhoods are organized, a look back at history is necessary. The Gallo-Roman city was built following the classic orthogonal plan, and its current roadways still reflect major Roman routes, such as Rue de Bourgogne and Rue de la Poterne (Chevallier, 1997). Historically, Orléans is renowned for being the site of Joan of Arc's victory during the Siege of Orléans, a pivotal moment in the Hundred Years' War between England and France from 1428 to 1429 (Pernoud, 1962). The city also holds royal significance, as it used to be the residence of several French kings throughout history. Economically, the city saw exceptional growth during the second half of the 17th and 18th centuries, largely driven by maritime trade along the Loire River, with goods being transported from Nantes (Braudel, 1982). This period marked the rise of Orléans' bourgeois identity, and the concentration of political and administrative power near the Cathédrale Sainte-Croix d'Orléans (today the city's iconic symbol) reflects this prosperity, such as the prefecture, the town hall, the courthouse, and the military headquarters (Pernoud, 1962).

If the city was so hegemonic three centuries ago, its decline can be explained by several factors. During the 19th and early 20th centuries, the industrial revolution led to a shift in economic centers. Major industrial hubs, particularly in the north and east of France, began to outpace smaller cities in terms of industrial output and commercial activity (Braudel, 1982). The growth of railways and advancements in transport made previously smaller cities more connected to global trade routes, diminishing the importance of cities like Orléans that were more reliant on river-based trade (Braudel 1982). In the meantime, the rise of larger metropolitan areas due to rapid urbanization, especially Paris, led to a concentration of resources and opportunities in those cities (Braudel, 1982). This is

why, until recently, Orléans had a less favorable reputation, a sentiment we could echo during our field visit, where inhabitants mentioned how they felt the city was losing its identity and struggling to keep up with larger urban centers.

2.2.2 The landscape of housing inequalities

As of 2021, the city of Orléans had 67,376 dwellings, while the wider metropolitan area accounted for 148,662. In the municipality, 86,5% of them were main residences, 3,5% were secondary housing and 9,9% of the dwellings were vacant (see Figure 2.2.2.1). 51% of the households are owners of their residence in the municipality, 29% are private renters and 19% are social housing residents (see Figure 2.2.2.2). The housing stock includes 51,493 apartments and 15,134 houses (respectively 76.4% and 22.5% of the housing stock). 74.8% of the main residences were built before 1990, highlighting the prevalence of older housing. These sources are drawn from the 2023 Local Housing Program (Programme Local de l'Habitat, PLH).

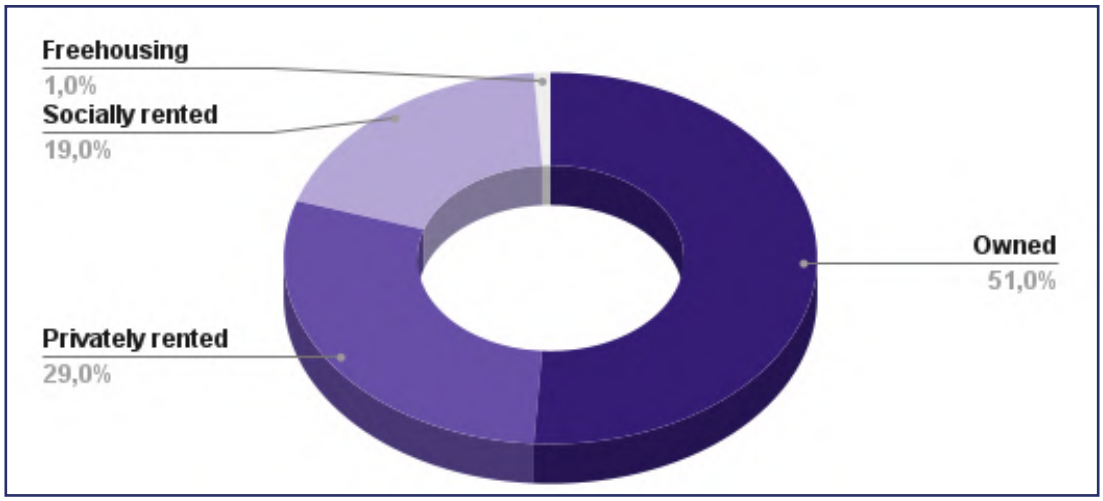

Fig. 2.2.2.1 Tenure type among main residences in the municipality of Orléans in 2021.
(Source: INSEE, 2021)

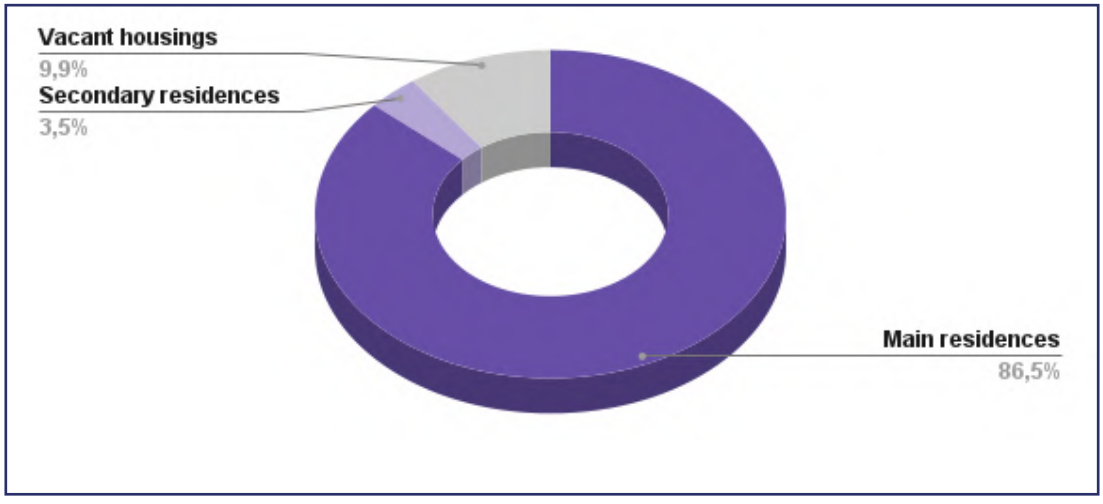

Fig. 2.2.2.2 Breakdown of Orléans' housing stock by status of occupancy in 2021.
(Source: INSEE, 2021)

The overall share of social housing in Orléans Métropole is at 27.84% in 2023, slightly above the legal requirement set by the SRU law (Solidarité et Renouvellement Urbain, as detailed in the Parisian case). However, seven municipalities within the metropolitan area remain below the 20% threshold in 2023: Chécy, Ingré, La Chapelle Saint-Mesmin, Olivet, Ormes, Saint-Denis-en-Val and Saint-Jean-le-Blanc (see Figure 2.2.2.3). In addition, 22% of the population in Orléans lives below the poverty line in 2021, compared to 15% in the wider metropolitan area (INSEE, 2021). Notably, in the La Source neighborhood, 50% of residents have an income below 60% of the median (INSEE, 2021). These trends highlight persistent territorial inequalities both within the municipality and across the metropolitan area.

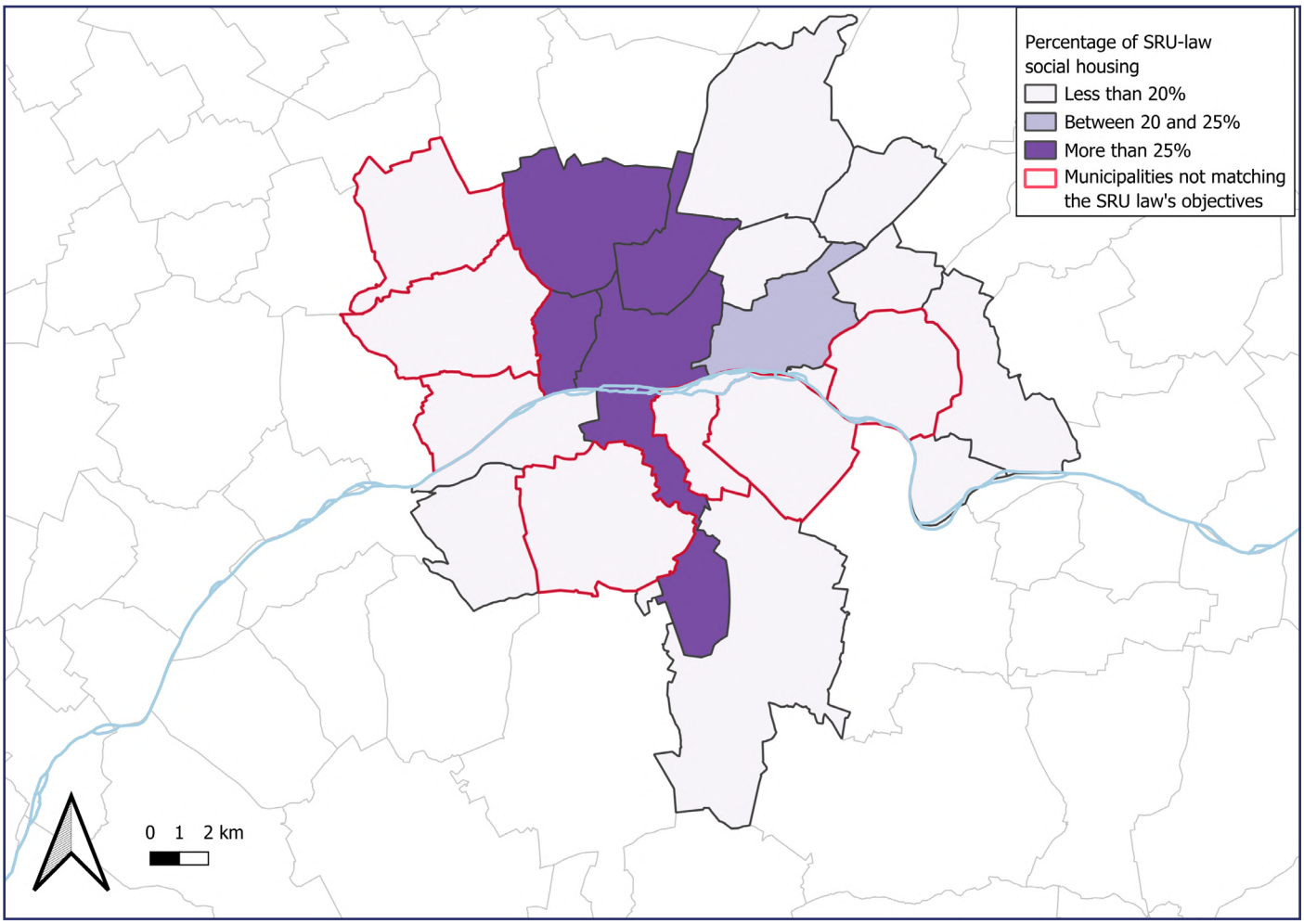

Fig. 2.2.2.3 Share of social housing across the municipalities of the Orléans metropolitan area.
(Source: INSEE, 2023)

The PLH4 (4th Local Housing Programme, 2023–2028) is a strategic document that guides housing policy across Orléans Métropole, setting objectives for housing production, affordability, and social balance. It reaffirms the Métropole's commitment to producing a diverse range of housing types across all municipalities in order to promote social mix. In practice, however, the municipality prioritizes the construction of PLUS units (social rental housing for low- to moderate-income households), which receive 78% of funding, over PLAI units, which receive only 4% (see Figure 2.2.2.4). PLAI housing (Prêt Locatif Aidé d'Intégration) is intended for people in extremely precarious situations or with very low incomes, and is therefore considered the most "social" form of public housing. According to a representative from the Union Sociale pour l'Habitat we met on the field, this strategy enables the city to formally comply with the targets set by the SRU law while avoiding a genuine commitment to addressing the most urgent housing needs. In addition, we notice some stagnation in Orléans' social housing stock, with a turnover rate at 8.9% (PLH, 2023), which corresponds to the national average at 8.7% (ANCOLS, 2024). This low turnover means that only a limited number of units become available each year, further restricting access for new applicants and limiting mobility within the social housing system. Finally, 8.1% of housing units in Orléans are currently vacant (PLH4, 2023), nearly identical to the national average of 8.2% (INSEE, 2023). These dynamics raise important questions about the effectiveness and equity of current housing policies, and whether they truly serve the most vulnerable populations.

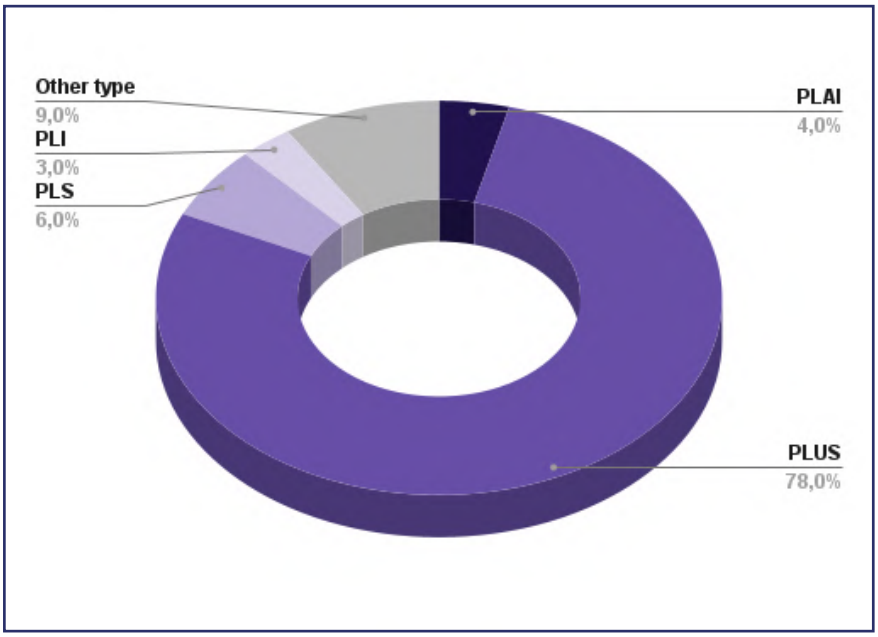

Fig. 2.2.2.4 Share of funding by type of social housing in Orléans.
(Source: PLH4, 2023)

2.2.3 Environmental and energy policies at the urban scale

Nature-based Solutions

Recent efforts to green the city, such as increased park spaces around the cathedral mainly, pedestrianization of the city center, implementation of two tram's lines, and the promotion of electric vehicles, have highlighted Orléans' recent commitment to sustainable planning, in line with its aim to become carbon-neutral by 2050 (Plan Climat Air Enérgie Territoriale, 2019). These

transformations have been highly appreciated by many residents encountered during fieldwork, who found the city more pleasant and enjoyable in recent years. Orléans contains several public gardens and parks including Pasteur Park (4 ha) in the city center, the Jardin des Plantes (3.5 ha) south of the Loire to the West, and the Parc Floral de la Source (35 ha), located in the southern district of La Source and designed in 1963 by the urban planner Louis Arretche (see Figure 2.2.3.1).

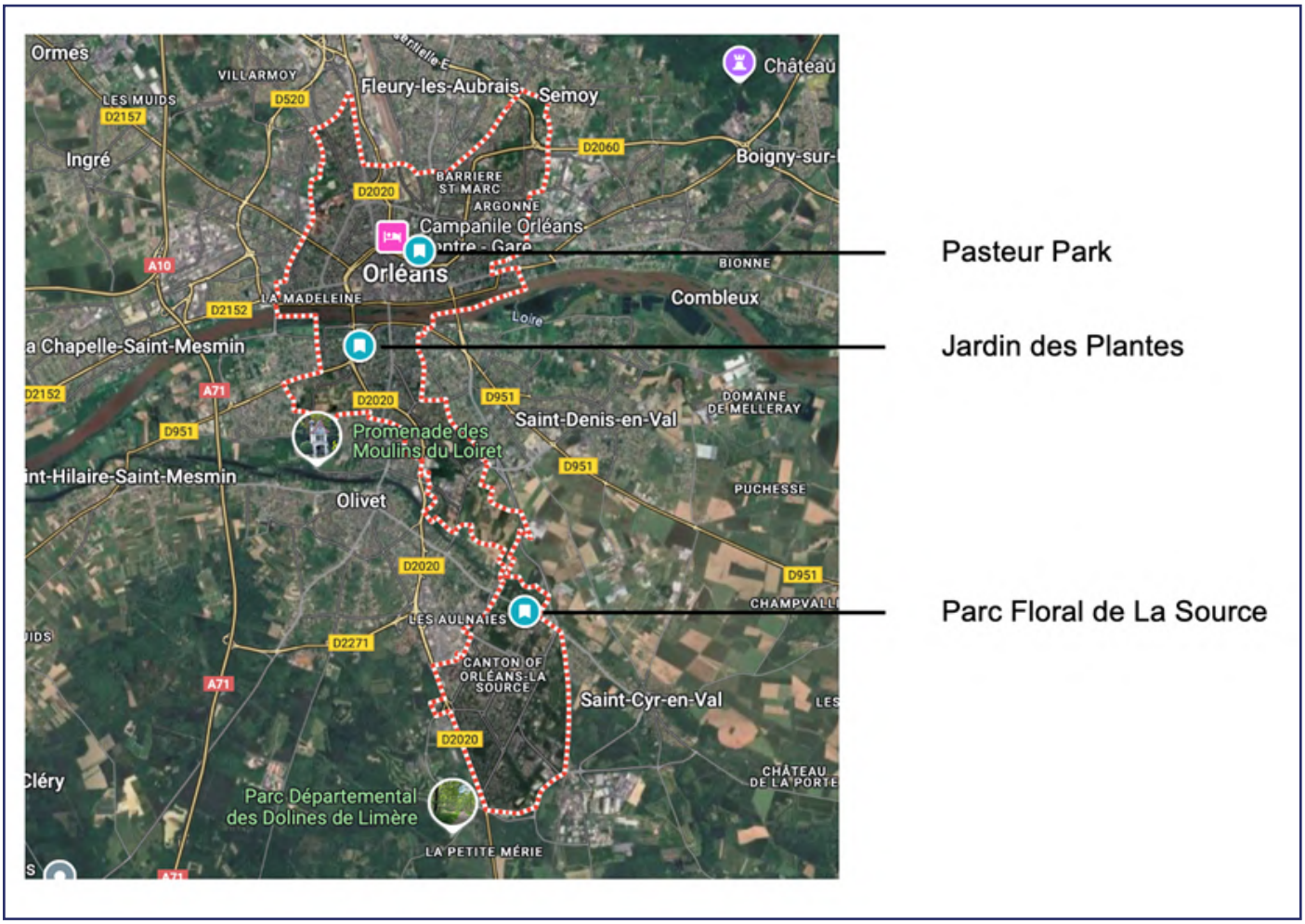

Fig. 2.2.3.1 Map of the three main public parks and garden in the municipality of Orléans.
(Source: Google Maps 2025)

The municipality is also investing in green spaces to help mitigate urban heat islands, i.e., localized zones where temperatures are significantly higher due to dense urbanization (PLUi, 2023). One example is the gradual transformation of schoolyards into "oasis courtyards" across the city's schools (TOPOS, 2023), following the example of Paris, which implemented its "oasis courtyards" program to create cooler, greener, and more welcoming outdoor spaces for children. Another example is the "Verdissons Nos Rues" initiative launched by the Orléans municipality in May 2025, which invites residents to green their streets and enhance their neighborhoods. By encouraging the planting of vegetation in public spaces, the initiative aims at helping cool the urban environment, support

biodiversity, improve air quality, reduce rainwater runoff, and contribute to lowering greenhouse gas emissions (Mairie d'Orléans, 2025). As mentioned on the city hall' official website, the initiative aims at fostering social ties by creating shared green spaces that encourage community interaction and well-being. Several urban parks have also been developed in recent years, including the Berthe-Morisot Park, located in the northern part of the city and opened in 2021, and the Auguste de Saint-Hilaire Garden, which was created on a former brownfield site in the Madeleine neighborhood in 2022.

Energy Retrofitting

According to the Observatoire de l'Energie et du Climat d'Orléans Métropole (2017), 11.7% of households in Orléans Métropole suffer from energy poverty, close to the national average of 11.9% (Commissariat Général au Développement Durable 2024). The city's housing stock is mainly heated by individual central heating (40.8%), followed by individual electric heating (31%) and collective central heating (26.8%). The Plan Climat Air Énergie Territorial (2019) of the Métropole set a target to renovate over 2,500 homes annually until the end of 2025, with the aim of doubling this rate to reduce greenhouse gas emissions by 50% by 2030 and achieve positive energy territory status by 2050. Energy retrofitting of both private and public housing is a key priority in the current PLH, which targets the elimination of poorly insulated homes and seeks to improve residents' comfort and energy efficiency. To support this, Orléans Métropole plans to retrofit 6,500 homes per year by the end of its mandate to assist project owners. The residential sector accounts for 35% of the Métropole's energy consumption and 28% of its greenhouse gas emissions, partly due to 35% of main residences having been built before 1970, prior to the first thermal regulations. Enhancing building performance and energy sobriety in housing is therefore a crucial lever in the city's ecological transition.

However, we notice a clear tension in Orléans between the push to renovate buildings for better energy efficiency and the wish to protect the city's historic centre, especially its many half-timbered houses. An urban planner from the TOPOS agency pointed out that these buildings are protected because of their cultural and historical value, but they are often poorly insulated and tricky to upgrade. Unlike newer buildings, their old façades and interiors cannot easily be changed without losing their character, which makes it difficult to find the right balance between preserving the city's charm and meeting energy standards.

Finally, the Orléans Métropole council launched Ma Métro Rénov' and Ma Métro Rénov'+ in 2022, two programmes that offer financial help for energy renovation projects in addition to the ANAH (Agence Nationale de l'Habitat) subsidies, which are government grants for home improvements. They also include energy advisors and legal experts who help homeowners by giving clear advice on needed work, explaining all available financial help like grants and loans, and guiding them through the paperwork at every step of their project (Orléans Métropole).

Densification

Orléans Métropole positions itself as a central actor in planning, coordinating, and facilitating urban construction and densification, with 173 hectares of development potential identified within the existing urban fabric, mainly consisting of brownfields (see Figure 2.2.3.4) and vacant land (PLH4, 2023). In line with the ZAN (Zero Net Artifi-

cialisation) objectives, which aim to halt the loss of natural and agricultural land by reducing land take and promoting land regeneration, the Métropole is committed to reducing gross land artificialization by 70% and restoring over 5,000 hectares of natural areas, thereby limiting urban sprawl (PLH4, 2023). The PLH promotes a reasoned approach to densification by prioritizing redevelopment within the city rather than outward expansion, while preserving and enhancing urban cooling islands that are essential for quality of life. Figure 2.2.3.2 shows densification opportunities within the metropolitan area.

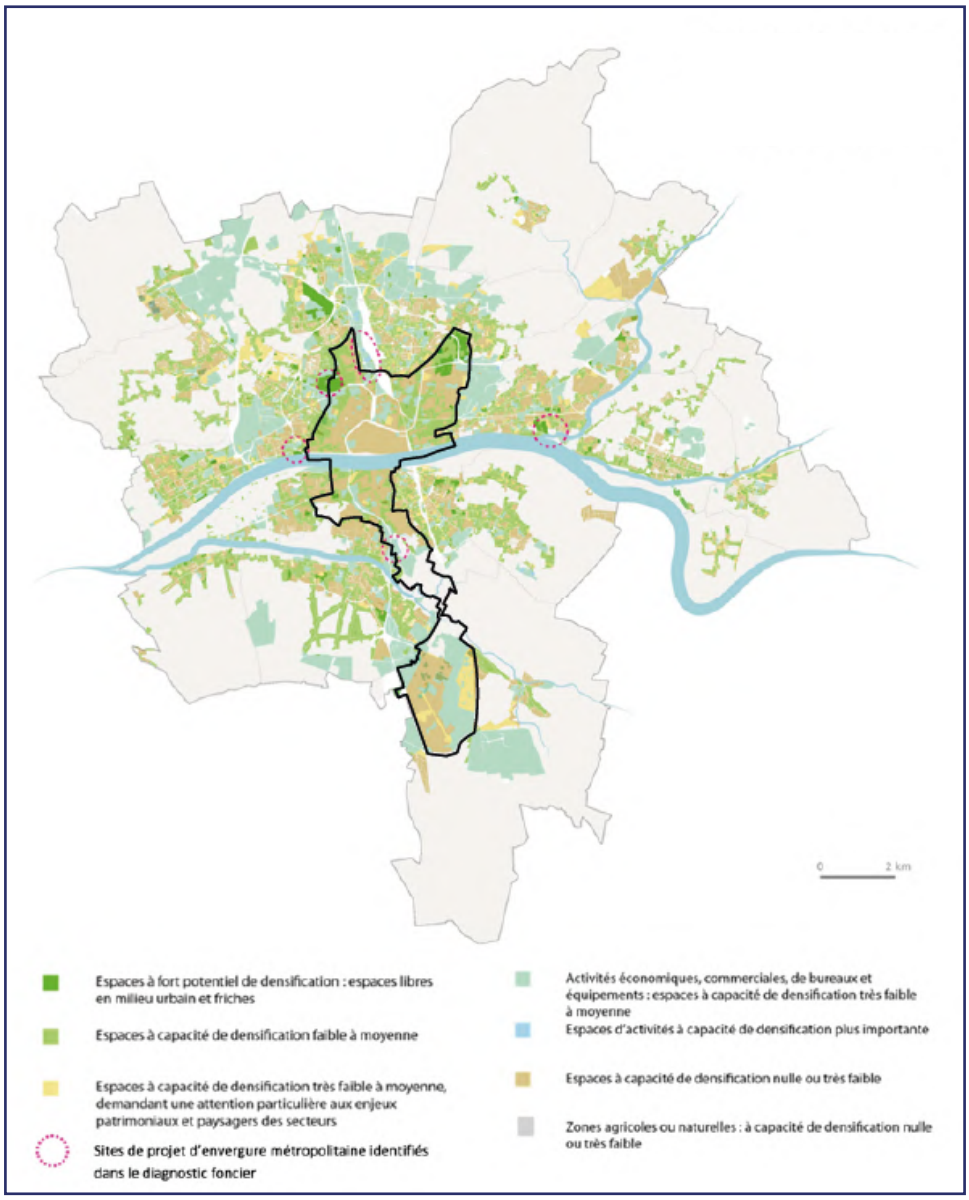

Fig. 2.2.3.2 Map of densification and land redevelopment opportunities within the Metropolitan area as identified by the Plan Local d'Urbanisme Métropolitain. (Source: Espace Ville, 2019)

However, a contrasting phenomenon of rapid suburban expansion challenges this vision. The residential decentralization observed in the Orléans metropolitan area mirrors a national trend of urban sprawl (Vallès, 2019). This dynamic is mainly driven by the suburban housing model, with detached houses representing 89% of recent builds in the outskirts, compared to only 42% within the metro-

politan core (TOPOS, 2024). Surveys consistently show that owning a single-family home with a garden remains a strong aspiration for many French households (e.g., Léger, 2017), particularly young working families with children—a trend dating back to the suburban expansion starting in the 1970s. This urban sprawl runs counter to densification goals and complicates efforts under the ZAN policy.

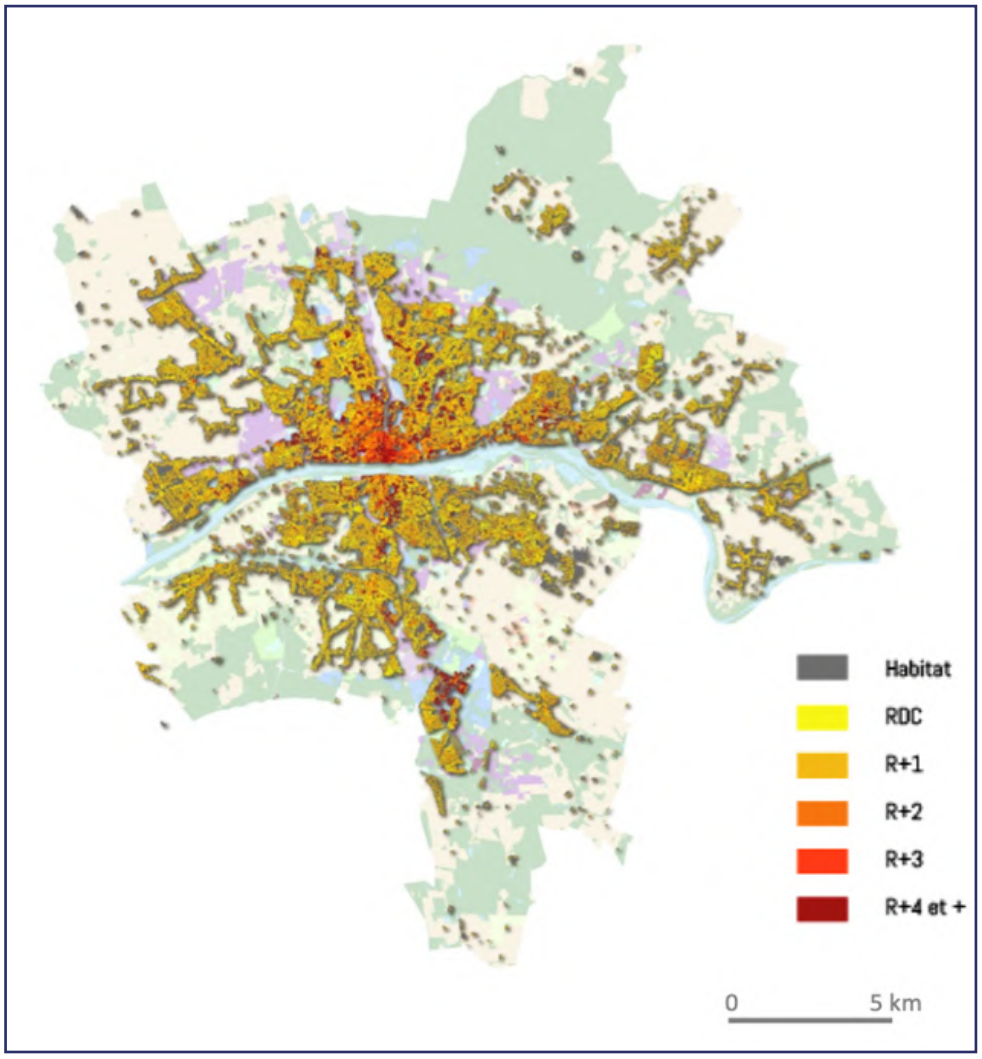

Fig. 2.2.3.3 Map of building height in the municipality of Orléans.
(Source: INSEE, 2019)

However, a contrasting phenomenon of rapid suburban expansion challenges this vision. The residential decentralization observed in the Orléans metropolitan area mirrors a national trend of urban sprawl (Vallès, 2019). This dynamic is mainly driven by the suburban housing model, with detached houses representing 89% of recent builds in the outskirts, compared to only 42% within the metropolitan core (TOPOS, 2024). Surveys consistently show that owning a single-family home with a garden remains a strong aspiration for many French households (e.g., Léger, 2017), particularly young working families with children—a trend dating back to the suburban expansion starting in the 1970s. This urban sprawl runs counter to densification goals and complicates efforts under the ZAN policy.

Fig. 2.2.3.4 The Dessaux Vinegar Factory, a brownfield located in downtown Orléans.
(Source: Personal archive, 2025)

2.2.4 A detailed focus on specific districts

The two districts we are focusing on are La Source and Bourgogne, each representing a distinct approach to urban transformation. La Source spans 72.9 hectares and is home to 10,210 residents. Its large-scale urban renewal project, launched in 2014, involves a total investment of €88 million. Key components include the renovation of 1,520 housing units, the residential restructuring of 1,140 units, the demolition of 308 units, and the construction of nearly 200 new homes. The project also supports co-owned properties involving over 500 units, while reinforcing the greening of avenues and public spaces (Orléans Métropole, 2025). In contrast, the Bourgogne district is being reshaped through a more bottom-up, experimental approach known as tactical urbanism, which is a form of citizen-led, participatory, and temporary planning. The project draws directly on the needs and expectations expressed by local residents. It promotes calmer traffic and pedestrian-friendly spaces, an increased presence of vegetation, the revitalization of local businesses, and the organization of convivial community events (Ville d'Orléans, 2025).

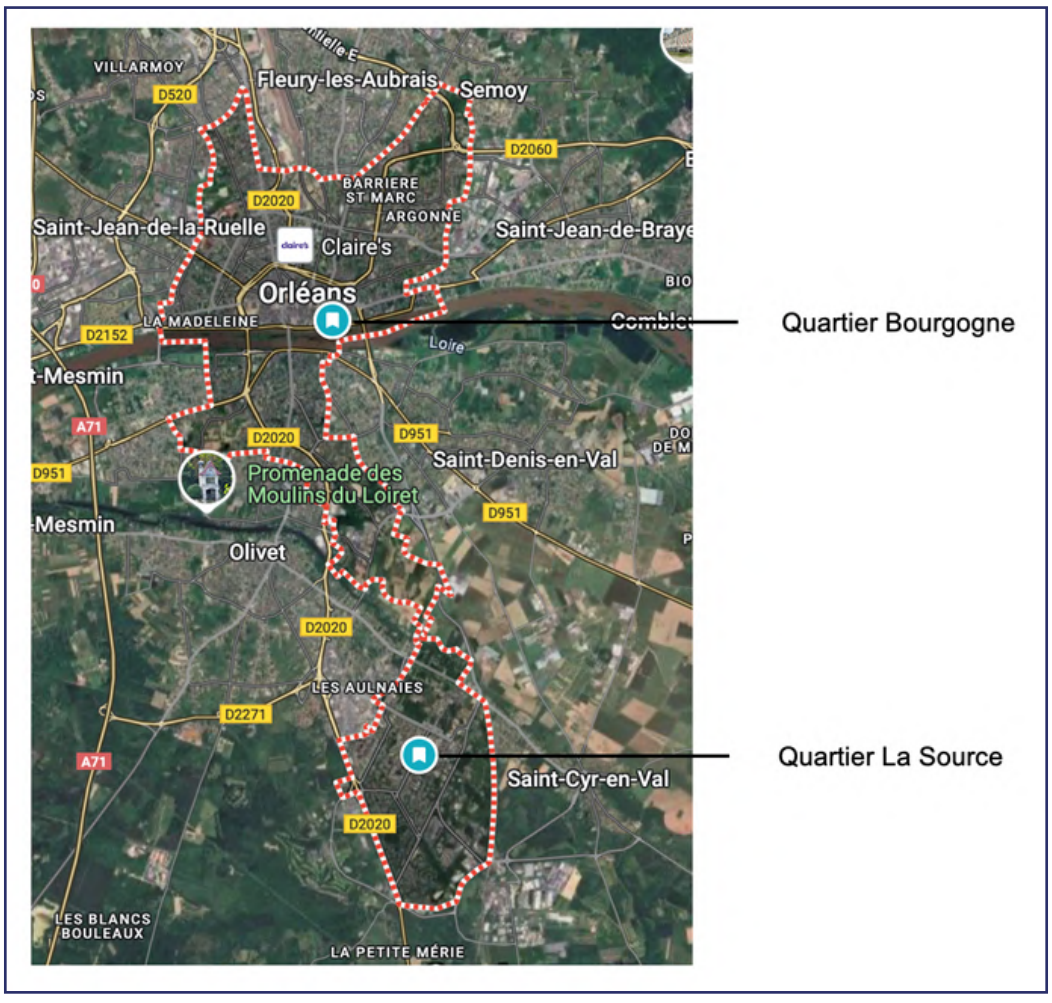

Fig. 2.2.4.1 Map of the two districts we are focusing on: La Source and Bourgogne.
(Source: Google Maps, 2025)

DISTRICTS	LA SOURCE	QUARTIER BOURGOGNE
Name of the project	*Urban Renewal of La Source*	*Bourgogne Village*
Time frame	- 2014: the Board of Directors of the National Agency for Urban Renewal (ANRU) designated the La Source district as a national priority under the new urban renewal program (NPRU) - 2030: scheduled completion date	- 2023: questionnaire distributed to local residents - 2025: launch of the project - 2026: start of development works
EEPs involved	- Energy retrofitting - Nature-based solutions - Densification	- Energy retrofitting - Nature-based solutions - Densification
Actors involved	- Orléans municipality - ANRU - Orléans Métropole - social housing organizations (e.g., Union Sociale pour l'Habitat) - Departmental Council of Loiret - Centre-Val de Loire Région	- Orléans municipality - Local inhabitants

Fig. 2.2.4.2 Summary table of fieldwork in Orléans.

In 2024, the "Bourgogne Village" project, led by the Orléans city council, was launched as an ambitious and participatory initiative that is based on collaborative workshops with local residents. The project includes pedestrianizing several streets (particularly around schools), removing parking spaces, and adding greenery. The first objective is to continue the transformation of this central neighborhood that began back in the 1990s with housing renovations and pedestrian street upgrades in the western part of Rue de Bourgogne (see Figure 2.2.4.4 and Figure 2.2.4.5). The aim is to preserve a distinct "village" identity within the city's historic core. Construction is expected to begin in 2026. The second objective concerns the redevelopment of former industrial land in this historically working-class area. With the departure of the local vinegar industry in 1984, the city plans to reuse these vacant plots (see Figure 2.2.3.2) to reduce urban density in new developments while slowing down urban sprawl (Ville d'Orléans, 2024).
However, as pointed out by a member of Habitat et Humanisme Loiret, the neighborhood has been undergoing a process of gentrification in recent years, accelerated by these municipal interventions. This gentrification manifests in several ways: the arrival of wealthier populations, the gradual transformation of the commercial fabric, and rising housing prices. As shown on the map below, the average buying price per square meter is current-

ly the highest in the historic city center, illustrating the growing real estate pressure. This raises concerns about the long-term accessibility of the area for lower-income residents and whether well-intentioned urban improvements may ultimately displace the populations they aim to serve.

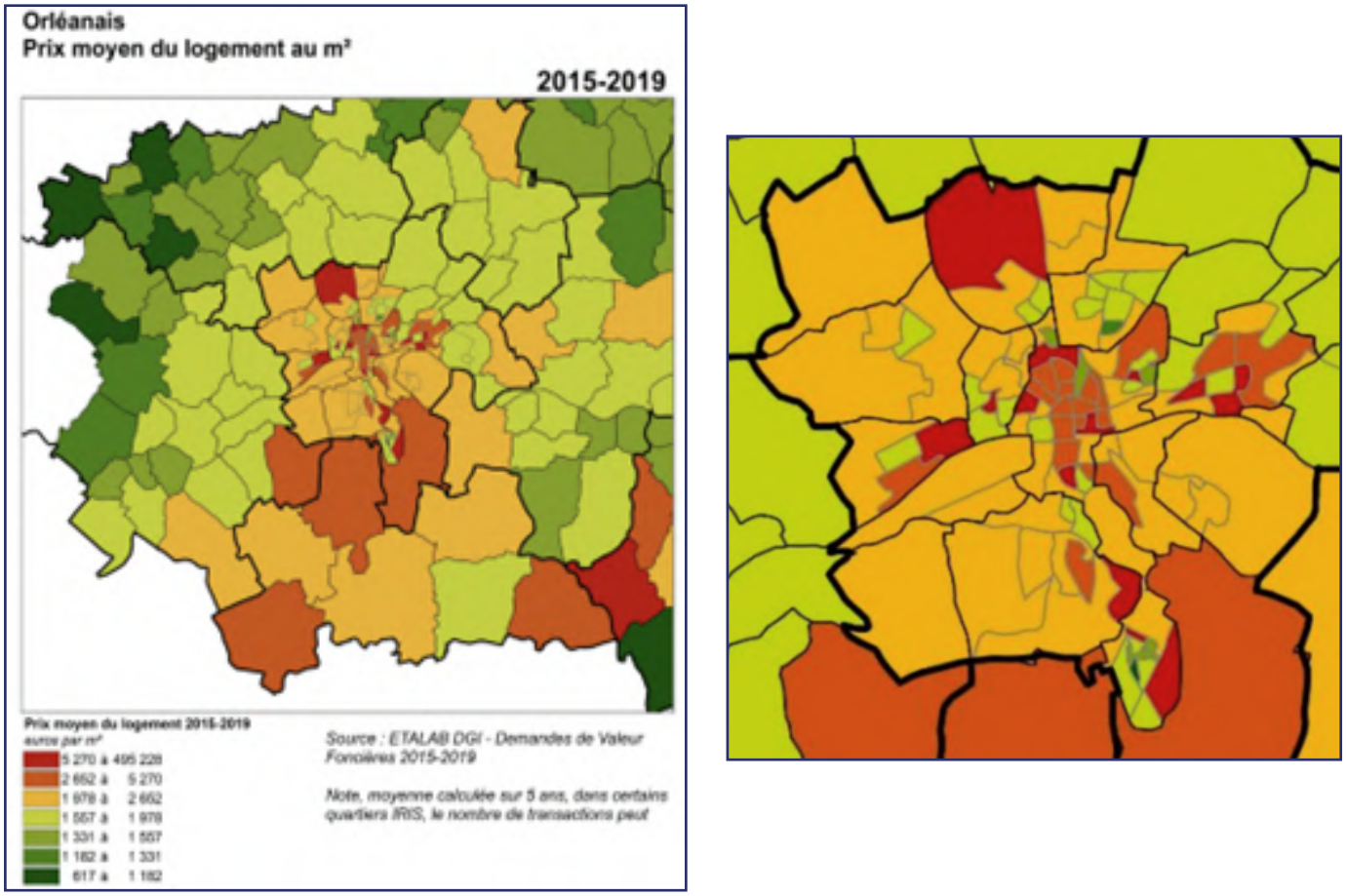

Fig. 2.2.4.3 Average buying price (in €) per square meter in Orléans Métropole between 2015 and 2019.
(Source: ETALAB DGI, 2015-2019)

Fig. 2.2.4.4 Rue de Bourgogne located in downtown Orléans.
(Source: Personal archive, 2025

Fig. 2.2.4.5 Satellite view of Quartier Bourgogne.
(Source: Google Maps, 2025)

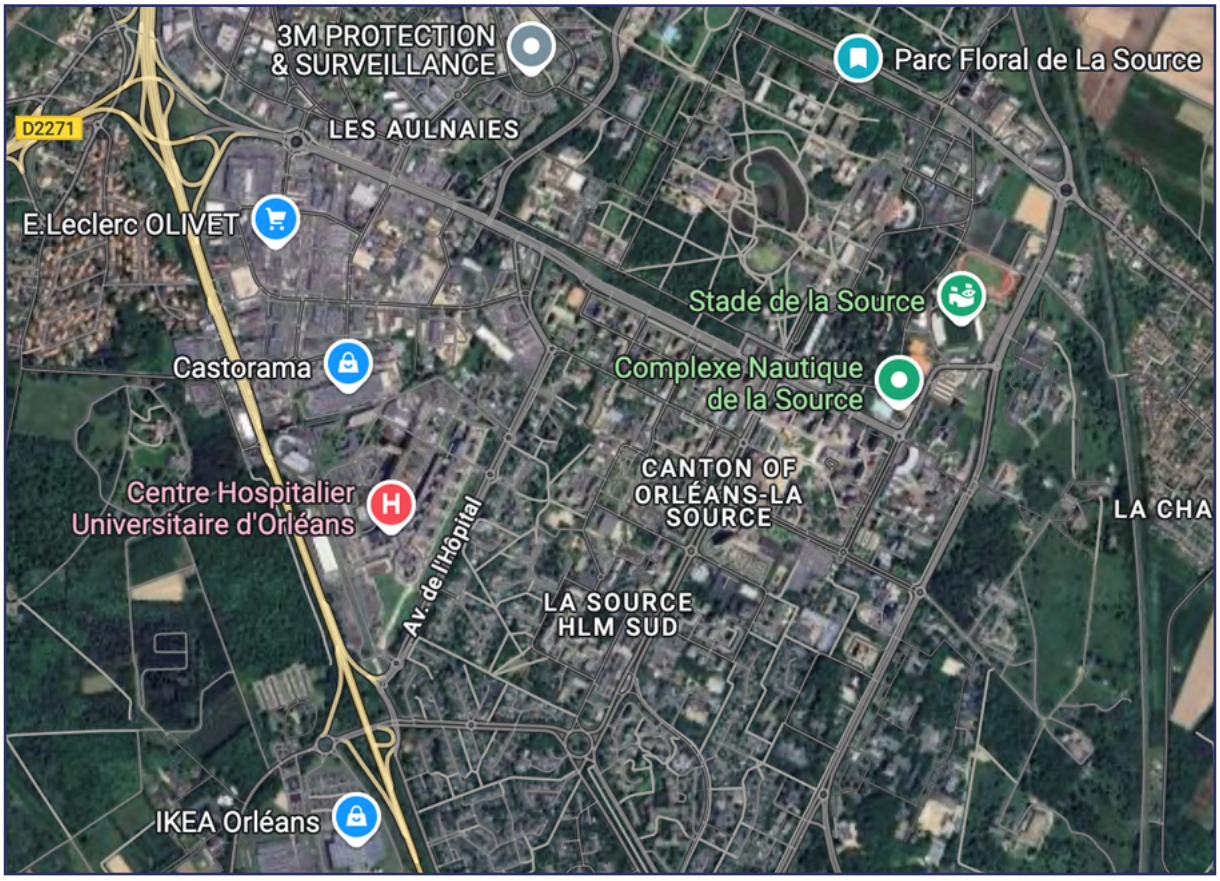

Fig. 2.2.4.6 Satellite view of La Source district.
(Source: Google Maps, 2025)

As a second focus, La Source district is considered because it is a compelling example of how environmental planning can improve quality of life while integrating social objectives. It is located in the southern part of Orléans. Despite its geographic detachment due to the unusual shape of the city, La Source has been part of the municipality since its creation in the 1960s and is connected to the rest of the city by a north-south tram line. The district was developed as part of a large-scale urban expansion project to accommodate population growth, particularly due to the increasing number of students attending the University of Orléans. Since 1996, La Source has been designated as a Sensitive Urban Zone (ZUS), and in 2015, it became a QPV (Quartier Prioritaire de la Politique de la Ville), a designation for neighborhoods facing socio-economic hardship and targeted for state-funded urban, social, and economic interventions. Today, La Source is home to over 11,000 residents across 72 hectares. It is surrounded by forests and agricultural land, and features the Parc Floral de la Source, a paid-entry public garden that is one of the area's main attractions. As shown on the map below, La Source concentrates the largest number of low-rent social housing units in the city, therefore playing a crucial role in helping Orléans meet the SRU law's social housing quotas. Moreover, the district's abundance of green spaces integrated throughout the neighborhood seem to offer a pleasant and livable environment for its residents. In this sense, La Source illustrates the potential to align strong social housing policies with an ambitious greening agenda.

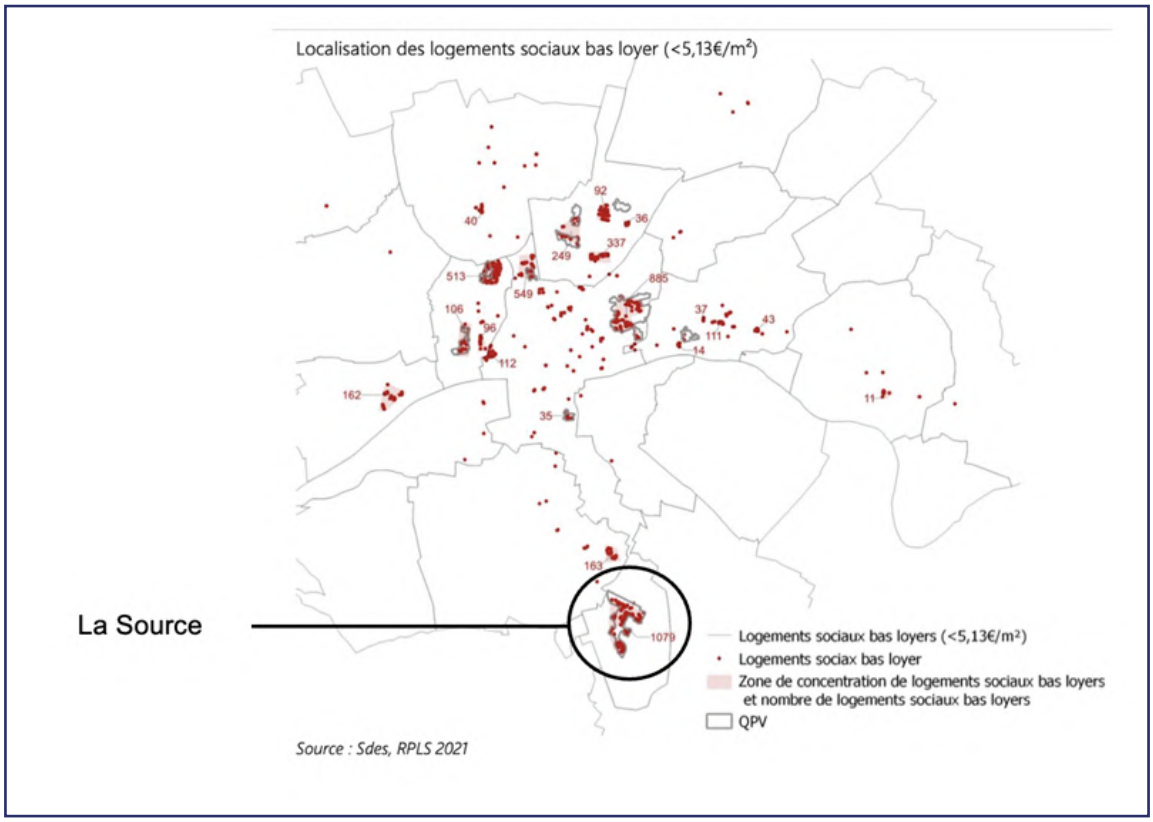

Fig. 2.2.4.7 Map of low-rent social housing units (<€5.13/m²) in the Orléans metropolitan area.
(Source: Service des Données et Études Statistiques, 2021)

2.2.5 The role of grassroots organizations in tackling housing exclusion

While the political landscape in Orléans limits efforts to expand affordable housing, grassroots organizations play a crucial role in advocating for and supporting social housing development. We chose to engage with two key actors on the field: Union Sociale pour l'Habitat Région Centre-Val-de-Loire and Habitat et Humanisme Loiret. These associations reflect locally grounded engagement and offer valuable insights into the challenges and realities of housing and green transition initiatives in the city.

Union Social pour l'Habitat région Centre-Val-de-Loire

The Union Sociale pour l'Habitat for the Centre-Val de Loire region is the regional branch of the Union Sociale pour l'Habitat, a federation of organizations related to social housing and landlords. Founded in 1929, the association plays a national representative role with public authorities, the media, associations, professional sectors, and public opinion. It also carries out reflection, analysis, and studies on all housing-related issues, develops proposals for social housing policies, and contributes to public debate. In addition, it provides information, advice, and support to organizations, their associations, and their federations to help facilitate, streamline, and develop their activities. Established in 1974, the regional branch has seven employees who are responsible for implementing the USH's missions in the Centre-Val de Loire and representing social housing organizations before local and regional authorities.

Habitat et Humanisme Loiret

Habitat et Humanisme (HH) Loiret is the departmental branch of the Habitat et Humanisme association, a real estate association that purchases land and housing to convert them into social integration housing for people in precarious situations, while also providing support to its tenants. Created in 1995, HH Loiret has three employees and around fifty active volunteers. It is responsible for managing and supporting tenants in Habitat et Humanisme dwellings located in the Loiret department, mainly in Orléans and its surrounding suburbs. Although the national real estate association owns the buildings, they are fully managed by the local section. Currently, HH Loiret manages 123 housing units, accommodating around 250 people in need, including single-parent families, young people in professional integration, and elderly individuals, sometimes in areas where rental prices are relatively high. These housing units serve as a temporary step in the tenants' integration process, with most residents encouraged to seek alternative housing as their economic and social situations improve, although some remain permanent residents. Among their main projects in Orléans and its surroundings are the intergenerational residence "Mosaïques," launched in 2016 in Saint-Jean-de-Braye with 43 housing units, and the family pension "Les Cèdres Bleus," located in Saint-Pryvé-Saint-Mesmin, which includes 21 housing units.

	Habitat et Humanisme Loiret	*Union Sociale pour l'Habitat - Centre-Val-de-Loire*
Actions	- provides housing for people in difficulty through over 120 units, including family shelters, intergenerational residences, and scattered apartments - offers personalized social support, delivered by trained professionals and volunteers, to help residents rebuild and regain autonomy	- represents social housing organizations in the region - provides information, guidance, and technical support to its members, helping them navigate regulatory frameworks and implement effective housing policies
Claims	- advocates for dignified housing access for isolated and vulnerable individuals in socially balanced neighborhoods - promotes transitional living spaces that support personal reconstruction and facilitate a move toward standard social housing or long-term residence in one of its units	- promotes the social housing sector as a key pillar of territorial cohesion and social justice - advocates for accessible, high-quality, and sustainable housing solutions adapted to local needs and demographic changes
Relationship to municipal authorities	- the municipal services strongly support the association whereas elected officials are less receptive - a recent proposal for a new intergenerational residence in the city center was rejected by the mayor, which highlights tensions at the municipal level	- plays a strategic role in regional dialogue between social housing actors and public authorities - While it maintains strong working relationships with municipal services, it also acts as a mediator and advocate, voicing the concerns and priorities of housing providers to elected officials

Fig. 2.2.5.1 Summary table of grassroot initiatives met in Orléans and their actions.

2.2.6 Trade-offs and relationships between green transition initiatives and housing inequalities

Based on our overview of the city, its housing market and its energy and environmental policies (EEPs), as well as case studies and interviews with grassroots organizations, this section analyzes the trade-offs and relationships at the municipal level between the implementation of EEPs and housing inequalities.

The specificity of the Orléans case study lies in its status as a mid-sized city, which offers new perspectives on ecological and social dynamics in a setting that sits between major global cities like Paris and smaller towns such as Sens. Our initial hypothesis was that Orléans could reveal distinct tensions and opportunities in balancing environmental policies with housing equity in this intermediate urban context, in which political will and financial resources are more limited. Reflecting on the material presented above, we identify three main dynamics: (1) socio-spatial inequalities across the Orléans metropolitan area; (2) ambivalent local policies that struggle to reconcile environmental ambitions with social objectives; and (3) a

potential trade-off between preserving the city's architectural heritage and pursuing energy-efficient renovations.

Socio-spatial inequalities in allocating greening funding across the Orléanais metropolitan area

The spatial distribution of housing prices in the Orléans metropolitan area reveals clear socio-spatial inequalities: in the northwest, the Beauce sector has the lowest housing prices, attracting working-class families, especially those employed in nearby industrial and logistics hubs. In contrast, the northeast, near the Orléans forest, is slightly more expensive and tends to attract middle-income households. The most expensive housing is found in the southern area, in the Sologne countryside, which draws high-income professionals, particularly those working in La Source, a major center for scientific and service-sector jobs. This pattern highlights a strong preference for suburban living, partly due to the lack of affordable housing in central Orléans, particularly for middle-class households (Zaninetti, 2021). Within the city center itself, socio-spatial divides persist. Streets like Rue de Bourgogne and Rue Madeleine have seen significant changes over the past two decades, including pedestrianization, renovations, and the development of shops and restaurants. However, these improvements are unevenly distributed. Just a few blocks away, some areas remain neglected, with abandoned houses and large industrial wastelands. This observation raises critical questions: what drives the choice to carry out both renewal and greening in certain spaces and not others? Who benefits from these urban projects? These choices are often influenced by economic interests and political priorities, which tend to favor areas with higher visibility and investment potential.

Ambivalent local policies that struggle to reconcile environmental ambitions with social objectives

In the past two decades, the municipality has made significant efforts to revitalize itself, focusing on attracting young couples, students, and new residents, as well as greening urban spaces. Neighborhoods like La Source, Gonne, and parts of Madeleine illustrate the possibility of conciliating environmental and social goals: these districts, having a significant share of social housing while also benefiting from quality public spaces and abundant greenery, demonstrate that affordable housing and access to green spaces can go hand in hand (see Figure 2.2.6.1). Moreover, the city's densification objectives, although partially offset by the ongoing suburban expansion of the metropolitan outskirts, align with the ZAN policy set at the national level, which seeks to achieve zero net land take by balancing urban development with the protection and restoration of natural and agricultural spaces.

However, some policies raise questions about the city's genuine commitment to vulnerable populations. First, the municipality's strong focus on building PLUS rather than PLAI units, which target the most disadvantaged, suggests a cautious approach that prioritizes compliance with legal quotas over addressing urgent social housing needs. Second, specific projects such as Bourgogne Village reveal contradictions in the municipality's strategy: while aiming to improve urban quality and citizen participation, they also risk accelerating social change that may reduce long-term affordability for lower-income residents.

Fig. 2.2.6.1 On the left side, a green space located in the La Source district, in the South of Orléans. On the right-side, a water area located on a square in La Source, in the South of Orléans. (Source: Personal archive, 2025)

Trade-off between heritage preservation and housing renovation

The protection of half-timbered buildings in Orléans' historic center reflects the municipality's commitment to preserving its historical and cultural heritage (see Figure 2.2.6.2). However, this policy restricts interior renovations that could provide significant benefits—both economically, by reducing energy bills and improving comfort, and environmentally, by lowering overall emissions. Given that the housing sector accounts for 35% of total energy consumption in the metropolitan area (PLH4, 2023), building renovation represents a key lever in the ecological transition. This creates an apparent trade-off between heritage preservation and the need for housing renovation that should be carefully addressed and reassessed, as energy efficiency improvements may soon become a necessity rather than a choice.

Fig. 2.2.6.2 Preserved half-timbered houses in the historic center of Orléans. (Source: Personal archive, 2025)

Together, these dynamics are reshaping the region's social geography and pose growing challenges for spatial planning and the pursuit of territorial equity in a rapidly evolving metropolitan landscape. To respond effectively, bold and integrated policies are needed—policies that simultaneously promote affordable housing, protect green spaces, and ensure inclusive access to urban amenities. This requires balancing densification with the preservation of social diversity, reinforcing support for vulnerable populations, and reassessing heritage preservation rules to enable energy-efficient renovations.

2.3. SENS

2.3.1 Overview of the city's main dynamics

A General Overview of Sens

Sens is a French commune of the Yonne department of the Bourgogne-Franche-Comté region, located approximately 100 km southeast of Paris. As of 2022, it had a population of 27,275 residents (see Figure 2.3.1.1), known as "Sénonais," making it the second-largest commune in the department, experiencing reasonable demographic growth, particularly among younger age groups (INSEE, 2021).

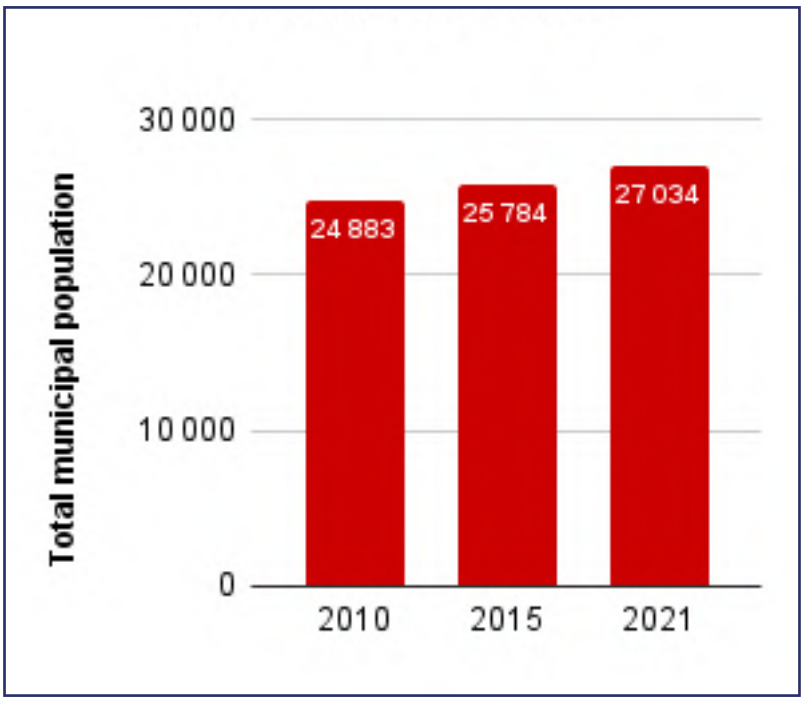

Fig. 2.3.1.1 Evolution of Sens' total population in 2010, 2015 & 2021.
(Source: INSEE, 2021)

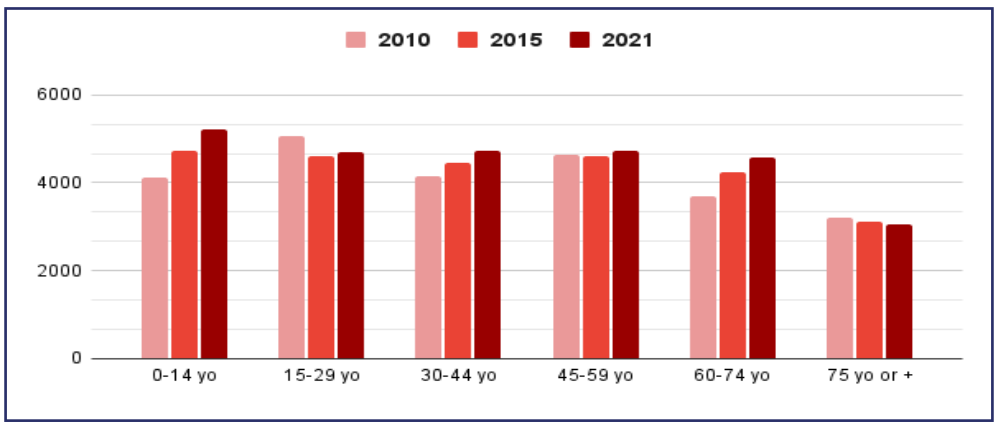

Fig. 2.3.1.2 Evolution of Sens' population by age repartition in 2010, 2015 & 2021.
(Source: INSEE, 2021)

The city covers an area of 21.92 km^2, resulting in a population density of 1,233 inhabitants per km^2 (INSEE 2021). Sens serves as the administrative center of its arrondissement and is situated at the confluence of the Yonne and Vanne rivers. The city's elevation ranges from 62 to 208 meters, with the town hall located at approximately 67 meters above sea level. The climate is characterized as altered oceanic, with moderate rainfall distributed throughout the year and cold winters averaging around 3°C.

Part of a metropolitan area which includes 65 municipalities with a combined population between 50,000 and 200,000 inhabitants, Sens is classified as a rural intermediate urban center, meaning that the majority of its population lives in a cluster of 1 km^2 grid cells, each containing at least 1,500 inhabitants and together comprising between 5,000 and 50,000 residents (INSEE, 2022). The city's land use in 2018 was predominantly agricultural (48.4%), followed by urbanized areas (31.1%). Notably, there has been a decrease in agricultural land since 1990, indicating ongoing urban development and horizontal sprawl (Corine Land Cover, 2018). The city is divided into nine sectors, each with a council aimed at enhancing residents' living conditions and promoting community engagement.

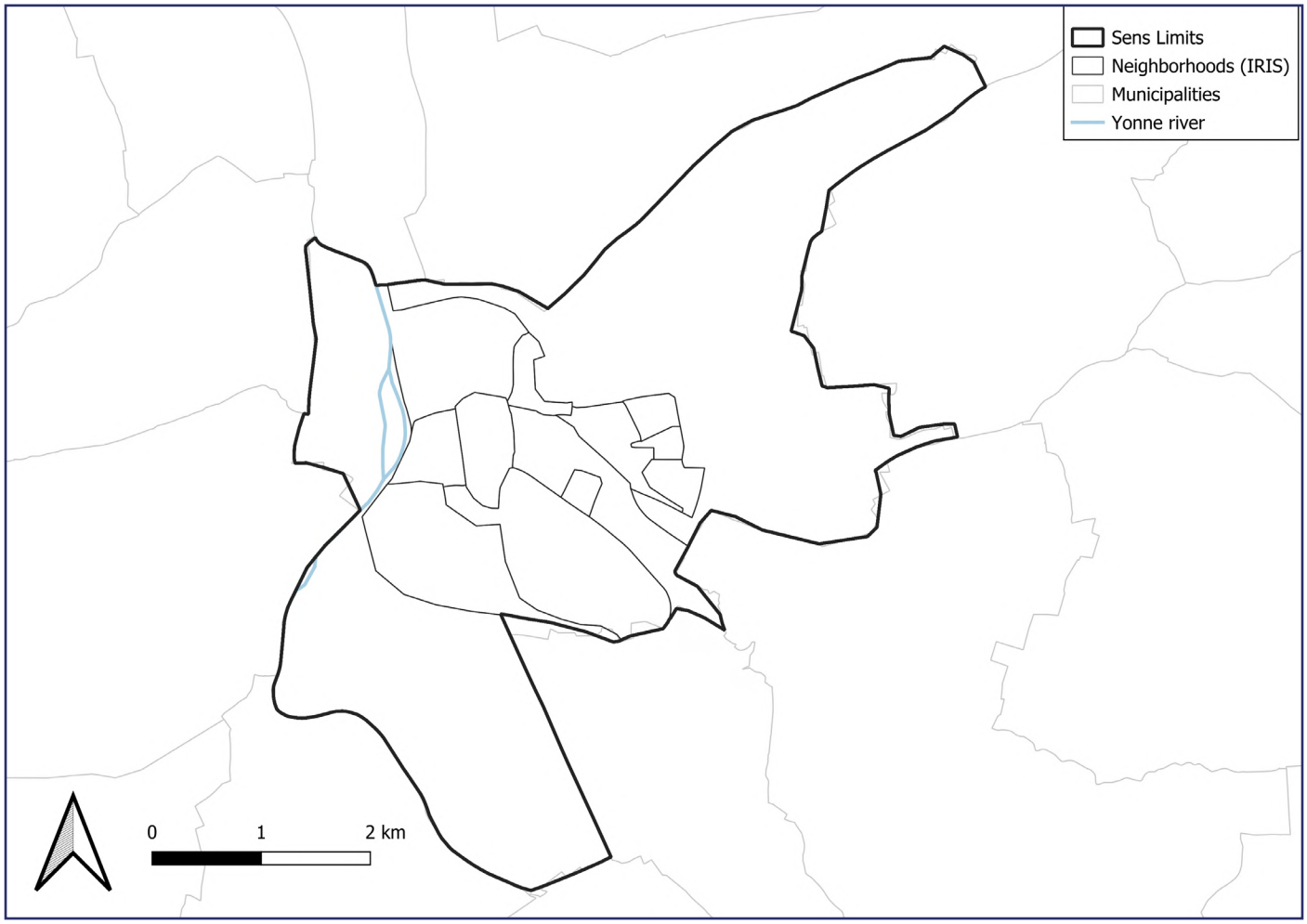

Fig. 2.3.1.3 Map of Sens municipal borders, IRIS division.
(Source: Authors' own, 2025)

The city can be divided into several different historic and socio-economical parts. One first part lies to the east, separated from the rest of the city by the Yonne river, and includes the train station as well as a few largely neglected residential neighborhoods. Further east toward the city center, the riverbanks of the Yonne have undergone several recent redevelopment projects, as detailed later in this report, and constitute an entry point to the city center, which still hosts a number of shops and restaurants, along with the Cathedral of Sens, construction of which began in 1130 AD. It is this part of the city that the report refers to using the terms "city center" or "historic center" throughout the description of the Sens case study. Additionally, the city's land use in 2018 was predominantly agricultural (48.4%), followed by urbanized areas (31.1%), industrial or commercial zones and transportation networks (14.9%), inland waters (3.7%), forests (1.6%), heterogeneous agricultural areas (1.5%), and artificial non-agricultural green spaces (0.2%) following the Corine Land Cover classification (see Figure 2.3.1.4).

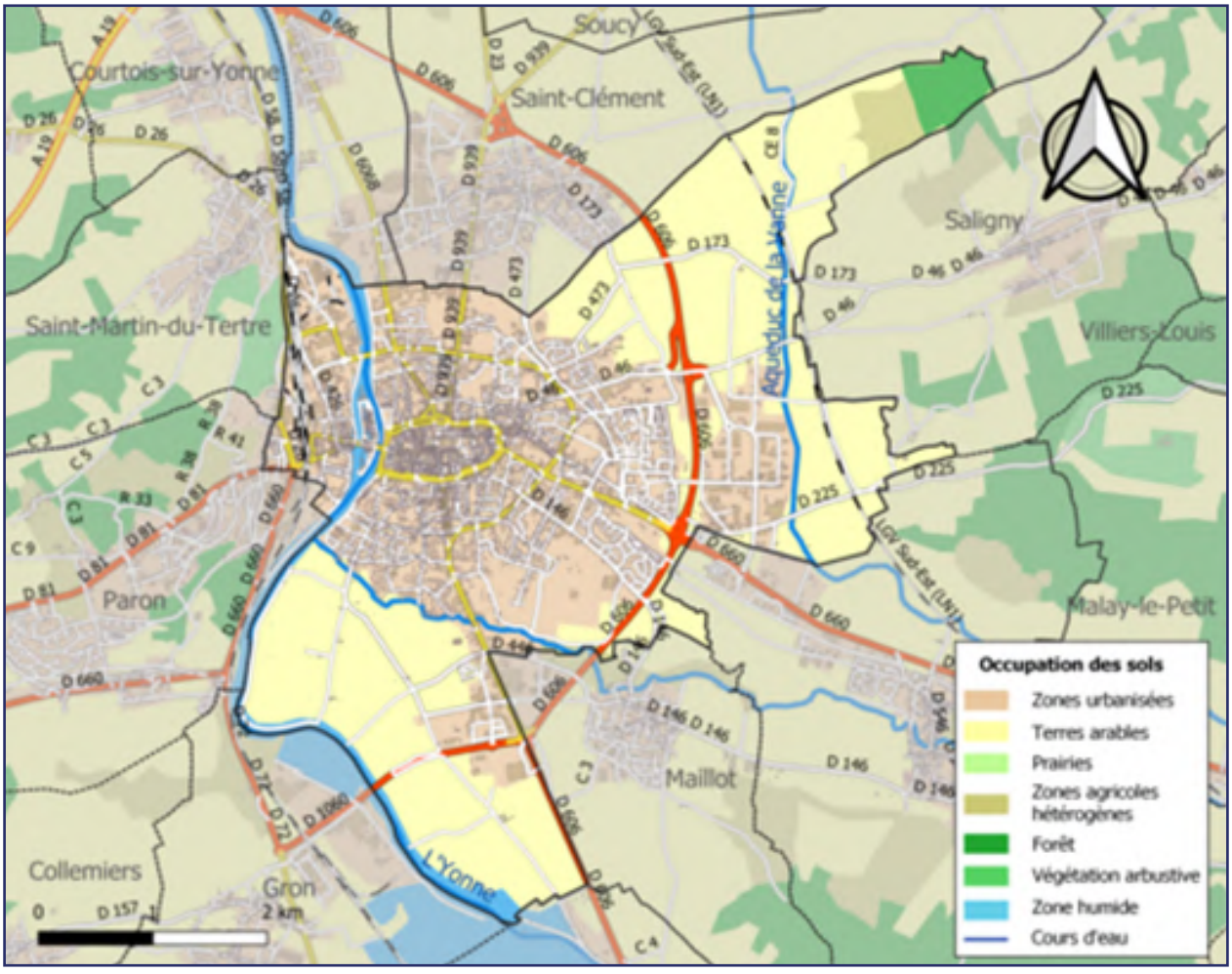

Fig. 2.3.1.4 Land use in Sens in 2018.
(Source: Corine Land Cover, 2018)

Political and administrative system

As of 2025, the political landscape of Sens reflected a gradual yet significant shift in voter preferences over recent years. Long a stronghold of the centre-right, the city was governed by Marie-Louise Fort (Les Républicains) from 2001 until 2008, when Michel Daniel Paris (Parti Radical de Gauche) got elected. Although perceived as a political jolt within the traditionally right-wing republican trend that had long shaped the city, this term did not reach its conclusion due to the mayor's resignation in 2013. He was replaced by Michel Fourré, a representative of diverse left forces. This brief interlude ended less than a year later, in 2014, when Mme Fort was re-elected, leaving a lasting imprint of right-wing leadership on the municipality as she was re-elected 6 years later in the 2020 municipal elections with 50.1% of the vote in the second round. Following her passing in September 2022, her first deputy, Paul-Antoine de Carville, was appointed mayor in October 2022, continuing the local LR leadership. At the national level, Sens belongs to Yonne's 3rd constituency, where Julien Odoul of the Rassemblement National was elected deputy in 2022 and re-elected outright in the first round of the 2024 legislative elections, with 50.44% of the vote. This result confirmed the consolidation of RN influence in the region, aligning with national gains by the far-right. Other candidates, such as Nicolas Soret (Nouveau Front Populaire) and Michèle Crouzet (Ensemble!), trailed significantly behind.

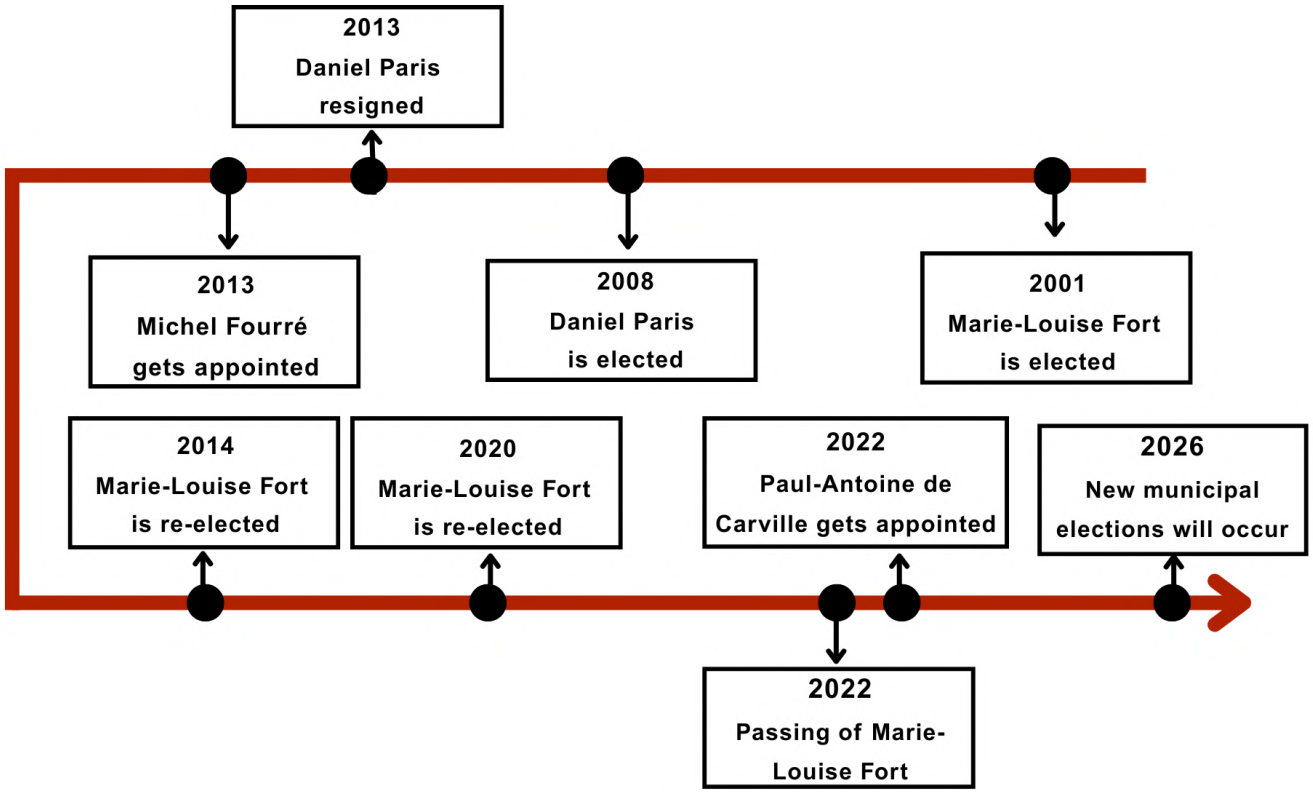

Fig. 2.3.1.5 Timeline of the municipal elections in Sens (2001-2026). (Source: Authors' own, 2025)

The shift from traditional centre-right dominance to growing far-right support implies a transformation in the city's political identity. Local political life has also been marked by debates around urban development, security, and economic revitalization, very often oriented toward the reduction of social housing's part in the city, as stated by the mayor himself in his New Year speech earlier in 2025 (L'Yonne Républicaine, 2025). However, Sens carries a significant left-wing legacy notably highlighted by a historic period when the Communist Party (PCF) played a central role in shaping local policy - characterized nowadays by the significant remaining social housing stock in the city. Although the PCF and allied left-wing groups have lost much of their former influence amid the rising prominence of center-right and far-right political forces, progressive factions continue to advocate for social justice, environmental protection, and affordable housing.

Finally, the city of Sens is among the French municipalities that were heavily affected by the riots that shook the french suburbs in June 2023, following the death of Nahel Merzouk during a police check in Nanterre. These events had a significant impact in Sens, notably resulting in the arson of the social center that was under construction at the time (L'Yonne Républicaine, 2023).

2.3.2 The landscape of housing inequalities

As of 2021, Sens had 13,009 dwellings, comprising 12,552 main residences, 391 secondary residences, and 1,501 vacant homes, triggering discussions about the unexploited potentials of vacant dwellings in the city because of their numerous weight (1 dwellings out of 10, see Figure 2.3.2.1). This vacancy rate is part of a broader supra-local trend, with the proportion of vacant housing in the Yonne department reaching 12% in 2020 (INSEE). Nonetheless, it remains noteworthy for exceeding the national average, which stood at 8.2% in 2023 (INSEE).

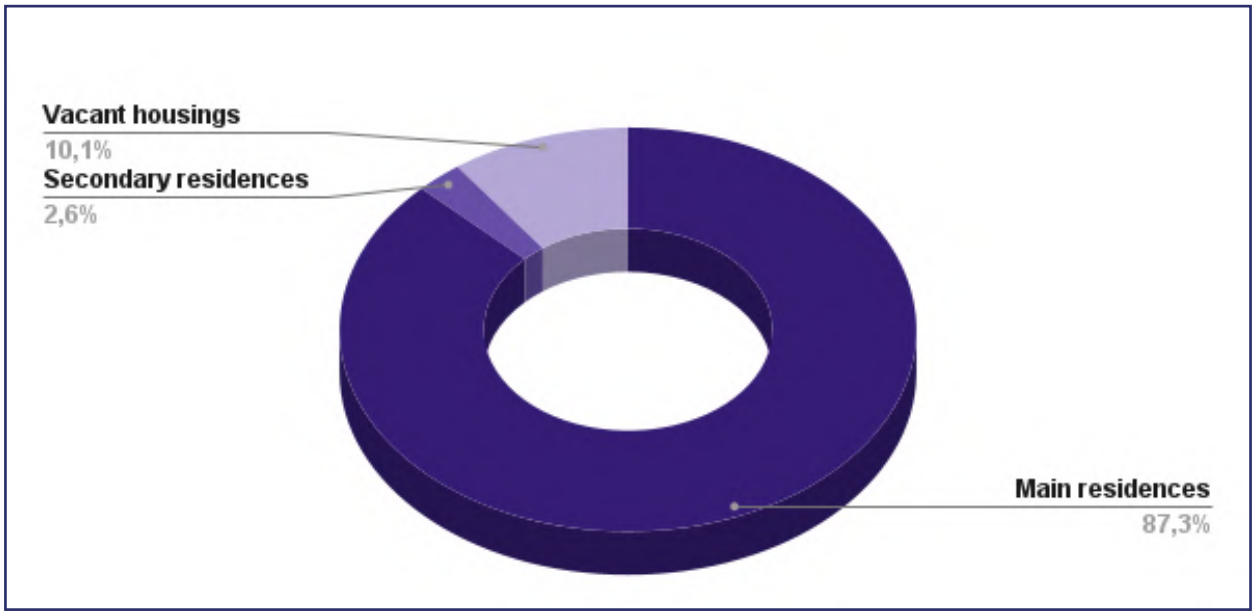

Fig. 2.3.2.1 Breakdown of Sens' housing stock by status of occupancy in 2021.
(Source: INSEE, 2021)

The housing stock in Sens included 5,172 houses and 9,646 apartments in 2021 (INSEE, 2021). Among houses, a significant majority of them (76,5%) were built before 1990, highlighting the prevalence of older housing (taking into account only main residences) whereas most of the apartments appear to be built since the 50s (see Figure 2.3.2.2).

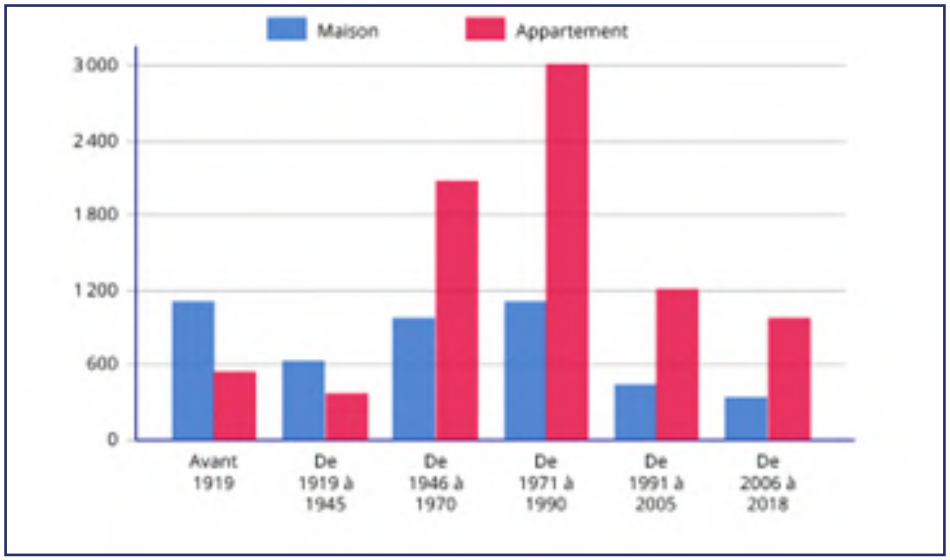

Fig. 2.3.2.2 Main residences repartition by period of construction and housing type in Sens in 2021.
(Source: INSEE, 2021)

Regarding occupancy, a significant portion of primary residences are rented (8,048, or 61.9%). Next come homeowners (4,752 homes, or 36,5%). As of 2021, the majority of these homes were equipped with individual central heating (48.7%), followed by collective central heating (31.4%), and finally individual electric heating (18.1%, INSEE,2021).

This is followed by a high share of social housings in the city of Sens, namely 4522 dwellings in 2023, representing around 30% of the total housing stock in the city (Observatoire des Territoires, 2023) and, simultaneously, overpassing the 20% threshold of the SRU law. Those dwellings are mostly located outside of Sens' central area, in the northeast of the city, within an intermediate urban zone that we will designate as the "inner-suburb" (see Figure 2.3.6.2).

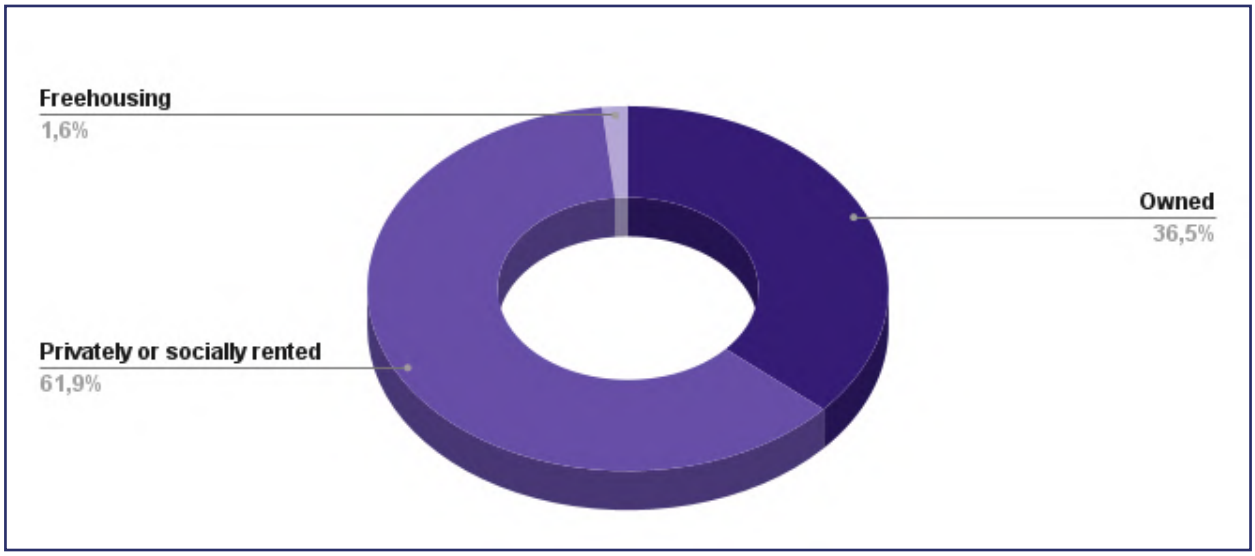

Fig. 2.3.2.3 Tenure type répartition among main residences in Sens in 2021.
(Source: INSEE, 2021)

2.3.3 Environmental and energy policies at the urban scale

The city of Sens has recently undertaken what can be qualified as several environmental policies, among which the development of nature-based solutions and energy retrofitting projects. However, densification policies seem to be globally lacking at the municipal scale, allowing for efficiency-related discussions and guiding the last proposal step of this work. This section aims at listing down the policies recently led by the municipality of Sens during the last 15 years when it comes to recent environmental and energy policies, in order to allow for a later purposeful assessment of those policies and their potential related trade-offs.

Nature-based Solutions

Sens is a city naturally appreciated for its green coverage, with numerous public parks and gardens of varying sizes and contributions, such as:

- Moulin à Tan Park: A 10-hectare park in the southern part of the city, featuring tropical greenhouses with plant species from warmer climates ;
- The Orangerie Garden: Located in the city center, this garden showcases 3,608 plants from 164 different species ;
- Ballastière Park: A 17-hectare park in northern Sens, home to 1,000 trees and a pond ;
- Jean Cousin Square: Established in 1883 near the city center, offering over 6,000 m^2 of green space.

The city of Sens has also been undertaking a greening of its city center for several years, a process it aims to carry out through what we have identified as two distinct pillars of local municipal greening.

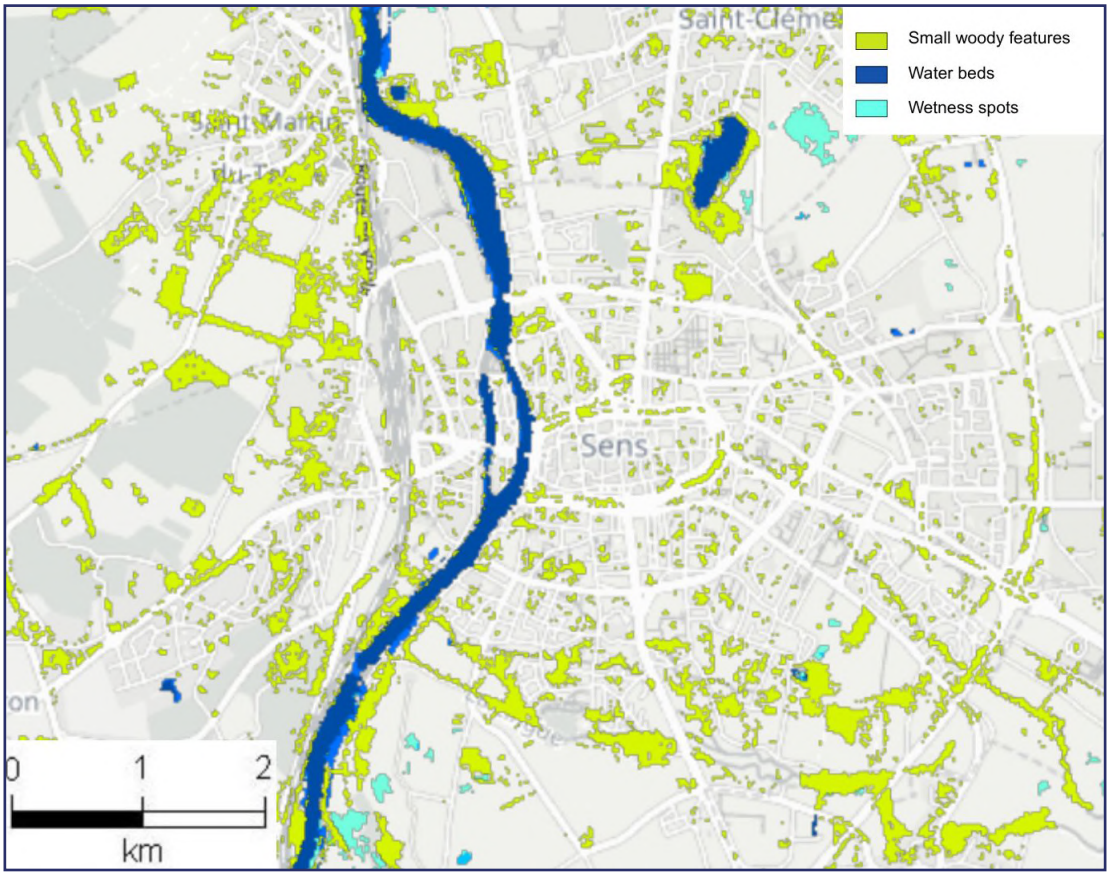

Fig. 2.3.3.1 Map of the Small woody features and water/wet spots cover in Sens.
(Source: Copernicus Land Monitoring Service, n.d.)

The first pillar consists primarily of urban redevelopment projects not specifically targeting housing units but which include the planting of new trees and flower beds as part of broader urban improvement initiatives. These projects aim to enhance public walkways and introduce new tree species to provide both shade, air quality improvement and aesthetic value. A notable example of this approach can be seen along the Yonne river quays (Ernest-Landry and Jean Moulin quays), which underwent redevelopment in 2018 (see Figure 2.3.3.3). The project sought to improve pedestrian pathways and modernize public lighting by replacing outdated bulbs with energy-efficient LEDs. Ultimately, it enabled the planting of 47 additional trees and the substantial greening of flower beds along the riverfront, with the broader goal of achieving biodiversity-related and socio-economic benefits (L'Yonne Républicaine, 2019). A second phase of this greening initiative was still under construction at the time of our visit. It involves the transformation of a former parking corridor located in the northwest of the historic center into a pedestrian promenade (see Figure 2.3.3.2).

Fig. 2.3.3.2 Development Plan for the Promenades of Sens.
(Source: City of Sens website, n.d.)

The second pillar of the municipality's greening strategy involves a more dispersed and small-scale greening of the city center. This includes the installation of plant plots along the streets of the historic core, as well as the placement of flower beds in various corners and pockets throughout the area. Moreover, Sens has also been awarded the «four flowers» distinction by the Conseil National des Villes et Villages Fleuries (National Council of Flowering Towns and Villages) since 1991. In 2010, there were 3,217 trees in public spaces, a number that has likely increased due to recent greening projects, especially along the quays (L'Yonne Républicaine, 2019). Another noticeable green municipal project was the planting of a micro-forest initiated in January 2023 in the Champs-Plaisants neighborhood and in collaboration with local schools. This recent project led to the planting of nearly 1,800 trees over a 600 m^2 area (L'Yonne Républicaine, 2023), illustrating another face of the city's action aiming to integrate green natural assets into the urban environment.

Additionally, Sens faces notable flood risks due to the Yonne River crossing the city. To mitigate these risks, the Metropolitan actor Grand Sénonais introduced a €3 annual flood tax per person in 2018, generating €180,000 for protective infrastructure. That same year, the city was declared a natural disaster zone following severe storms on June 11. As of now, no use of NbS to deal with this risk situation were reported but this might constitute a track for further recommendations.

Fig. 2.3.3.3 Picture taken on site of the refurbished quai Jean Moulin.
(Source: Personal archive, 2025)

Energy Retrofitting

Energy retrofitting constituted, since 2019, another aspect of the urban municipal-led policies in Sens according to the municipal website, with the aim to improve insulation and reduce heating consumption in winter. These works were conducted in the realm of, first the Programme National de Rénovation Urbaine (PNRU) and second the Nouveau Programme National de Rénovation Urbaine (NPNRU), during which overall around €120 millions were and are still injected mainly targeting the districts of Champs-plaisants, les Arènes, Chaillot and Etienne-Dodet until the end of the development project, planned in 20230 (L'Yonne Républicaine, 2019). In all those neighbourhoods, several social housing buildings were selected, mainly based on their to be retrofitted through the installation of external insulation and the renovation of all window systems, thereby preventing excessive heat loss. These projects even included sometimes NbS initiatives such as green walls or greening-cables, even though their implementation remained percellar and unsystematic. Moreover, an expansion of the district heating network was planned in 2020, aiming to extend it by nearly 7 km.

Fig. 2.3.3.4 Social housing dwellings that did (right) and did not (left) undergo renovation in rue de la Folie-Jeannot, Sens.
(Source: Personal archive, 2025)

Additionally, as part of the Action Cœur de Ville program—launched in 2018 and overseen by the National Agency for Territorial Cohesion (ANCT)—the city of Sens is committed to revitalizing its city center. This program includes support from the ANCT for policies aimed at improving accessibility in rural town centers, as well as reducing the carbon footprint of buildings through the rehabilitation and restructuring of the urban fabric in order to create an attractive residential supply (ANCT, 2018). Although the city has been part of the program since 2018, it does not appear to have yet implemented the components related to housing and the renovation of historical buildings in the city center. However, the program may prove particularly beneficial in the coming years for a municipality seeking revitalization, especially through partnerships with institutions such as the National Housing Agency, Action Logement, and the Caisse des Dépôts. Furthermore, since 2023, Action Cœur de Ville has entered its second phase, which allows for the expansion of its scope to include new areas such as train station districts. Consequently, the city of Sens is developing its urban strategy along a west–east axis (see Figure 2.3.3.5), in an effort to ensure the coherence of its redevelopment approach.

Fig. 2.3.3.5 West-east axis of municipal urban planning in Sens.
(Source: City of Sens website, n.d.)

Densification

As mentioned above, the city of Sens does not appear to have recently undertaken municipal policies promoting densification in the way we define the process. On the contrary, we have observed a trend in local policy that seems to favor urban sprawl instead. For instance, plans have been initiated for the creation of an eco-neighborhood in the northern part of the city, specifically in the Beaumont-Ballastière sector. This project aims to address demographic growth and the anticipated halt of land artificialization in the coming years. The proposed development would encompass 13 hectares of agricultural land between Sens and Saint-Clément (see Figure 2.3.3.6), focusing on constructing eco-responsible housing to attract new residents and reduce the percentage of social housing in the area (France Bleu, 2025).

Additionally, the agglomeration also seems to be supporting soft mobility options such as cycling, as witnessed by the launch of the shared bike network “Brennus à vélo” in early 2025, aiming at inter-connecting the sprawled city neighbourhoods with about 100 electric-powered bikes (Grand-Sénonais l’Agglomération, 2025).

Fig. 2.3.3.6 Agricultural parcels targeted by the eco-neighbourhood plan.
(Source: Personal archive, 2025)

2.3.4 A detailed focus on specific districts

Preliminary research conducted prior to our fieldwork allowed us to identify several areas within the city of Sens that were of direct relevance to our study. From these, we ultimately selected three areas because of their significant contribution to the study, as they embody dynamics and trade-offs that we want to assess and that will be discussed in the last section of this part (section f). Methodologically, these case studies were guided by the research questions underpinning the project. However, it is important to mention that our research questions underwent minor adjustments and redefinitions once on site, particularly in response to feedback and suggestions from members of the grassroots organization Sens 4 Étoiles (see Section 2.3.5).

DISTRICTS	HISTORICAL CITY-CENTER	INNER SUBURBS NEIGHBOURHOODS	ECO-DISTRICT DEVELOPMENT
Name of the project	*Action Coeur de Ville + Transformation des Promenades + Aménagement des quais de l'Yonne*	*Renouvellement urbain des Champs-Plaisants et des Arènes*	*Sens Eco-district*
Time frame	- 2018 - present	- 2020 - 2030	- 2024 - Unknown
EEPs involved	- Nature-based solutions	- Nature-based Solutions - Densification - Energy retrofitting	- Nature-based Solutions
Actors involved	- Sens municipality - Agence Nationale de la Cohésion des Territoires (ANCT)	- Sens municipality - Agence Nationale pour la Rénovation Urbaine (ANRU) - Municipal schools - Local associations	- Sens municipality - Private developers

Fig. 2.3.4.1 Summary table of fieldwork in Sens.

Therefore, our on-site work in Sens focuses primarily on the historic city-center of the city (red and blue points on Figure 2.3.4.2) as well as on the neighborhoods of Champs-Plaisants and Chaillot, as they are considered representative of the state of social housing in Sens and have also been the focus of numerous redevelopment and energy efficiency initiatives over the past five years (yellow points on Figure 2.3.4.2). Additionally, at the northern edge of the urban territory of the municipality of Sens lie some agricultural lands separating the city from the neighboring commune of Saint-Clément. These lands are currently the subject of speculation related to the potential development of an eco-district by the city of Sens - part of which construction has already been achieved and thus constituted an interesting topic to be assessed on site (green point on Figure 2.3.4.2).

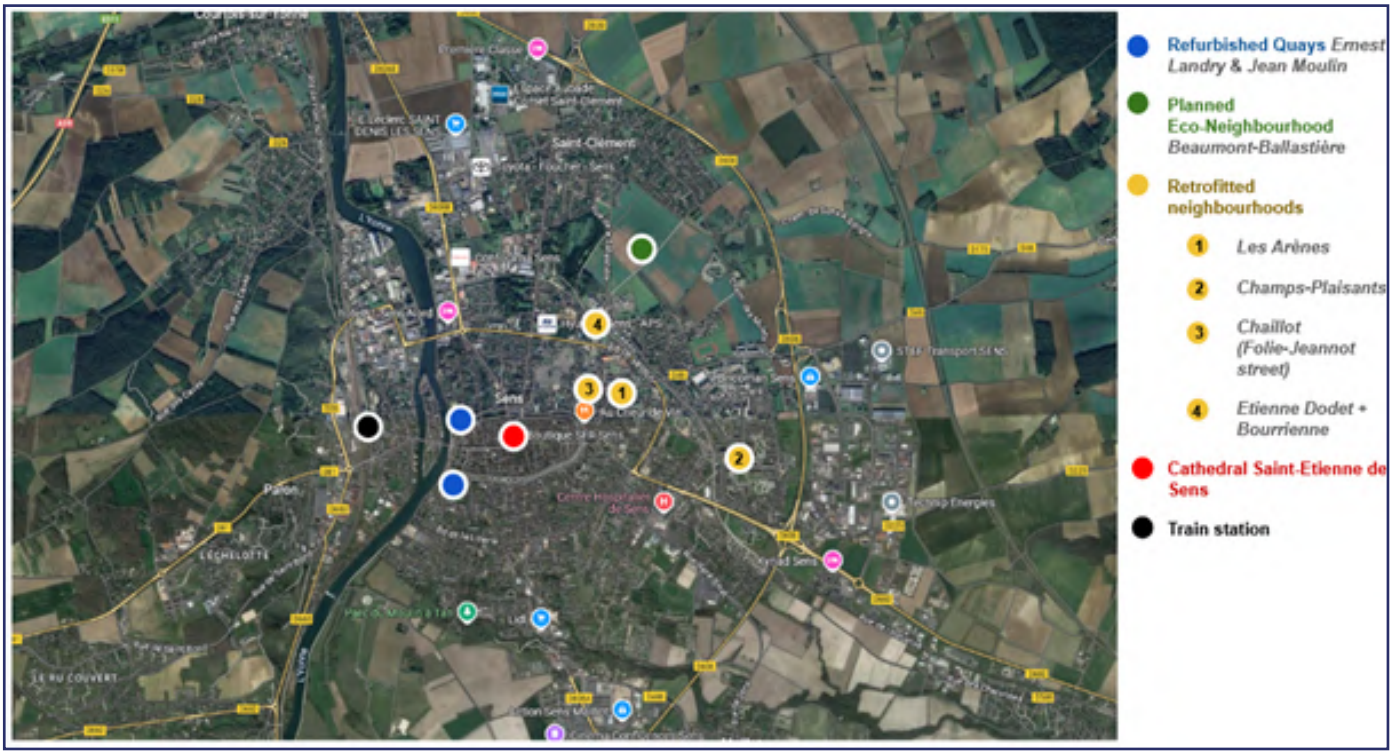

Fig. 2.3.4.2 Map of Sens by center of interests for the fieldwork.
(Source: Google Maps 2025)

Our first in-depth case study focused on what we refer to here as the historic and central district of Sens, symbolically bounded by the road axis that has replaced the former fortification walls. This district constitutes the historical core of the city's economic life and cultural heritage, encompassing key landmarks such as the cathedral, city hall, covered market halls, and the "Grande rue" (main street). We chose to focus partly on this area due to the significant underutilized land potential it presents and also for the lack of political interest it seems to present as of now. Our field visits also revealed that municipal attention to this zone is largely centered around plot-based urban greening policies, which aligns with another structural dimension of our analysis. Given the similarities in trends of residential de-densification and economic stagnation, we chose to include the area surrounding the Sens train station within this case study as well. This first case study was constructed as a tool to assess the role of urban core economic attractivity in promoting housing density and affordable housing in the city center, which appears to be currently failing to do so Moreover, this case appears as a necessary reminder of Sens' historical background (including the cathedral, city hall and market places) as well as a crucible reference point when it comes to comparing the dynamic of the city center to the residential inner suburbs or even peripheral agricultural lands. By meeting us in front of Sens Cathedral — thus in the heart of the city's traditional center — our first interviewee, co-founder and leader of the "Sens 4 Étoiles" movement, intended to offer us a first impression of the overall decline affecting the downtown area and its commercial streets. Among the streets most visibly impacted by this dynamic is Sens's main street, stretching over 400 meters and lined with frequent signs announcing imminent business closures or calls for new buyers. According to local interviewees, this street epitomizes the central issue plaguing the city center: the econo-

mic decay of its commercial appeal, exacerbated by disproportionately high investment costs and thus raising significant questions of affordability of the center to low-income residents.

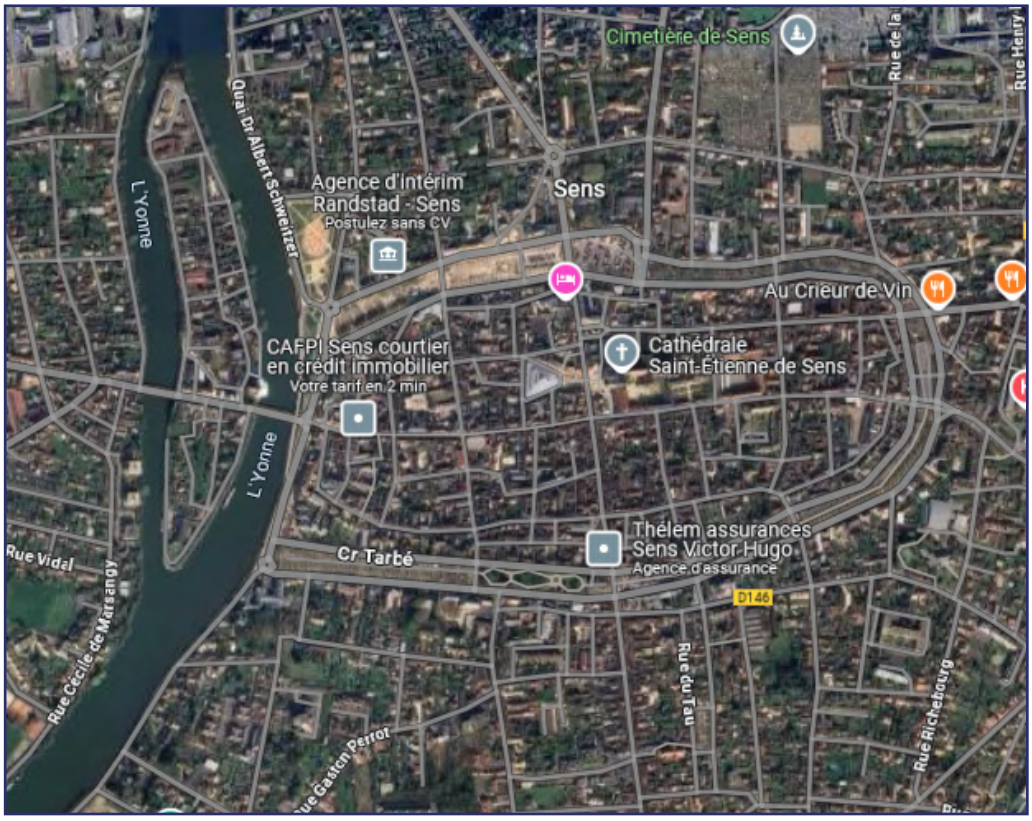

Fig. 2.3.4.3 Satellite view of Sens historic city center.
(Source: Google Maps, 2025)

Once considered a small bourgeois town until the late 1980s and 1990s — benefiting from its proximity to Paris — this first illustrates that Sens seems to be no longer enjoying meaningful economic development in its downtown core. Recent development trends appear to have rather favored urban sprawl and the promise of full employment that supposedly accompanies it, according to proponents of such approaches. Therefore, once crossing the ancient city walls, the diagnosis is stark: the historic center of Sens is caught in a cycle of inertia and degradation, affecting both the city's economic vitality and the sanitary conditions of its housing stock. This economic stagnation is accompanied by a significant decline in residential attractiveness, particularly in the city center, which is in turn exacerbated by the deteriorating state of housing. Local informants, estimates that between 400 and 500 housing units in the downtown area are currently unsanitary, representing a substantial amount of unused rental potential—if not already exploited by unscrupulous slumlords and thus raising noticeable questions of unexploited densification potential and abnormal high rent costs reducing access to housing in the city center.

Our second substantial and contextually grounded case study concerns several neighborhoods located in the city's inner suburbs, primarily to the

northeast, comprising a number of social housing complexes—namely the Champs-Plaisants, les Arènes,, and Étienne Dodet neighborhoods. These social housing estates have undergone major renovations starting in 2019 under the framework of the New National Urban Renewal Program (NPNRU in french), which included mostly energy efficiency upgrades but also the integration of some nature-based solution tools. With a total investment of €124 million over more than a decade, this major project is structured around three pillars defined by the municipality: the modernization of public facilities, the improvement of the living environment, and the renovation of social housing (ville-sens.fr, 2024). The goal in these predominantly social housing neighborhoods is to revitalize the area by integrating upgraded public services, new housing, green spaces, and infrastructure for active mobility. To achieve this, the municipality relies on several flagship developments, including the creation of a micro-forest within residential complexes—as previously mentioned in this report—which began in 2024 in collaboration with an urban agriculture initiative led by the association Le Ginkgo. Added to this is the impact of the arson attack on the social center "La Maison des 3 Sens" in June 2023, previously mentioned, which led to a redesign of the development project. It now includes a new shared facility named "La Ruche," which will combine a social center and a daycare. Construction is scheduled to begin in 2025. Instead of the two initially planned buildings, the decision was made to construct a single, multi-purpose facility, thereby maintaining public services while controlling costs, according to the municipality (ville-sens.fr, 2024). As for the housing component, it is overseen by the social housing providers Habellis and Domanys. The plan includes the demolition of 617 housing units, the reconstruction of 309 social housing units, and the "residentialisation" (namely the reconfiguration of social housing into more residential-style environments) of 585 units, again according to information provided by the municipality. Some of this work has already begun and is expected to continue until 2030.

Fig. 2.3.4.4 Satellite view of Sens Chaillots Social housing neighbourhood.
(Source: Google Maps, 2025)

These neighborhoods concerned by ambiguous redevelopment projects thus constitute particularly relevant sites for our analysis, as our fieldwork sought to assess the extent of trade-offs associated with these renovations, whether in the design of the project or in the outcome, thus directly relating to the topic. In this context, the question of the potential exclusion of long-term residents under the guise of upgrading existing housing—through energy efficiency measures and residential reconfiguration—inevitably arises. This raises broader concerns about the role accorded to the social dimension beyond the boundaries of the construction of an additional social center. Even though we observe a numerical augmentation in planned available housing units, the question of moral displacement through the weakening of social institutions such as tenants associations arises.

Finally, our third case study on site investigated potential dynamics of accelerated land speculation driven by national regulatory frameworks in Sens, focusing on agricultural land located at the northern periphery of the city, namely on the "Eco-neighbourhood" project. This case aims to assess the extent to which ecological discourse is used to justify the conversion of peri-urban farmland into artificialized land designated for the development of an "eco-district," whose architectural and community foundations are portrayed as sustainable. This case allows us to examine the impact of national regulations such as the ZAN (Zero Net Land Take) policy on urban sprawl in municipalities with rural characteristics, as well as the implications of these dynamics for housing accessibility. Although less developed—partly due to a lack of documentation—than the two previous case studies, this final case allows us to raise se-

veral questions related to urban sprawl dynamics and their connection to the gradual decline of the city center. The reliance on car-based mobility hinders efforts to re-densify the city center in a pedestrian-friendly manner. Furthermore, the issue of green branding in these new neighborhoods, and the impact of such marketing narratives on local rent prices, also deserves attention.

Fig. 2.3.4.5 Satellite view of Sens Eco-district parcels.
(Source: Google Maps, 2025)

2.3.5 The role of grassroots organizations in tackling housing exclusion

Sens 4 Étoiles

Within the comparative framework of our work in Sens, particular attention was paid to the grassroots movement Sens 4 Étoiles, whose local engagement and political agenda provided valuable insights into the evolving socio-urban landscape of Sens. Sens 4 Étoiles is a grassroots citizen collective based in Sens and its surrounding areas, born out of a shared aspiration to initiate a transformative political shift in the lead-up to the 2026 municipal elections. The movement mostly envisions a more inclusive, participatory, and sustainable city and advocates for deeper citizen involvement in urban planning and local governance. Its action is structured around three major pillars: participatory democracy, sustainable urban development, and ecological transition. Central to its democratic vision is the creation of "neighborhood houses"—community spaces where residents can gather, discuss, and co-decide on local matters, fostering stronger ties between citizens and elected officials. This participatory model seeks to reinforce a sense of ownership and collective responsibility for the city's future. On the urban front, the group positions itself firmly against the logic of urban sprawl,

instead advocating for vertical densification—constructing higher-quality, taller buildings within existing urban perimeters and thus reinforcing the urban core center attractivity and lowering down the housing prices as it creates more housing possibilities for the same total amount of applicants. This approach is seen by the collective as both a way to provide better housing but also as a crucial mean to preserve agricultural and natural lands by limitating urban sprawl dynamics. In terms of environmental goals, Sens 4 Étoiles pushes for a local ecological transition grounded in practical initiatives: reducing the city's carbon footprint, improving energy efficiency, and integrating green infrastructure into the urban fabric. Altogether, the movement seeks to represent an alternative political voice to the current municipal trend grounded in grassroots mobilization and a deep commitment to democratic renewal and sustainability. It thus made sense within our fieldwork in Sens to engage directly with figures from this collective, as they also significantly contributed to the production of local knowledge on EEPs and urban issues.

While this collective does not directly address the trade-offs resulting from the implementation of municipal environmental and energy policies, it nonetheless appears to play a significant role in bringing them to light, may it be through citizens meeting, the voicing of their discontent or even neighborhoods visits that they're used to conduct within critical sites of the city to raise awareness about - among other - housing issues. This collective was not directly involved in the conceptual phases of the aforementioned projects. Rather, it gradually established itself as a platform for disseminating urban development issues, notably through the organization of those neighborhood visits. The movement includes former municipal councilors, particularly from the Socialist party, who are seeking solutions in a locally grounded, cross-party approach rather than through traditional partisan competition for control of the municipality. It is nonetheless noteworthy that the movement has recently expressed electoral ambitions, with the 2026 municipal elections in its sights.

	Sens 4 Etoiles
Actions	- Citizen gatherings and public debates on urban planning in the city of Sens - Guided neighborhood visits to explore urban planning issues - Production of knowledge and alternatives for the city and its territory (think tank model) - Creation of an electoral list targeting the 2026 municipal elections (more recently)
Claims	- Advocate for vertical densification to prevent urban sprawl and preserve natural spaces - Focus on efficient land use to support population growth and economic development - Address issues of soil artificialization and promote green spaces and pedestrianization of the city center - Encourage community involvement in planning processes to ensure sustainable and inclusive urban growth - Promote urban agriculture to enhance food quality and reduce carbon footprint - Expand the urban heating network utilizing geothermal energy to reduce reliance on fossil fuels
Relationship to municipal authorities	- Self-declared non-partisan citizen movement, composed nonetheless of former municipal councillors, aiming to refocus public debate on the development of an inclusive, participatory and sustainable urban planning policy - The group opposes the current urban development approach implemented by the municipality and intends to form an opposition electoral list for the 2026 municipal elections

Fig. 2.3.5.1 Summary table of grassroot initiative met in Sens and its actions.

Thus, by claiming a transpartisan stance and therefore claiming that they can operate "a true focus on the local", the collective brings together a very diverse group of citizens, thereby broadening the scope of our field analysis and offering perspectives that are directly affected by the dynamics triggered by the municipality's recent public policies. Therefore, we conducted semi-structured interviews with two members of the collective, namely the head of the movement and a social housing tenant representative and resident. The first interview was even followed by a discussed visit of the city center, allowing for a more precise review of critical sites that represents the challenges at play in Sens.

2.3.6 Trade-offs and relationships between green transition initiatives and housing inequalities

Based on our overview of the city, its housing market and EEPs, case studies and interviews

with grassroots, this part will provide an early analysis of the trade-offs and relationships at the municipal level between our studied EEPs and housing inequalities, following a three parts structure.

Decline of the Historic City Center in the local agenda: scattered municipal policy attention and unequal greening initiatives

The economic and residential decline of the historic city center—extending as far as the train station district—is characterized by high housing vacancy rates compared to the national mean, and a puzzling lack of attractiveness, despite its strategic location (only a ten-minute walk from a train station with direct connections to Paris in under an hour, making it an ideal setting for commuters or cultural visitors). This trend mirrors a broader pattern observed across many small and medium-sized rural towns in France (Vie-publique, 2021). Locally, this loss of vitality is perceived by the encountered inhabitants and by some members of Sens 4 Etoiles as yet another symptom of the city's "satellization": gradually stripped of its own appeal due to its increasing dependence on the capital and a more dispersed population. One of the central criticisms raised by the collective Sens 4 Étoiles targets the municipal policies of the past two decades, which they accuse of prioritizing what they see as a "fragmented and superficial greening strategy, limited to scattered interventions in streets and alleys". The municipal greening process, which in Sens primarily takes the two forms outlined above, is therefore widely perceived by Sens 4 Etoiles as a major factor contributing to the rising rental prices in a city center that otherwise lacks economic dynamism. These changes may be considered as having driven away many shops and residents—either due to a lack of economic opportunities or to decreasing affordability.

In addition to questions raised about the effectiveness and the unequal distribution of the benefits related to NbS implementation in Sens, we can also argue that, so far, these interventions do not appear to have achieved their intended impact, as evidenced by the persistently high housing vacancy rates and the desolate landscape of the city's once-thriving commercial artery. To further seek for explanations to those dynamics, we take for example the redevelopment project of the Promenades in Sens. While this project does not eliminate cars altogether, it significantly reduces available parking space by including ever more tree spots, thus raising increasing concerns about modal exclusion and its effects on commercial life in the city center and rent prices. Therefore, there is an acknowledged incentive here to identify Sens' greening policy as segmented and non-resilient and by this, we refer to a loosely coordinated effort consisting of isolated green installations with little integration into a broader urban planning strategy thus contributing to a significant reduction of housing accessibility in the city center. As one passerby put it: "Here, when the city puts a potted plant on the street, that's what they consider to be a greening process."

Sidewise, current revitalization efforts conducted within the city itself such as the redevelopment of the promenade, often contribute more to the suffocation of urban life than to its revival — largely due to the persistent prioritization of automobiles and its extensive artificialization — according to the interviewees and residents we met on field. This autocentric logic is evident in the ongoing project on Rue André Gateau, one of many streets parallel to the main artery, where a vacant plot (see Figure 2.3.6.1) is being turned into a "landscaped parking lot." Our interviewee even perceives this as a disingenuous pretext for more concrete de-

velopment, especially since the area is already surrounded by parking spaces, thereby further disrupting the urban density fabric while not being able to fully capture the land housing potential and not being coordinated with previously mentioned greening policy.

Fig. 2.3.6.1 Urban wasteland on Rue André Gateau in the center of Sens and set to be converted into a parking lot.
(Source: Personal archive, 2025)

In response to what they see as uninspired and poorly connected environmental policies, the Sens 4 Étoiles collective advocates for a near-complete pedestrianization of the city center. They argue that such a measure would allow residents to reclaim the historic core while countering the stifling and unequally distributed effects of current green initiatives. The group also supports a shift toward vertical densification in the center — which would involve relaxing the strict building height limits currently imposed by the city's Local Urban Plan (PLU) — toward higher buildings and more affordable access to housing in the center (see Dong, 2023, on the effect of higher density development on housing costs) . According to the collective, this type of policy could support the rehabilitation of vacant or unsanitary housing units in both the city center and the train station area. However, to be inclusive, such a shift would require close collaboration with social housing providers, with the aim of redirecting public housing supply back into the historic heart of the city.

Beyond the facades: Investigating the social costs of renovation in the inner suburbs

Beyond the progressively pauperising city centre, what we refer to here as the inner suburb—or Sens's second ring—stands out for its significantly higher concentration of social housing and designated priority neighbourhoods. This spatial configuration has contributed to a growing divide between a declining historic core and its adjacent, more popular and residential urban fringe. Among these neighbourhoods, our fieldwork focused

more specifically on the Arènes, Chaillots, and Champs-Plaisants districts, located respectively to the north and east of Sens's historic centre (see Figure 2.3.6.2). This selection is justified by the fact that these areas have recently been the target of substantial municipal renovation and environmental enhancement projects, making the assessment of their impact on residents and housing accessibility a key dimension of our study in Sens.

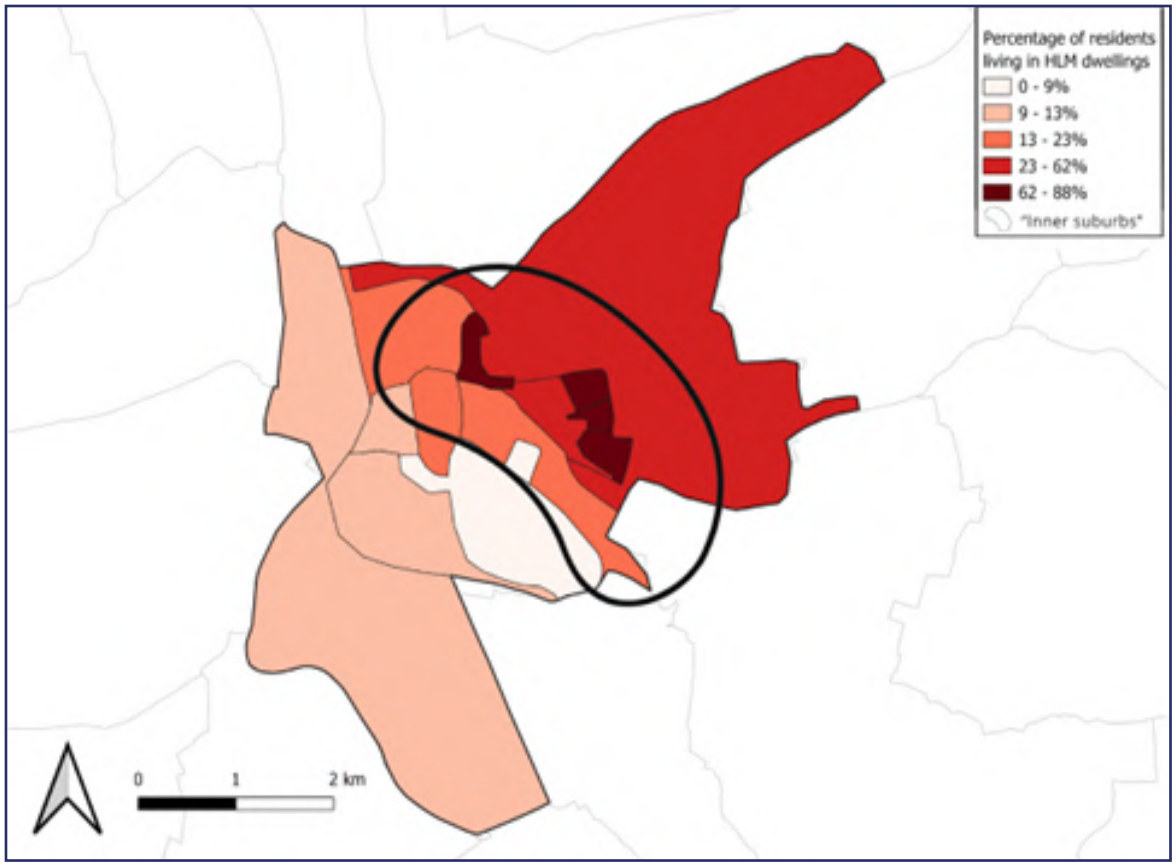

Fig. 2.3.6.2 Social housing residents density in Sens by IRIS division.
(Source: INSEE, 2021).

In the context of the ambitious NPNRU redevelopment project detailed in previous section 2.3.4, the municipality and private developers established a main goal of reducing energy consumption by over 50%, chiefly through external insulation of buildings, upgrades to carpentry and structural elements as well as the development of several greening components (green walls, micro-forest…). These examples suggest that the inner suburb's social housing districts have been the focus of intensive renovation efforts In a municipality where social housing accounts for approximately 30% of the total housing stock—significantly exceeding the national minimum of 20%.

However, first observations and interviews on site tend to say that these costly - for the municipality as well as for local residents - and large-scale investments appear to have been unevenly distributed across neighbourhoods, a fact that would have fuelled scepticism among many residents, particularly those living in the historic centre. Moreover, despite the magnitude of the financial investments involved, these renovations have focused exclusively on technical and material aspects of energy efficiency, largely ignoring the social and human dimensions of urban renewal. This concern is notably expressed by a member of the Sens 4 Étoiles movement, social housing

resident, and tenants' association representative, who argues that, "everything was invested in the buildings; they left the people aside—and that's tragic." According to him, these renovation efforts failed to account for the revitalisation of tenant communities and their associative networks. By concentrating solely on the technical execution of the works - even if those technical details would need a proper detailed analysis as well, notably concerning the efficiency of the work realized on site - the projects have coincided with a progressive decline in the number of on-site caretakers, social workers, and, more broadly, tenant associations and community initiatives.

This neglect of the human factor emerges as a central concern in our study, as it illustrates the trade-offs—whether conscious or not—made by municipalities and social housing authorities when defining renovation priorities and allocating funding. In this regard, the grassroot association also criticises the structural impact of the ELAN law (Évolution du Logement, de l'Aménagement et du Numérique), promulgated in November 2018, which aims to facilitate housing construction, improve existing housing stock, and modernise social housing management while supporting digital and environmental transitions. The law requires the merger or consolidation of social housing providers managing fewer than 12,000 units. According to our local informant, one of the notable consequences of this legislation has been the absorption of local, community-based housing providers into larger entities, which, in an effort to achieve economies of scale, often reduce staff responsible for maintaining dialogue with tenants. This results in a larger number of units managed by fewer people, further weakening social bonds and local responsiveness as social housing providers then employs fewer field workers, reducing the possibility of direct contact with social residents and thus the maintenance of the social link. Coupled with energetic and ecological renovation strategies that prioritise aesthetic and technical upgrades, these trends further alienate social housing residents from full inclusion in contemporary environmental and energy policy frameworks.

Intensification of the land artificialization: between national regulatory pressures and green washing

In the northern sector of the city of Sens, a new urban development project is being promoted under the appealing label of an "eco-neighbourhood". Though it presents itself as a sustainable solution to urban growth, the project raises a number of concerns when examined in the context of national land-use regulations and ongoing processes of suburban speculation. The initiative appears to reflect a persistent logic of horizontal densification and land artificialization, which undermines both climate ambitions and social equity at the local scale.

The "eco-neighbourhood" is planned - and already partly constructed - on a previously agricultural plot in the northeastern part of the city. While project promoters emphasize its connection to the urban heating network and the inclusion of green spaces, closer scrutiny reveals a set of contradictions. According to local informatns, the development consists of "minimalist green arrangements" and limited spatial ambitions for biodiversity: "It's the kind of space where you can grow three carrots, not more." The project limits building height to a maximum of R+3 (three floors above ground), yet covers a vast area, implying a horizontal urban expansion that clashes directly with the national trajectory set by the Zéro Artificialisation Nette (ZAN) framework. As already mentioned above,

the ZAN regulation was introduced as part of the 2021 Climate and Resilience Law, aiming for "zero net land artificialization" by 2050, with an intermediary target of halving land take by 2030. However, the project in Sens predates the implementation of this law and appears to actively resist its spirit. Local authorities involved in the project reportedly show little interest in aligning the development with ZAN constraints, choosing instead to continue promoting peripheral land consumption under the guise of green innovation and until they will not be allowed to do it anymore. This speculative use of land fuels a dynamic of urban sprawl, where development shifts toward the city's periphery without adequately addressing the needs of the historical centre or inner suburbs such as argued in the previous subparts.

In practice, the branding of the project as an eco-district appears to be serving more as a greenwashing strategy than a true ecological transition. As such, it raises key questions about how public and private actors are navigating—and sometimes circumventing—the increasingly stringent land-use regulations set by the central state. The speculative dimension of this transformation is also apparent in the shifting land-use patterns on the city's outskirts. The gradual commodification of peripheral land parcels, often in anticipation of zoning changes or development projects, contributes to a wider process of socio-spatial fragmentation. Core areas of the city, including the historic centre and adjacent working-class districts, continue to face disinvestment, while economic and planning efforts are redirected toward newly artificialized areas that are less accessible and more car-dependent. In that sense, it can easily be argued that the Sens eco-neighbourhood project illustrates the tensions between national regulatory pressures, such as ZAN 2030, and local development practices that still rely heavily on land consumption. While dressed in the language of sustainability, these initiatives may reinforce rather than resolve existing inequalities and environmental contradictions.

2.4 MILAN

2.4.1 Overview of the city's main dynamics

A General Overview of Milan

Milan is the regional capital of Lombardia, in Northern Italy, close to the Swiss border. Despite its proximity to the Alps mountains, the city is flat with being located in the Po Valley, with the highest point being at 122 m above sea level. The surrounding rivers are the river Po in the south and the great lakes of the Alps (Lake Como, Lake Maggiore and Lake Lugano) to the north, the Ticino river to the west and the Adda to the east. Milan benefits from a mid-latitude, four-season humid subtropical climate.

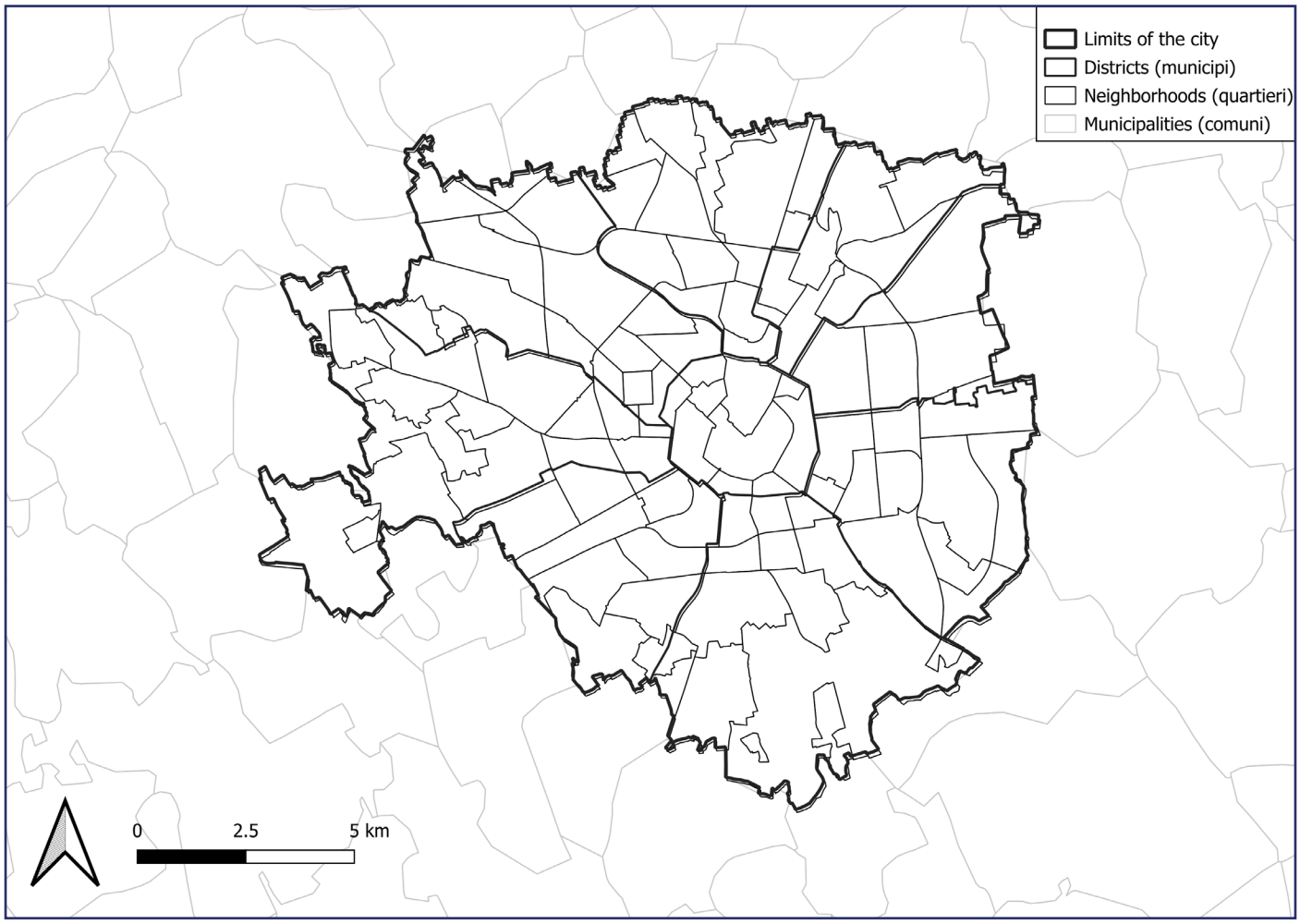

Fig. 2.4.1.1 Map of Milan municipal borders, neighbourhoods division.
(Source: Authors' own, 2025)

With 1,4 million inhabitants (in 2019) over 182 km2 for the city area, Milan is the second largest city of Italy and one of the largest cities in the European Union. The metropolitan area of Milan, which includes nine municipalities, counts 3.22 million residents over 3,632 km2. Lombardia itself is the most populous region in Italy. The city of Milan (shown on Figure 2.4.1.1) is also characterized by its high density of 7,800 hab/km2, namely compared to the national average of 198 habitants/km2 (Istat, 2025). Figure 4.1.2 shows the evolution of Milan's total population between 2019 and 2024.

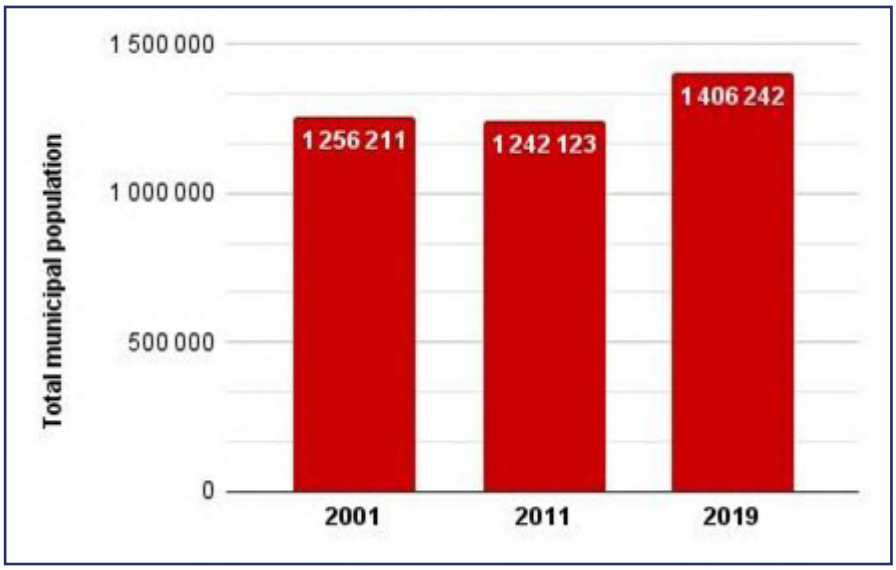

Fig. 2.4.1.2 Evolution of Milan's total population between 2001 & 2019.
(Source: Istat 2021)

Political and administrative system

Italy is a regional state. Its political system is organised in multiple administrative levels - regions (regioni), provinces (province), and municipalities (comuni). The regions have the right to acquire property and to collect certain revenues and taxes (Britannica, 2025). The Municipality of Milan (Comune di Milano) has both a legislative and executive body. The City Council (Consiglio Comunale) is made up of 48 councillors elected every five years by proportional representation. It votes on local laws, approves the budget and oversees the actions of the mayor and the Giunta Comunale. The City Council (Giunta Comunale) is the city's executive body, responsible for the day-to-day administration of the city. It is headed by the mayor, elected by direct universal suffrage. The Municipality of Milan is divided into nine administrative Consigli di Municipio which can advise the Mayor and have some responsibilities for local services like waste collection, roads, parks, or schools. The current mayor of Milan is Giuseppe Sala. He was first elected on 5 June 2016 and re-elected for a second term on 4 October 2021, as candidate for the Green Party and leading the centre-left coalition (see Figure 2.4.1.3 showing the timeline of municipal elections since 1997). At the last elections in October 2021, the left-wing coalition led by the Democratic Party won a majority with 33% of seats, followed by the center-right coalition with 17%, led by the populist party The League (just under 11%) (Repubblica.it., 2021).

Since 2015, Milan has become one of 15 metropolitan municipalities (città metropolitane), a new administrative status that better coordinates the provision of basic services (such as schools, transport), policies, namely in territorial planning and environmental matters, and their financing. The Metropolitan area gathers 133 municipalities. The mayor of the municipality of Milan also acts as metropolitan mayor (Sindaco metropolitano) and governs with a Metropolitan Council composed of 24 representatives. The metropolitan council is composed of members elected indirectly by mayors and city councillors from the municipalities within the metropolitan area.

Finally, the region of Lombardy plays a key role in the economy, transport, health and the environment. It coordinates public policies on a wider scale than the city of Milan and the Metropolis.

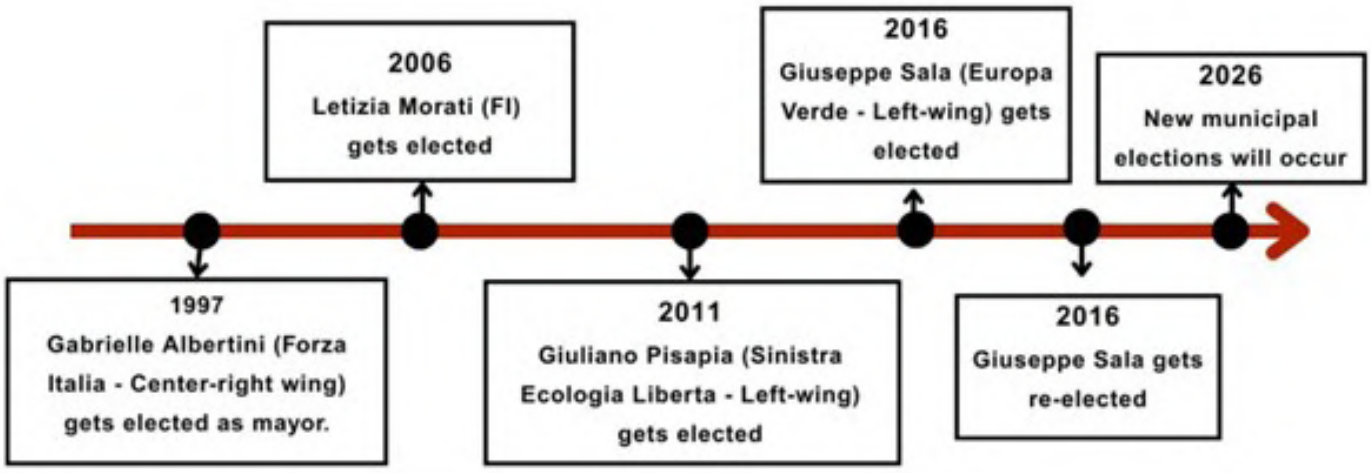

Fig. 2.4.1.3 Timeline of the municipal elections in Milan (1997-2026). (Source: Authors' own, 2025)

Economic context

Economically, Milan is among the wealthiest cities in Europe, with a GDP of 228,44 billion euros annually (Eurostat, 2025). The average income of the Milanese population is 30,600€ (Lelo, 2018) and the Gini index is 0,3 in 2021 (Polis Lombardia, 2024). Milan is historically the economic centre of Italy, forming an industrial triangle with Turin and Genoa. During the 20th century, the city was specialised in the mechanical industry for automobiles (like Alfa Romeo), motorcycles, railways materials. Beginning with the economic crisis of the 1970s, Milan followed a trajectory similar to many other European cities, experiencing the delocalisation of production and deindustrialization within the broader context of globalization. The national government became powerless in the face of cross-border competition and global economic shifts. Milan shifted its economy from industry to services, mainly in finance and banks, informatic

technologies, logistics, tourism, and fashion. This transition has made both the city and the region among the richest in Italy. Today, the Milanese Metropolitan area stands for 16% of the national GDP. As an attractive hub for high quality services, Milan is today a dynamic center of progress, what Sassen describes as a "global city" (Sassen, 2009).

2.4.2 The landscape of housing inequalities

In Italy, the housing structure evolution has seen a constant shift from rent to ownership. In 2021, 76,7% of Italians were owner-occupiers and 17% were renters (see Figure 2.4.2.1).

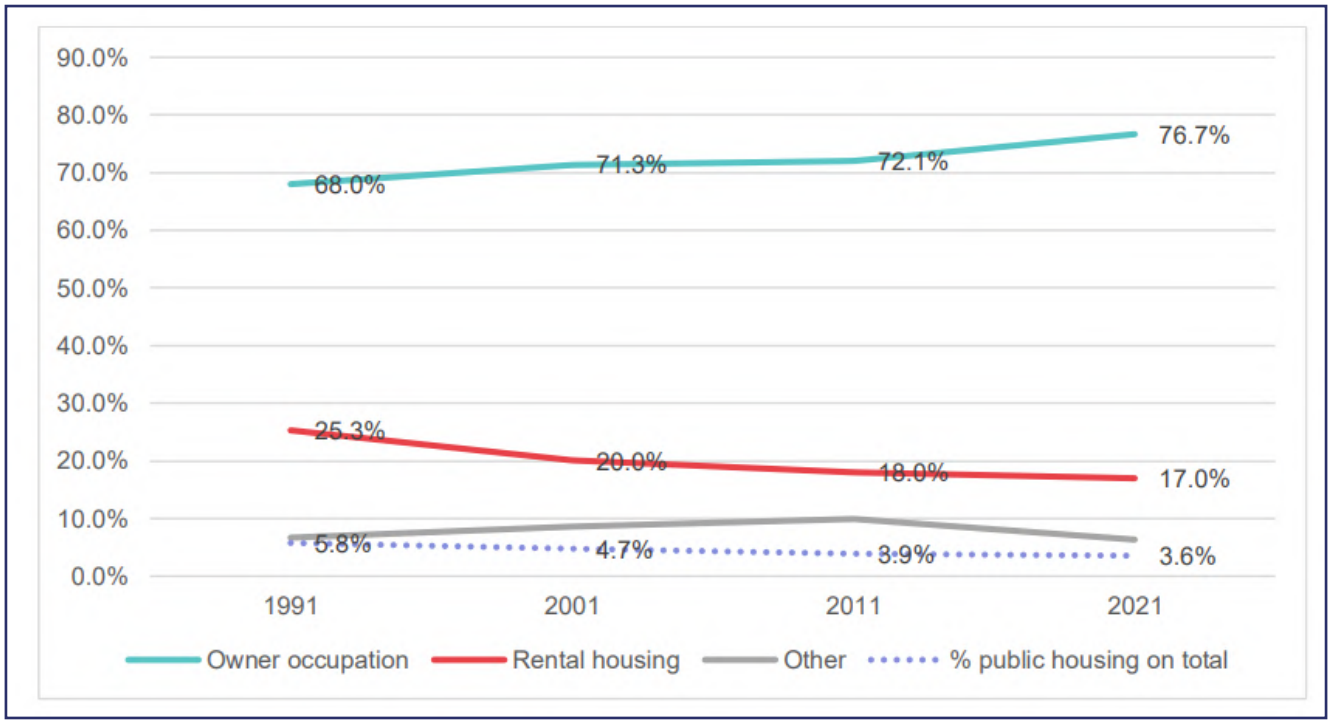

Fig. 2.4.2.1 Tenure structure 1991-2021 and percentage of public housing on the total tenure.
(Source: Bricocoli et al., 2024)

Housing tenure in Milan has been following a similar pattern as the national level, and is today characterized by a high rate of homeownership, reaching 71% of the housing stock (Cavicchia et al., 2023). Among the 29% rented units, 19% are private rental units and 10% are public housing (Figure 2.4.2.2). The public housing stock represents 60,000 social housing units, divided between the municipal company MM SpA (26,489 units) and the regional company ALER Milano (32,017 units) (Wolfgring and Peverini, 2023).

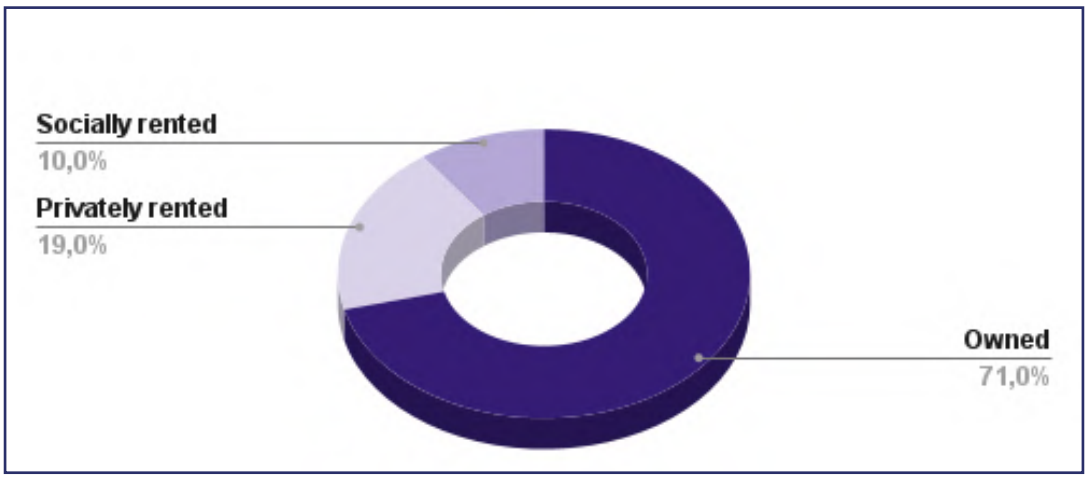

Fig. 2.4.2.2 Tenure type repartition among main residences in Milan in 2023.
(Source: Cavicchia et al., 2023

After WWII and until the 1960s, Milan, heavily bombed during the war, underwent an intensive reconstruction phase and became a key destination for internal migrants, notably from Puglia, Campania, and Sicily. Between 1958 and 1970, the province welcomed 440,000 migrants, and the wider Lombardy region 740,000 (Balard & Petsimeris, 2008). In this context of economic growth and urgent housing demand, the government launched the 1962 Affordable Housing Plan (Piano di Edilizia Economica e Popolare, Law 167/1962), requiring large municipalities to allocate land for social housing and related public services (Peverini et al., 2023). Between 1949 and 1963, public housing in Milan represented 5% to 28% of annual new construction (Peverini et al., 2023). The city hosted some of Europe's largest projects, such as Gratosoglio, with 4,000 units built between 1962 and 1965 (Petsimeris, 2018). Yet these estates, built with industrial techniques on the urban periphery, were poorly integrated and lacked connections to the city, reinforcing segregation between a wealthy center and a deprived periphery. Now fully part of the city, several of these areas are being targeted for regeneration due to their strategic location (see Figure 2.4.3.4 about the six specific areas identified in the PGT Milano 2030 as providing Major Urban Functions) and rising land value (Bazzi, 2024).

Milan's public housing, though higher than the national average, has been decreasing since the neoliberalisation wave of the 1970s. In 1971, a housing reform initiated the privatization of the housing market and of the institutions responsible for managing public housing. In 1993, the law entitled Norme in materia di alienazione degli alloggi di edilizia residenziale pubblica institutionalized the possibility for social housing tenants (Edilizia Residenziale Pubblica - ERP) to purchase their homes at reduced prices. Between 1991 and 2001, Milan's public housing sector lost approximately one third of its stock, around 27,000 units. Today, regulations of public housing come from the regional or municipal levels, but no national law in Italy mandates a fixed percentage of new housing developments to be allocated to social housing, so that the country ranks "at the bottom of the European league table in terms of the number of social housing units by country" (Petsimeris, 2018) with not more than 4% of the total housing stock being publicly owned.

The wave of privatization had a twofold consequence. First, the withdrawal of public authorities from managing the housing stock has led to serious problems in renovating aging buildings. With dwellings becoming uninhabitable and no structured renovation plans led by public authorities, vacancy rates have risen sharply (Bricocoli et al., 2024 ; Peverini et al., 2023). Around 20% of Milan's housing stock was unoccupied, and in the public housing stock in 2021, 14% of the houses were vacant (Peverini et al., 2023). This led Peverini et al. (2023) to highlight the emergence of a paradoxical and urgent situation: while the availability of public housing is decreasing due to lack of maintenance, the demand for affordable housing continues to grow. Second, privatization of the housing market led to its commodification, directly contributing to the lack of affordable housing. In a global city like Milan, which still has development potential, investors view housing primarily as a source of profit. In 2022, average rent in the private sector was €14,5/m^2 per month, increasing by around 34% compared to 2015 (Wolfgring & Peverini, 2024). Today, Milan is facing a housing crisis with a housing market becoming more and more exclusive. According to a study by Bricocoli and Perevini (2024), average housing prices in Milan recorded a 50.1% increase between 2015 and 2022, growing 2.7 times faster than incomes and wages. Rents are rising almost twice as fast as incomes and wages at the same period (Bricocoli & Perevini, 2024).

Moreover, Milan's housing market is nowadays facing a new challenge with the massive expansion of short-term rental platforms like Airbnb. In 2022, over 20,000 Airbnb listings existed in Milan (Comitato Abitare in via Padova, 2023).

In Milan, a distinction must be made between two types of affordable housing: public housing and social housing, as Figure 2.4.2.3 summarizes.

Aspect	Public Housing (Edilizia Residenziale Pubblica - ERP)	Social Housing
Ownership and Funding	Owned and managed by public entities, such as the Municipality of Milan or regional authorities. Finance and constructed by government funds.	Often developed through public-private partnerships involving non-profit organisations, private investors, and public institutions. Funded through a mix of public and private investments, often supported by ethical finance initiatives.
Purpose	Provides housing at subsidized rents primarily for low-income residents who meet specific eligibility criteria.	Aims to offer affordable housing to a broader range of income groups, including middle-income individuals and families.
Rent level	Very low - a fixed share of tenants' income (from 14% to 25%) 0,9 €/m²/ month on average (Cavicchia et al., 2023)	Low - around 30% lower than the market rate 9,4 €/m²/month on average (Wolfgring & Peverini, 2024)
Beneficiaries	Precarious households, very low income	Workers, families with low or medium income
Examples in Milan	Traditional public housing	Cenni di Cambiamento

Fig. 2.4.2.3 Characteristics of public and social housing in Milan. (Sources: Cavicchia et al., 2023 ; Wolfgring & Peverini, 2024)

Despite these municipal strategies, many urban regeneration programs in Milan are pushed by international programs launched by city-networks. The C40 "Reinventing cities" motivated many projects such as Ex Macello, Bovisa, Loreto, and Scalo Lambrate. This strategy is criticized for orienting the urban organisation towards a neoliberal management using labels and certifications as branding tools to ameliorate the attractiveness.

2.4.3 Environmental and energy policies at the urban scale

In 2019, the Municipal Council of Milan adopted the Air and Climate Plan (Piano Aria e Clima), providing policy guidelines to reach carbon neutrality by 2050. In this regard, three main objectives have been identified: comply with the limit values for PM10 and NOx air pollutant concentrations ; reduce CO2 emissions by 45% by 2030 ; help limit the local temperature increase to 2°C by 2050 through urban cooling measures and the reduction of the urban heat island effect (Comune di Milano, 2022).

Nature-based Solutions

The total green coverage stands at 13,8% of Milan' municipal territory, representing more than 25 million square metres (Istat, 2020), which is low compared to Paris (14,6%) and London (20%). The Milan metropolitan area also has large agricultural areas on its southern and western edges, forming the rural area of the Parco Agricolo Sud Milano. In fact, 50% of the Milan metropolitan area is used for agricultural purposes (Pogliani et al., 2023).

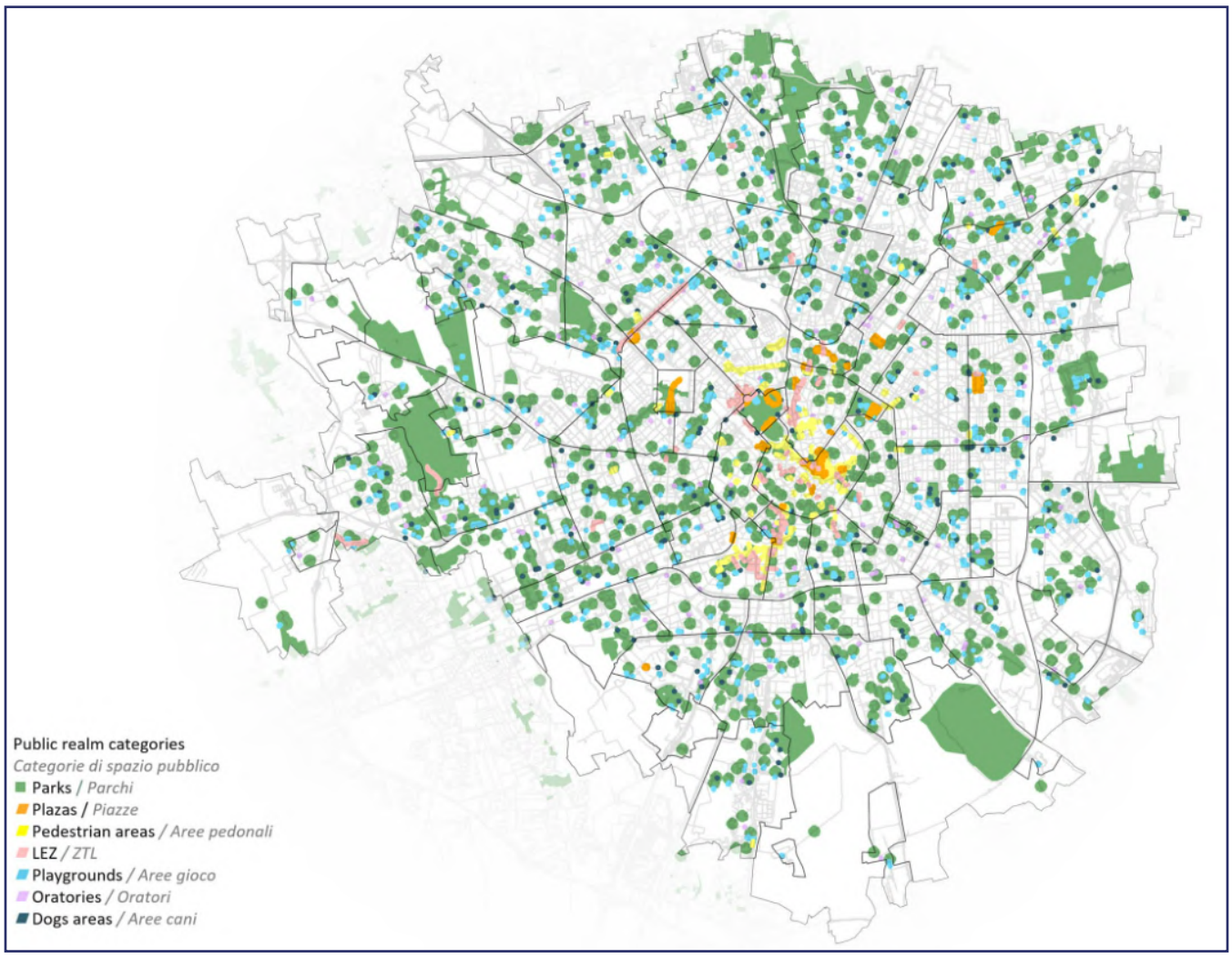

Fig. 2.4.3.1 Characteristics of public and social housing in Milan.
(Sources: Cavicchia et al., 2023 ; Wolfgring & Peverini, 2024)

In the city, green surface almost exclusively encompasses urban green spaces like urban parks (5,7%), small neighbourhood parks and gardens (3,9%). The rest is mainly composed of the 54 historical parks - including Parco Sempione (the largest park in the city centre, 39 ha) - and large unmanaged green spaces (Istat, 2020). Walking in the city, one can have the impression of a good green coverage thanks to numerous green infrastructures like tram lines with grass, trees, green roofs and walls, as Figure 2.4.3.2 illustrates. Moreover, the Municipality of Milan benefits from a great green surrounding of agricultural and woodlands composing the Metropolitan area (Pastore, 2025). The Parco Agricolo Sud Milano is defined as a natural area and protected by local and regional regulations, like the Istituzione del Parco Agricolo Sud Milano (§ 4.7.86 - L.R. 23 aprile 1990, n. 24.). Recent urban planning documents, such as the 2019 General Territorial Plan (PGT) and the 2020 Metropolitan Territorial Plan (PTM), explicitly recognise the multifunctionality of green spaces and their fundamental role in territorial development. These plans explicitly refer to ecosystem services, nature-based solutions and climate change adaptation and mitigation strategies (Azzimonti, 2024). Yet, these green facilities are mostly private-led due to the "planning by project" development strategy of the municipality.

Fig. 2.4.3.2 Examples of green amenities in the city of Milan.
(Source: Personal archive, 2025)

In the Air and Climate Plan, the section 4 "Fresher Milan: a greener, cooler, and more pleasant city to live in that adapts to climate change" aims at reducing urban heat island effect (Comune di Milano, 2022) focuses on increasing urban green spaces, which includes expanding parks, implementing urban forestation projects, promoting green roofs and walls, and reducing grey areas like parking slots (Citta Clima, 2022). The Forestami Project, for instance, aims to plant 3 million trees in the metropolitan area, enhancing green infrastructure and its accessibility (Comune di Milano, 2022). This project, launched in 2019 in collaboration with the Politecnico di Milano, wants to introduce NbS with a focus on urban forestry, identified as a "strategically necessary solution" to counteract the effects of climate change and make the city more resilient (Forestami, s.d.).

Energy Retrofitting

Milan's building stock is characterized by poor energy performance, with 44.4% of certified buildings classified in the lowest energy efficiency categories, F and G (see Figure 2.4.3.3 on energy performance certificates). In response to this challenge, and within the framework of the Covenant of Mayors, the City of Milan implemented a Strategic Plan for Sustainable Energy (SEAP) in 2014. The main objective was to reduce CO_2 emissions by 20% by 2020 compared to 2005 levels. A key focus of the plan was to lower electricity consumption and emissions in both public and private residential buildings (Comune di Milano, 2014). For the renovation of private residences, the measures included infrastructure cost reductions and financial incentives to carry out energy-saving upgrades or integrate renewable energy sources (such as replacing heating systems). The plan also introduced energy efficiency standards for new constructions, particularly in the case of social housing. For municipal buildings, awareness campaigns, renovation and installation of solar panels were planned (Comune di Milano, 2009).

In 2019, the municipality has outlined a comprehensive strategy for energy retrofitting through the Air and Climate Plan. The plan highlights the crucial role of building retrofits in meeting the city's carbon neutrality target by 2050 (Comune di Milano, 2022). According to Cavicchia et al. (2023), in 2017, heating and domestic energy use accounted for 58% of Milan's total energy consumption and 52% of its CO_2 emissions. For the private building sector, the city has set a goal of reducing CO_2 emissions by 1.4% by 2025 compared to 2005 levels.

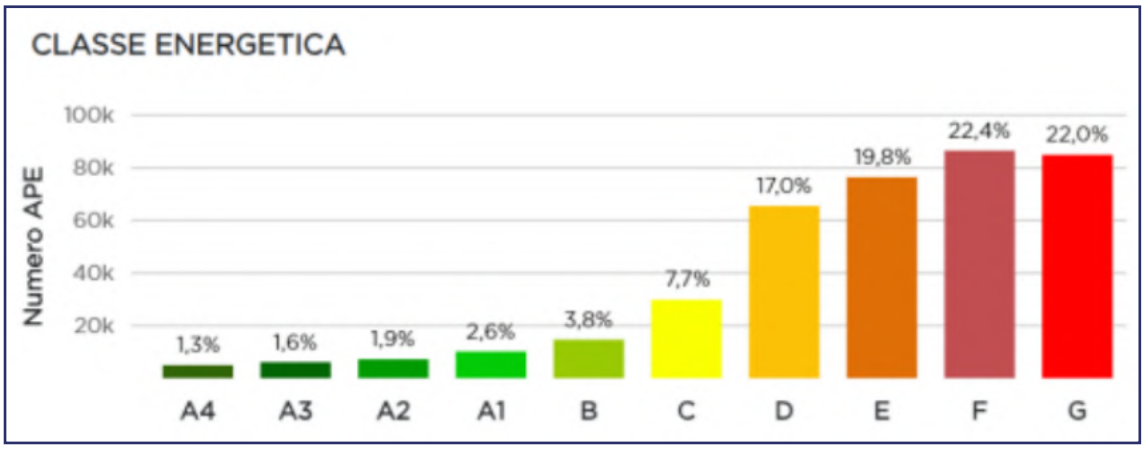

Fig. 2.4.3.3 Building stock with energy performance certificates (APE) by energy class in Milan province. (Sources: ENEA & SIAPE, 2023)

In the Area 3 "Milan with positive energy: a city that consumes less and better" (Milano a energia positiva: una città che consuma meno e meglio) of the Air and Climate Plan, the municipality has introduced a set of initiatives to improve energy efficiency of the building stock. These include the requalification of public buildings (such as schools, offices, public housing) with the installation of photovoltaic panels (Azione 3.2.2) and retrofitting works (Azione 3.2.1), with the goal of reducing fossil fuel consumption by up to 50% by 2030 (Comune di Milano, 2020a).

In addition, the Municipality of Milan adopted in January 2024 a Plan to Combat Energy Poverty and Precariousness called "Towards Common Energy Well-being" with resolution no. 1698 of 22/12/2023. Designed in a holistic approach in a collaboration between the Green and Environment, Home, Welfare and Health Directorates, it has a twofold objective: combat energy vulnerability and pursue the energy transition. The four key actions include: (1) Establishment of the municipal observatory on energy well-being: creation of a monitoring tool to measure and analyse energy poverty at the local level. (2) Coordination of financial assistance: identification and harmonisation of subsidies available to improve the energy efficiency of housing and help pay energy bills. (3) Reorganisation of the energy helpdesk: setting up physical drop-in centres offering information and assistance to citizens in energy poverty. (4) Mobilisation of local actors: structuring collaboration between public and private stakeholders for concerted action (Comune di Milano, 2025).

On the national level, Italy's most significant policy instrument is the Attestato di Prestazione Energetica (Energy Performance Certificate), mandatory since 2005 for both rentals and property sales. These certifications, administered by ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development), help enforce compliance with energy efficiency standards and inform renovation priorities. As a result, newly constructed buildings in Milan have an average energy consumption of 47 kWh/m^2/year, a marked improvement over the 150–300 kWh/m^2/year typical of older buildings.

Additionally, Italy's Integrated National Energy and Climate Plan (INECP), covering 2021–2030, commits the country to reduce primary energy consumption by 43% from 2007 levels, aiming for savings of 0.33 MtCO2eq per year in the residential sector by 2030 (Wang, 2023). On the fiscal side, the national Ecobonus allows for tax deductions of 50% to 75% for energy-efficient investments, such as high-performance windows, boilers, heat pumps, and solar panels. This initiative has yielded estimated savings of 0.332 MtCO2eq per year, with over 1.7 million energy renovation interventions recorded between 2014 and 2018 (Wang, 2023).

Incentive tools include generous fiscal incentives. One of the most impactful programs has been the Superbonus 110%, launched in 2021, which offered tax credits covering up to 110% of renovation costs, with ceilings ranging from €45,000 to €80,000 per housing unit. In Milan, around 3,000 buildings benefited from the scheme, representing roughly 7% of the total housing stock (60,000 housing units) (Cavicchia et al., 2023). Recognizing the risk of rent increases due to renovations, the city also introduced a social equity component, allocating €100,000 to support «equitable incentives» based on socio-economic criteria (Cavicchia et al., 2023).
Despite their success, these incentive-based policies have notable limitations. From a technical

standpoint, they tend to promote partial interventions rather than comprehensive renovations, resulting in less effective emissions reductions (Magnani et al., 2020). Additionally, the 2025 finance law introduced significant budget cuts, reducing deduction rates to 36% in 2025 and 30% from 2026 onward, with temporary exceptions allowing a 50% deduction for primary residences. Moreover, equity concerns have been raised: access to incentives is skewed toward wealthier, property-owning households. Cavicchia et al. (2023) underscore the regressive nature of these measures.

Densification

In 2014, the Lombardy region adopted the Disposizioni per la riduzione del consumo di suolo e per la riqualificazione del suolo degradato, a regulatory framework to implement the European Commission's goal of achieving zero net land take by 2050 in the Lombardy region (Regional law no. 31). Thus, priority is given to the regeneration of abandoned spaces and the reuse of existing unused buildings. Following the Regional Territorial Plan, Milan adopted its Territorial Government Plan of Milan (PGT Milano 2030) in 2019 (Comune di Milano, 2019). The PGT provides for a 4% reduction in land consumption. It also identifies specific zones to densify among the 1,500ha of wastelands (Balard and Petsimeris, 2008) the city still benefits from, mostly located in the peripheral neighbourhoods (as shown on Figure 2.4.3.4) and in dynamic economic centres. 13 interchange nodes like around train stations are permitted to exceed the maximum building index of 1 m2/m2 stipulated in highly accessible areas of the city. Redevelopment projects are underway, such as Bovisa-Goccia, which will become a technology and sports centre. However, even if the PGT requires 20% of affordable housing for sale and 20% for rent (with rents capped at 5% the sale price of affordable housing for sale) and 5% of public housing in all new development projects (Cavicchia et al., 2023 ; Comune di Milano, 2020), they are criticised for their emphasis on economic attractiveness - for instance involving big names in architecture such as Norman Foster - which accentuates the rise in housing prices.

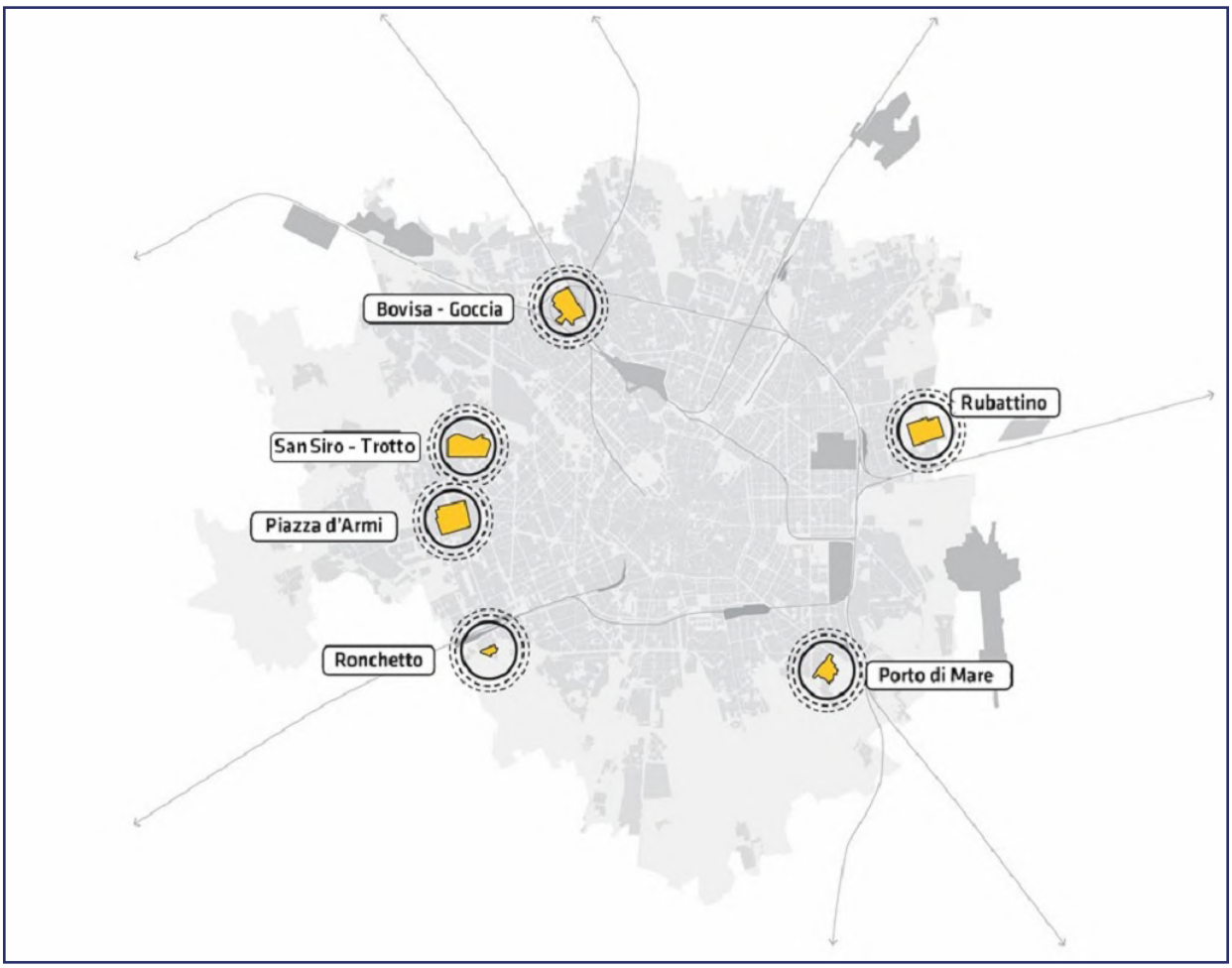

Fig. 2.4.3.4 The six specific areas identified in the PGT Milano 2030 for redevelopment projects to provide «Major Urban Functions».
(Source: Comune di Milano, 2020)

Moreover, Milan's Air and Climate Plan, while not directly targeting densification policies, promotes sustainable urban development practices that align with densification principles: optimize land use, reduce urban sprawl, and enhance public transportation accessibility, contributing to a more sustainable and efficient urban environment.

2.4.4 A detailed focus on specific districts

Our fieldwork methodology combines context-sensitive observations of selected neighborhoods with semi-structured interviews involving members of citizen-led initiatives. The neighborhood case studies (summarized on Figure 2.4.4.1 and mapped on Figure 2.4.4.2) include:

- **Bovisa La Goccia,** a former industrial area located in what was once Milan's western periphery, now fully integrated into the urban fabric. This site was selected to examine an ongoing urban redevelopment process and the early signs of student-driven gentrification;
- **Porta Nuova**, a newly developed eco-district and central business district (CBD) situated north of the city center. This area serves as a case study for analyzing the effects of Milan's neoliberal urban development policies and their gentrifying impacts;
- **Quartiere Stadera**, a historically working-class neighborhood in the southern part of the city center, chosen to investigate the challenges of

implementing socially oriented urban renewal policies;

In addition, we studied citizen-led initiatives, including:

- **Giardini Isola Pepe Verde and Giardini Lea Garofalo**, both located near Porta Nuova, selected to observe grassroots responses to top-down gentrification dynamics;
- **The Dar=Casa cooperative**, based in the Stadera neighborhood, analyzed because of its innovative approach to addressing the shortage of public intervention in the social housing sector.
- **Social Housing Via Cenni**, in western Milan, selected as a representative example of a successful compromise between environmental sustainability and housing affordability;

DISTRICTS	NORTHWEST OF THE CITY	CITY–CENTRE (ISOLA NEIGHBOURHOOD - GARIBALDI TRAIN STATION)
Name of the project	*Bovisa-Goccia Masterplan*	*Porta Nuova*
Time frame	2023-2026	2009
EEPs involved	- Nature-based solutions - Densification	- Nature-based solutions - Densification
Actors involved	- Politecnico di Milano, - Comune di Milano - Regione Lombardia - Fondazione ION	- Comune di Milano - Hines Italia SGR - COIMA SGR - Qatar Investment Authority

Fig. 2.4.4.1 Summary table of fieldwork in Milan.
(Source: Authors' own, 2025)

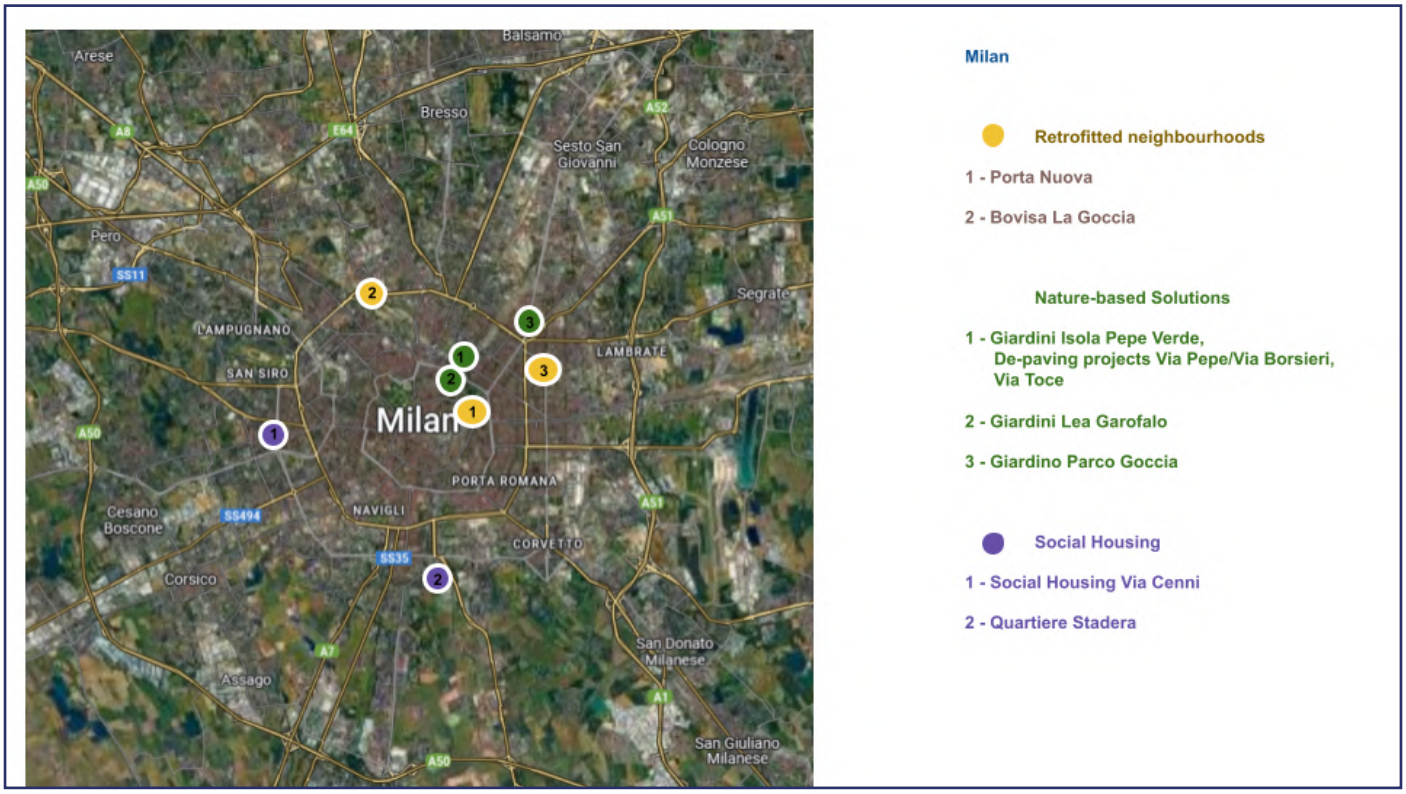

Fig. 2.4.4.2 Map of fieldwork in Milan.
(Source: Google Maps, 2025)

In this section, we chose to focus on Bovisa La Goccia and Porta Nuova, two examples of urban regeneration programs representing the ongoing top-down gentrification process in Milan. We chose these neighbourhoods for their complementary nature. Porta Nuova is used as a branding tool for Milan, and its impact in terms of neighbourhood transformation has been widely studied. Conversely, Bovisa La Goccia is a neighbourhood undergoing redevelopment that has not yet been studied in depth, but whose effects in terms of price increases are already feared by low-income and long-term residents.

Bovisa La Goccia

The current brownfield site of Bovisa (shown on Figure 2.4.4.3) is a telling example of how urban transformation is spatially conditioned by funding streams and disregards equity issues. A remnant of Milan's rich industrial past, the cessation of gas production has led to the neighborhood's isolation, further reinforced by surrounding railway infrastructure—creating an "urban void" (Grazzini & Bordin, 2024, in Bazzi, 2023). Today, despite the two train stations of Bovisa and Villapizone, railways remain physical and psychological barriers for the inclusion of the neighbourhood to the rest of the city. The presence of design (via Candiani) and engineering (via La Masa) campuses of the Politecnico di Milano, established in 1997, does not make up for the scarcity of services and spaces for social cohesion (Bazzi, 2024). According to Bazzi, Bovisa is still perceived as a "city enclave" (2024).

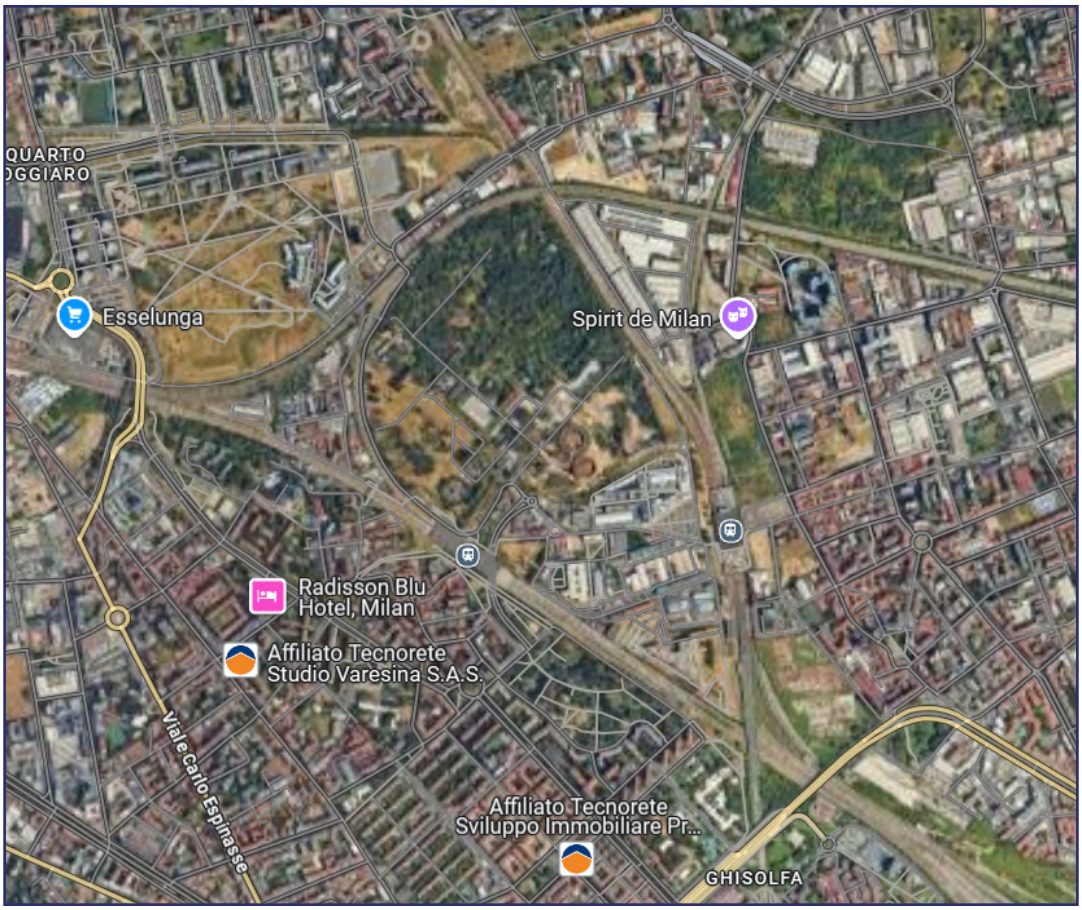

Fig. 2.4.4.3 Satellite view of Bovisa La Goccia.
(Source: Google Maps, 2025)

Moreover, Bovisa's land potential has become the focus of ambitious redevelopment projects centered on innovation and design. On one hand, the creation of recreational spaces for students, workers, and residents is part of the MoLeCoLa plan (Mobility, Learning, Community, Lab) under the Reinventing Cities program. On the other hand, the expansion of the university campus is also underway. During our visit, we observed the ambivalent character of the area: industrial remnants coexist with a hyper-modern campus; wild green cover and scattered leisure facilities stand next to endless construction fences. Squash courts and a café/co-working space share space with the ruins of an old drive-in cinema (see Figure 2.4.4.4 and Figure 2.4.4.5). On weekends, in the absence of students, the area's economic activity dwindles to the café on the road to the train station. The future of this neighborhood embodies Milan's broader dilemmas about what balance to strike between preserving the wild green spaces that have reclaimed former industrial lands, and increasing building density in a city already facing high population pressure.

Our visit allows us to raise tensions surrounding urban free zone development projects: for example, does a greening strategy that applies standardised infrastructure models justify the destruction of wild urban forests that have been there for decades? Bovisa La Goccia is an example of how Milan's urban planning follows a strategy of maximising space for strategic activities in a globalised economy. To quote Bazzi (2024): "It also mirrors the contradiction of using private green infrastructure to replace potential public green

areas." Finally, Bovisa La Goccia is an interesting case study for thinking about how to revitalise a neighbourhood without damaging the lives of its residents. In Bovisa, we are already seeing a rise in rents (Bazzi, 2024), associated with the arrival of the university (which could be seen as student gentrification (Kubeš and Kovács, 2025)), even though there are still many brownfield sites and vacant spaces (see Figure. 2.4.4.5).

Fig. 2.4.4.4 Brand new sport facilities on the campus of Politecnico di Milano adjacent to remnants of the industrial past on the brownfield of Bovisa La Goccia.
(Source: Personal archive, 2025)

Fig. 2.4.4.5 Remaining vast green and unmanaged wastelands in Bovisa La Goccia.
(Source: Personal archive, 2025)

Porta Nuova

The case of Porta Nuova serves as a striking illustration of gentrification. Located northeast of Milan, adjacent to the Garibaldi train station, this new business district was meant to break the isolation of the working-class neighborhood of Isola by connecting it to downtown (see Figure 2.4.4.6). Approved in 2004, Porta Nuova's 290,000 m^2 development ranks among the largest urban renewal projects in Europe—parts of which, two decades later, remain under construction. For its developers, Porta Nuova was to embody Milan's dream of becoming an international green capital, a model of urban sustainability. Most notably, the two residential towers of the Bosco Verticale symbolize Milan's so-called "gate of green" (Di Paola, 2021). Designed by architect Stefano Boeri, these buildings have gained worldwide acclaim for integrating trees into their structure—marketed as "a house for trees that also hosts humans and birds," incorporating 900 trees, shrubs, and other plants (Boeri Studio, 2014).

Fig. 2.4.4.6 Satellite view of Porta Nuova.
(Source: Google Maps, 2025)

However, the ecological merits of such infrastructure are highly questionable. From a purely environmental perspective, the construction of these skyscrapers (76 and 110 meters high) carries an enormous carbon footprint, primarily due to the vast amounts of concrete required to support the soil and vegetation, far exceeding the needs of conventional buildings (Di Paola, 2021). Additionally, although Porta Nuova boasts Milan's largest green area - the Biblioteca degli Alberi di Milano (BAM), covering 9 hectares - this park was built over an existing community garden. As for its claim to be a "library of trees," while some species are indeed displayed in neatly aligned pots and manicured lawns, the space's highly controlled design contributes little to biodiversity preservation, unlike the previous garden that once thrived there. The Ricostruire la Grande Milano plan had already provided for the destruction of the only public garden in this isolated neighborhood, as well as a wasteland that residents had reclaimed as a social and cultural space. As a result, the developers of Porta Nuova needed "green fix" or "sustainable fix" instruments to legitimize their project (Anguelovski et al., 2021). The Bosco Verticale and BAM serve as prime examples of "cosmetic green and fake sustainability" (Di Paola, 2021), feeding a rhetoric of greenwashing. In reality, the project failed to comply with the agreement that the company would return the space to the city and maintain its community function, nor did it meet the needs and demands of residents.

The revitalization brought not only aesthetic modification of the area, but also deep socioeconomic transformation. A member and co-founder of the Garden Isola Pepe Verde, spoke of a gentrification process similar to "an earthquake in the neighbo-

rhood." Over time, housing costs and property values skyrocketed, with an increase of 120% in 20 years (Semi, 2011), leading to a dramatic demographic recomposition of the area. Di Paola (2019) made a similar observation when she compared the price evolution in Isola and Farini (Figure. 2.4.4.7). Before 2006, both neighbourhoods were alike: located in a semi-peripheral area, separated by the train station, they also had the same range of housing prices. From 2006 onwards, as visible on the graph, the prices in Isola (yellow line) increased way faster than in Farini. According to Di Paola (2019), the spectacular increasing gap happening in 2014 could stand for the arrival of Bosco Verticale on the real estate market.

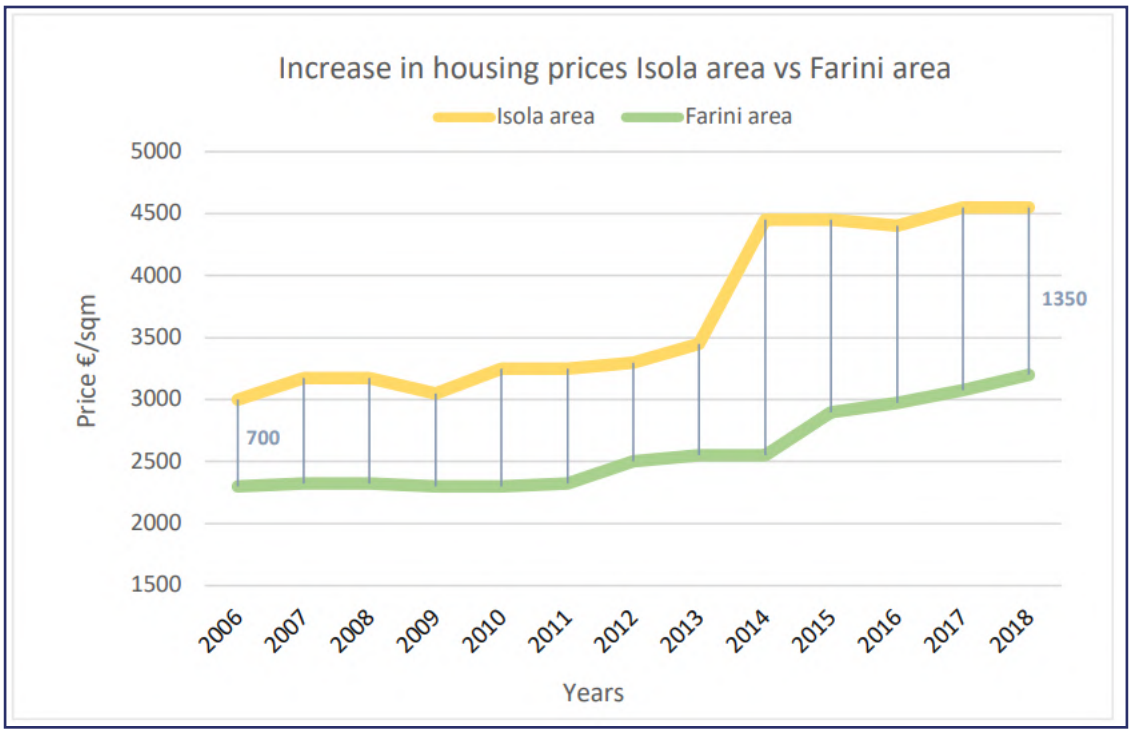

Fig. 2.4.4.7 Increase in housing prices in Isola area vs Farini area.
(Source: Di Paola, 2019)

Many long-term residents that are often modest families, have been displaced. The member of Isola Pepe Verde we talked to expressed sadness that "new people come, but it's different." With the arrival of new infrastructure and consumer attractions, she also noted the death of local businesses. The shops that once defined the neighborhood have closed, replaced by pizzerias and tourist-focused bars. Our interviewee told us the story of a friend who was forced to close her popular children's bookstore after her rent tripled. Her account echoes the broader experience of displacement that often accompanies gentrification: it is not just about physical but also emotional displacement. Goossens et al. (2019) underscore the significance of "sense of place", that is to say, the emotional connection people develop with their neighborhood and their capacity to imbue it with meaning. In Isola, this meaning has been erased. What was once known for its "underground and charming character" is now "'the place to be' at night for visitors" (Di Paola, 2021). The most symbolic sign of both cultural and physical displacement is the story of La Stecca: after the demolition of this former community center, residents were forced to reinvent their gathering spaces—mee-

ting in metro stations or in the streets. While their creativity in preserving a sense of community is remarkable, it also illustrates a deeper process of "un-homing", described by Goossens et al. (2019) as a dislocation so profound that people are left without a stable point of reference, even in what was once their home.

2.4.5 The role of grassroots organizations in tackling housing exclusion

In response to the neoliberal trends of the 1990s, citizen mobilisations began to emerge in the 2000s and 2010s, reclaiming the social aspect of urban space. In this section, we present the local initiatives we studied through our interviews and field visits.

We begin by presenting the two community gardens we visited: Isola Pepe Verde and Lea Garofalo. Among Milan's various greening initiatives, these gardens were selected for several reasons. First, they stood out as the most prominent and active based on their social media presence. Second, Isola Pepe Verde, being one of the earliest community gardens in the city, was a key site for us to explore. Finally, establishing contact was relatively straightforward—Isola Pepe Verde provided a contact email on its website, and we had personal connections at Lea Garofalo.

We then examine two organizations involved in the management of affordable housing complexes: Dar=Casa and Fondazione Housing Sociale. Dar=Casa was selected for its innovative approach to public-private partnerships, particularly in the context of refurbishing and managing the city's aging public housing stock, which is entrusted to cooperatives under municipal agreements. Next, we present the case of the Social Housing project in Via Cenni, managed by Fondazione Housing Sociale, as a relevant example of environmentally ambitious social housing.

Environmental issues

Isola Pepe Verde Garden

The Isola Pepe Verde Garden is the result of a local grassroots movement led by residents against Porta Nuova. Following the destruction of La Stecca, citizens devised a plan for a new community garden. With the support of urban planners, architects, and a wide range of residents, they designed a proposal which they submitted to the newly elected mayor, Pisapia, from the left-wing coalition. Without actually waiting for official permission, residents occupied the site of a former warehouse abandoned on Guglielmo Pepe Street, alongside the Garibaldi train station. Thanks to their determination, and also a favorable political window during the elections, the movement gained institutional recognition. This citizen-led initiative led to a regulatory innovation: the creation of the Giardini Condivisi agreement, which formalized the delegation of collective management of the space, even though ownership remained with the municipality. Through this "radical transformation of sustainability" (De Rosa et al., 2022), 27 other shared gardens have since emerged across Milan. The creation of this green space has strengthened the sense of belonging in the neighborhood. Community leaders carried on the mobilization efforts despite lacking a physical gathering space. Bert Theis, the director of the Isola Art Centre, deeply attached to the neighborhood's spirit, reached out to parents at the Isola school to launch the mobilization. Here, the boundaries typically drawn between longtime residents and newcomer gentrifiers become blurred, as the movement was initiated not by an old

local, but by a relatively new, non-native resident (Bert Theis was from the Netherlands). This is a significant feature of the Isola neighborhood: the usual figure of the pioneer-gentrifier—often an artist—is, in this case, fighting against the top-down gentrification process.

The diversity of activists forms the basis of the neighborhood's identity, and social cohesion no longer stems from class homogeneity but rather from inclusion and solidarity. As such, the frustrations and demands are not directed at the middle-class newcomers, but at political authorities. This strong sense of belonging is what allowed residents to remain mobilized for years. Coppola and Lucciarini (2023) describe this as a "domestication pattern", "i.e. the representation of neighborhood spaces and relationships as familial, domestic environments". This interpretation perfectly reflects the emphasis we observed during our visits to shared gardens: green spaces are not valued primarily for their aesthetic appeal, but for their benefits to the community. Vegetable gardening is far from being the central activity in these spaces. Rather, it is considered a means of sharing, not an end in itself. At Isola Pepe Verde, soil pollution has made in-ground planting impossible, so fruits and vegetables are grown in raised planters (many of which had recently been removed and were awaiting replacement) (see Figure 2.4.5.1). At Isola Pepe Verde, Africa also emphasized the national and international recognition the initiative has received. The garden regularly welcomes students from across the globe, the latest group coming from Columbia University. This cross-border acclaim contributes to the empowering effect of the grassroots movement.

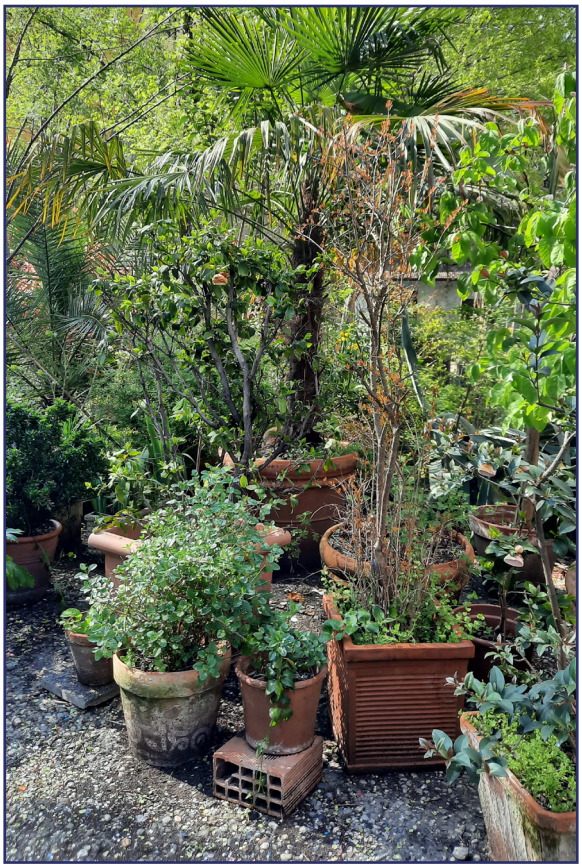

Fig. 2.4.5.1 Photo of plants in Isola Pepe Verde.
(Source: Personal archive, 2025)

Lea Garofalo Garden

The garden was established in 2011 by Giardini in Transito, a local citizen-led association, on a previously abandoned plot in the Porta Garibaldi neighborhood that had been slated for use as a parking lot. Similar to the initiative behind Isola Pepe Verde, a group of residents took the initiative to occupy and restore the area. Both the concept of creating a garden and the chosen location carry deep significance for the community: it sits directly in front of the former residence of a 'Ndrangheta mafia family and is named after Lea Garofalo, the partner of a clan member who was murdered for cooperating with the police in exposing their criminal activities. In collaboration with the anti-mafia organization Libera, Giardini in Transito created the garden as a space of peace and a symbol of hope for a better future. As we visited the garden, we could observe a calm and fresh green place where students come to study, residents walk their dogs, neighbors sit to read... There are also planters and a recently added basketball court.

Relations with the municipality, however, can be described as distant and lacking clarity. According to one of the founding members we met, despite the framework of Giardini Condivisi and its 2020 update through the Patti di collaborazione, members of the garden express disappointment with the limited support from local authorities. One example he gave involves a wall bordering the garden which has a strong emotional and historical value to the community. Rather than repairing it, the municipality merely fenced it off, rendering a significant portion of the garden unusable for community activities (see Figure 2.4.5.2).

Fig. 2.4.5.2 Photo of the wall in the garden Lea Garofalo.
(Source: Personal archive, 2025)

Social Housing issues

Dar=Casa

We went to the Stadera neighborhood, which, like Isola, has been historically inhabited by a working-class and immigrant population. In Stadera, we met an employee of the housing cooperative Dar=Casa.

Originally located on the city's outskirts, Stadera became part of the urban fabric as Milan expanded. Neglected by public authorities, the neighborhood and its numerous social housing units fell into decay, becoming a hotspot for drug trafficking and squatting. In 1990, the Urban Regeneration Program launched an "hybrid partnership" (Peverini et al., 2024), an innovative approach aimed at facilitating the renovation of social housing in the Quattro Corti complex (see Figure 2.4.5.3). Housing cooperatives Dar=Casa and Solidarnosc (formerly La Famiglia, acquired the buildings through a 25-year loan-for-use agreement, and financed the refurbishment using their own resources. In short, ownership remains with ALER (the Lombardy public housing agency), but the rent and management are handled by the two social cooperatives, which are private yet non-profit. On the 13th of July 2001, an agreement was signed between ALER, the Lombardy Region, and Lombardy Agency for the revitalisation of the rental market. Just three years later, in 2004, new residents began moving into the newly refurbished apartments of Quattro Corti. The success of this model stands in contrast to the rest of the neighborhood, which was still waiting for the regeneration program to start in 2005, and, in some areas, still is today. Today, rent management by Dar=Casa and Solidarnosc ensures affordable housing for the 48 units, while promoting social diversity among Italian and immigrant residents. The inhabitants, who are also cooperative members, benefit from a vibrant neighborhood life and are supported by social services provided in collaboration with local associations. As was the case with the Giardini Condivisi, this "alternative valorization to selling out" (valorizzazione alternativa alla vendita) has had a legislative impact, leading to changes in national and regional law: Law 80/2014 at the national level and Regional Law 16/2016 in Lombardy (Peverini et al., 2023). It is worth noting, however, that energy renovation was not a central focus of the refurbishment program, primarily due to a lack of public subsidies to support such work. As our interviewee. explained to us, the only renovation work for energy retrofitting focused on better window insulation.

Fig. 2.4.5.3 Photo of Quattro Corti.
(Source: Personal archive, 2025)

Social Housing Via Cenni

Finally, we visited the Via Cenni neighborhood, a housing complex in western Milan. Completed in 2013, it stands out as a pioneering project both for its provision of 123 affordable apartments and for its community spaces, which include a cafeteria, art therapy space, coworking areas, and a cultural hub located within the integrated Cascina Torrette di Trenno. The entire complex was built with an eco-friendly approach, using timber structures to enhance thermal insulation and reduce environmental impact. It thus manages to combine community engagement, social inclusion, and ecological goals. The project was financed through a public-private partnership involving socially-oriented private partners such as Fondazione Housing Sociale (FHS) and Cassa Depositi e Prestiti (CDP). The involvement of these private actors allows the city to provide high-quality housing to middle- and working-class families - households that do not qualify for public social housing, but also cannot afford Milan's private real estate market. Such initiatives are expanding across Milan and seem to offer a way to revitalize isolated neighborhoods while preventing the displacement of existing populations.

In the neighborhood, we met the manager of a third place established in 2016 within the buildings of a former farm. Conceived as a space for intergenerational and cross-cultural exchange, this place combines a bar, a restaurant, a distribution point for producers part of L'Alveare che dice Si network, and a cultural center. The manager expressed a positive view of the neighborhood's development, particularly the housing affordability initiatives resulting from collaboration between the city council and community organizations. He believes that the Social Housing Via Cenni project contributes to maintaining the area's social diversity.

	Nature-based Solutions to community issues		Construction solutions for community issues
	Isola Pepe Verde Garden	*Lea Garofalo Garden*	*Quattro Corti*
Association	Isola Pepe Verde association, created in 2011	Created in 2011 by the association Giardini in Transito and LatoB	Dar=Casa + Solidarnosc
	Around 300 members	10 principal members + passers-by + a Rom family living in the garden	
	Membership fees: 5€/year to get a member (but not compulsory to access the garden)		
Actions	Occupation of the field of an abandoned warehouse	Occupation of an abandoned field predestined to become a parking lot	Renovation and management of 48 apartments in the Quattro Corti ensemble
	Creation of the garden as a protest reaction after the destruction of La Stecca and its public gardens.	Cleaning, management of the place	Provision of administrative support for tenants
	Autonomous and horizontal management of the place through open meetings		
Claims	Belief in the sense of making community thanks to freely accessible green spaces	Creation of building imaginaries: raising awareness about citizens' needs	Need for affordable housings in popular neighbourhoods
		Promotion of empowering alternatives for the local community	Promotion of social mix while avoiding gentrification
Relationship to municipal authorities	Opposition between neighbours and Milanese administration about the construction of Porta Nuova	Conflictual relationship: lack of financial help and recognition from the municipal authorities.	Public-cooperative partnership: Agreement signed in July 2001 between ALER, the Lombardy Region, and Lombardy Agency for the revitalisation of the rental market
	Negotiations to obtain the management of the abandoned warehouse.	2020: Pacti di collaborazione:makes some rules more explicit on the garden management (ex: possible to fund-raise)	
	Creation of the Agreement "Giardini Condivisi"		
	Tense discussions for financing and space management		

Fig. 2.4.5.4 Summary table of grassroots associations met in Milan and their actions.

2.4.6 Trade-offs and relationships between green transition initiatives and housing inequalities

Based on the above overview of Milan, its housing market and EEPs, case studies and interviews with grassroots, this part will provide an analysis of the trade-offs and relationships at the municipal level between our studied EEPs and housing inequalities.

Milan's economic transformation has contributed to the urban revitalization of the city, described as an "urban renaissance" by some scholars (Coppola and Lucciarini, 2023). In this context, the "green" and "smart" discourses converge to legitimize urban revitalization as the most sustainable form of development. Green amenities are mobilized by cities as strategic tools to "'sell' themselves as desirable places to invest and live" and attract new commercial and real estate investments or third sector's funds (Anguelovski et al, 2021). In Milan, the proliferation of green infrastructures reflects this logic of showing off that the city is a "green booster" (Anguelovski et al, 2021). With the PGT, Milanese authorities could successfully reinvest abandoned brownfields and densify the city, bringing back the middle and upper classes back to the city (Coppola and Lucciarini, 2023).

As Coppola and Lucciarini (2023) point out, municipal administrations strategically adapt their communication to incorporate middle-class narratives, with the aim of attracting this social group to neighbourhoods targeted for urban regeneration. Authorities appeal to middle-class subjectivities, particularly those related to cultural consumption, social distinction and cohesion. In Milan, due to the withdrawal of the public sector from the housing market, local policymakers have increasingly emphasised home ownership as a strategy to attract young households (Coppola and Lucciarini, 2023).

However, the social reality largely contradicts the "win-win discourse" spread by the authorities. These large-scale regeneration plans are mainly imposed by a coalition of governmental and financial elites to low-income populations. Anguelovski et al. (2018) describe this strategy as "urban green orthodoxy" to explain how the purported benefits of greening initiatives are often overstated in order to obscure the negative social externalities generated by top-down regeneration programs.
Yet, the green essence itself of these redevelopment projects is questionable. The extension of the built surfaces onto so-called "empty" lands contributes to soil sealing and urban sprawl - a planning model increasingly at odds with goals of ecological restoration and ecosystem preservation.

Our observations suggest that three factors appear to reinforce one another in a self-perpetuating cycle (summarized on Figure 2.4.6.1):

(1) With 1,500 ha of wastelands, it appears that Milan has a significant proportion of space available for development (especially compared to other global cities like Paris, where 15.68 ha brownfields[1] have been recorded (Cerema, s.d.), making it a constantly building city.

(2) It seems that the neoliberal vision for the city

1 The Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement (Cerema) recorded 14 wastelands within Paris borders, which total superficie reaches 156 803m2 (calculated by authors based on the map available on Cerema website. See: https://cartofriches.cerema.fr/cartofriches/_w_f54df046a2954686b1441bde1ab26546/?site=75056_21956. It is yet worth noting that in Île-de-France, 2,700 brownfields have been identified, representing 4,200 ha (L'Institut Paris Région, s.d.).

has led to intensive construction, making Milan attractive to high-skilled workers and driving up prices due to commodification of real estates (gentrification and displacement) (Coppola & Lucciarini, 2023 ; Bricocoli & Peverini, 2024).

(3) A path-dependent situation of State retrenchment and market-oriented reforms, leading to shrinking resources and decrease of the production of public housing, could explain the precarious situation of social housing, which is aging and under-occupied (impoverishment). The exclusion of precarious populations is reinforced by their location in neighbourhoods surrounded by brownfield sites (Peverini et al., 2023 ; Peverini et al., 2024).

(4) To break these negative interactions, an effective solution could lay in the renovation of the existing social housing stock. Hybrid partnerships, developed between public institutions and private but social organizations, seem to provide a source of rapid private funding while ensuring the common good objective. They ensure affordability and social mix.

Finally, community-led initiatives like collective gardens seem to play an important role in maintaining the spirit of popular neighbourhoods. In the 2010s, a window of opportunity thanks to a more dedicated mayor favored the emergence of innovative social movements. From our field visits, we could observe that they succeeded at bringing their social agenda to the political one. This may be how they have shaped the urban landscape of Milan in a more incremental level, creating pockets of resistance to neoliberal trends. From that, we can conclude that their social utility should be granted with more political and legal recognition and support.

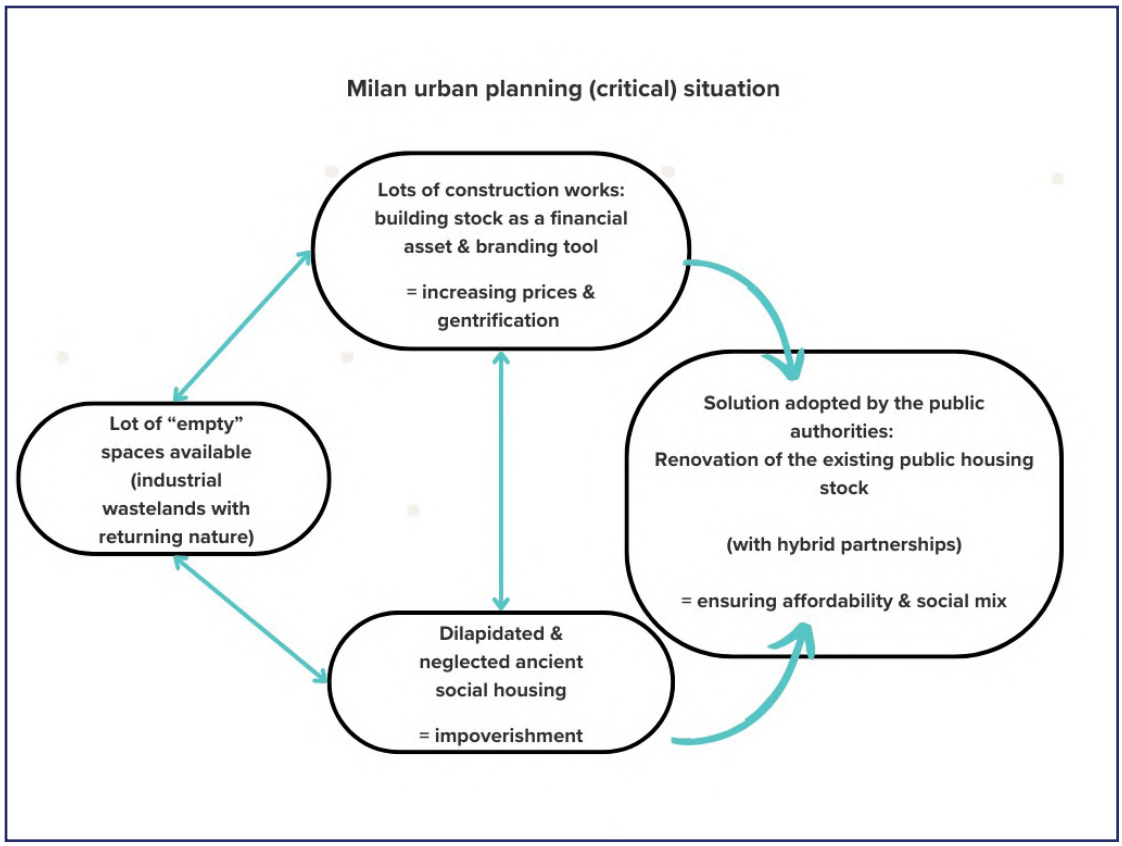

Figure 2.4.6.1 Vicious circle of neoliberal urban planning in Milan and feasible solution.
The straight arrows depict the mutually influencing phenomenon. The curved arrows lead to a solution to break out of the vicious circle.
(Source: Authors' own, 2025)

2.5 LONDON

2.5.1 Overview of the city's main dynamics

London spans a vast area of 1,572 km^2 and is located in the South of England. Its geography, shaped by the Thames and its basin, provides a diverse mix of floodplains, chalk hills, and green belts. London has a population of 8.87 million people, resulting in a relatively low density of 5,598 hab./km^2 compared with other European capitals (Britannica, 2025). The density varies across the city, and some of the densest parts of London contain more than 23.000 people per square kilometer (Office for national statistics, 2023). Additionally, it is a city facing population growth, with a net immigration to inner London, ie. the central boroughs, of 27.000 people between 2022 and 2023, as shown in Figure 2.5.1.2.

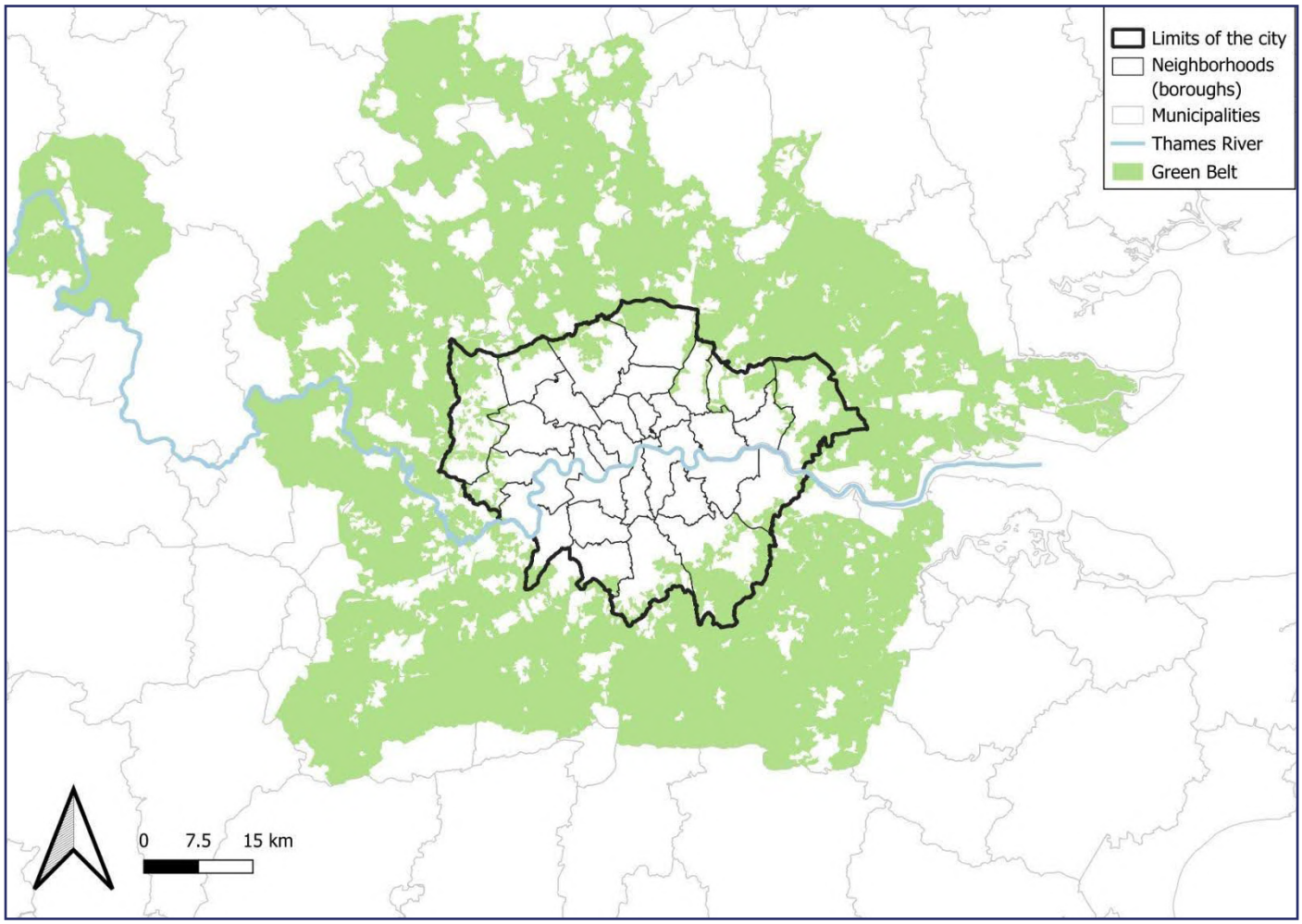

Fig. 2.5.1.1 Map of London by borough.
(Source: Open Street map, 2025; Find-open-data, 2025)

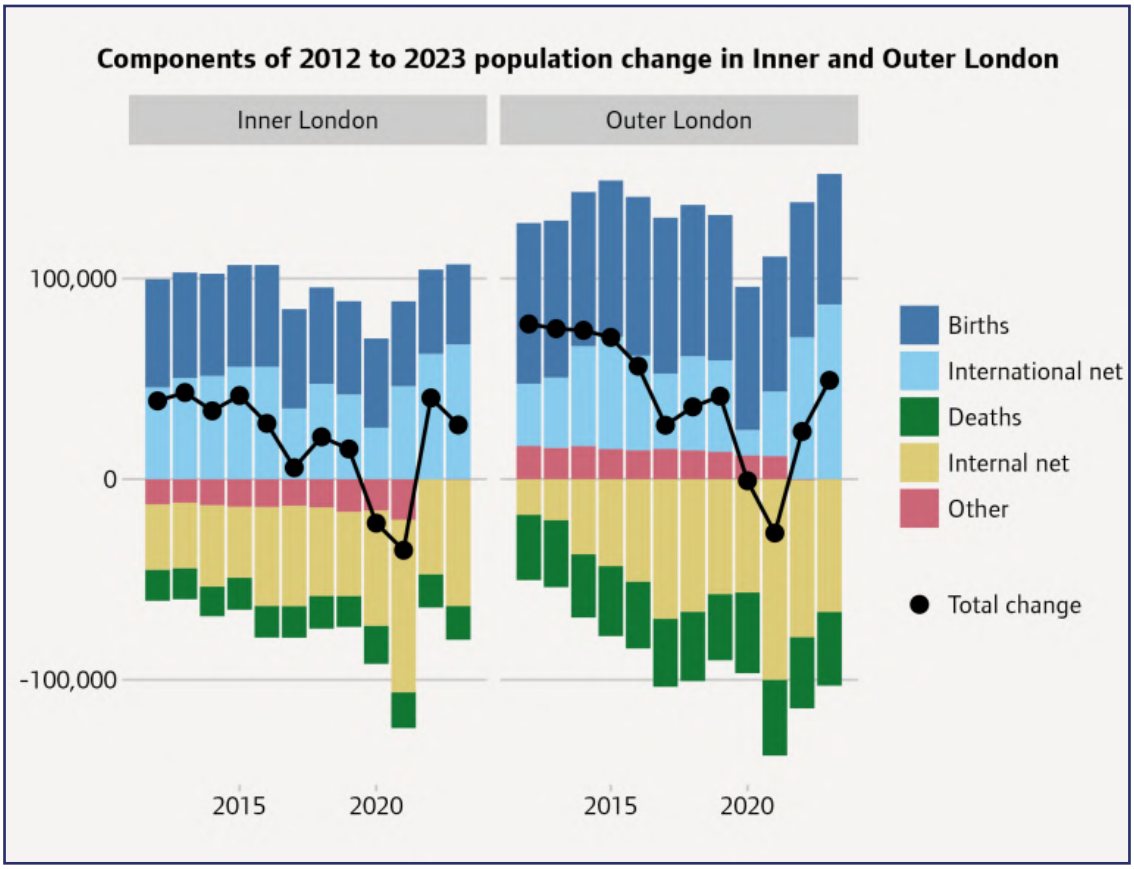

Fig. 2.5.1.2 Components of 2012 to 2023 population change in inner and outer London.
(Source: London Data Store, 2024)

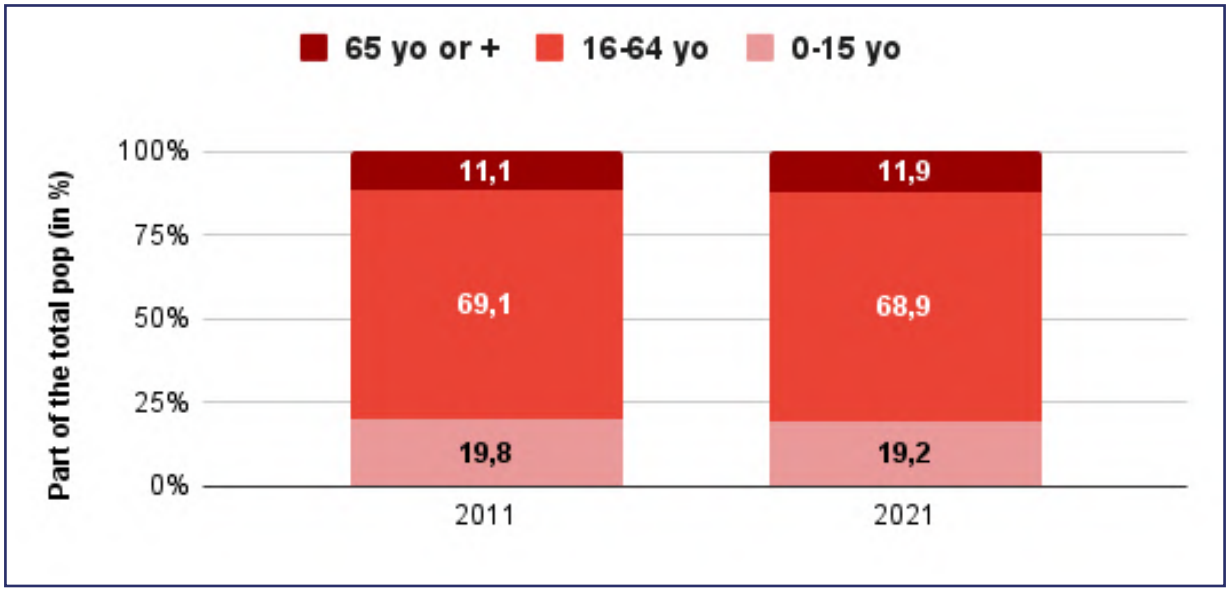

Figure 2.5.1.3 Age distribution in London in 2011 and 2021.
(Source: Office for National Statistics, 2023)

Political and administrative system

The current mayor of London is Sadiq Khan from the Labour Party, who has been in office since 2016 and was re-elected in 2024 (City of London, 2024). Their political project emphasizes policies that balance urban growth with environmental stewardship (Mayor of London, n.d.). Since 1965, London has been divided into 32 boroughs, along with the historic City of London. The 32 borough councils and the City of London are responsible for delivering most local services, such as education, housing, social services, environmental maintenance, urban planning, and various arts and leisure programs. Meanwhile, the Mayor of London focuses on setting a broader strategic vision for the city. Their responsibilities include developing policies on key issues like air quality, biodiversity, culture and tourism, economic growth, transport, waste management, and spatial development (London Archives, n.d.).

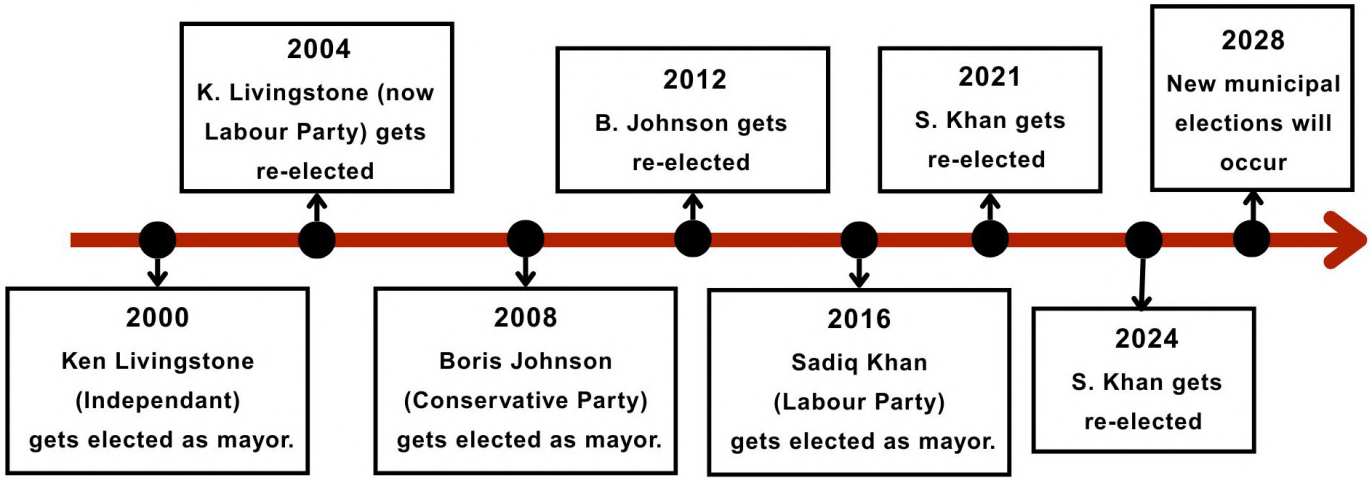

Fig. 2.5.1.4 Timeline of the municipal elections in London.
(Source: Authors' own, 2025)

Economic Context

Economically, London is one of Europe's financial powerhouses, with a GDP of 569 billion pounds annually. London also has quite high income levels compared to other European capitals, with a median annual salary being 56310 pounds in 2024 (Statista, 2024). Income inequalities in London are quite severe, with a 1:9 ratio between the bottom 10% and the top 10%. This gap is far larger than the rest of the UK, where the difference is 1:5 (London Datastore, 2023). Additionally, London's Gini-Coefficient of 70% on total wealth is also testimony to severe levels of inequality (Office for National Statistics, 2020).

2.5.2 The landscape of housing inequalities

London's housing market is complex and dynamic, with over 3.6 million dwellings forming the residential stock. According to the London Tenants Report (2022) and the Trust for London (2024), these homes are distributed across three main tenures: 47% are owner-occupied, 31% are privately rented, and 23% fall under social housing, as seen in Figure 2.5.2.1. On average in the UK 62% of the households are homeowners, 18% are social renters and 20% are private renters, making the proportion of private renters higher in London than the UK average (House of Commons Library, 2024).

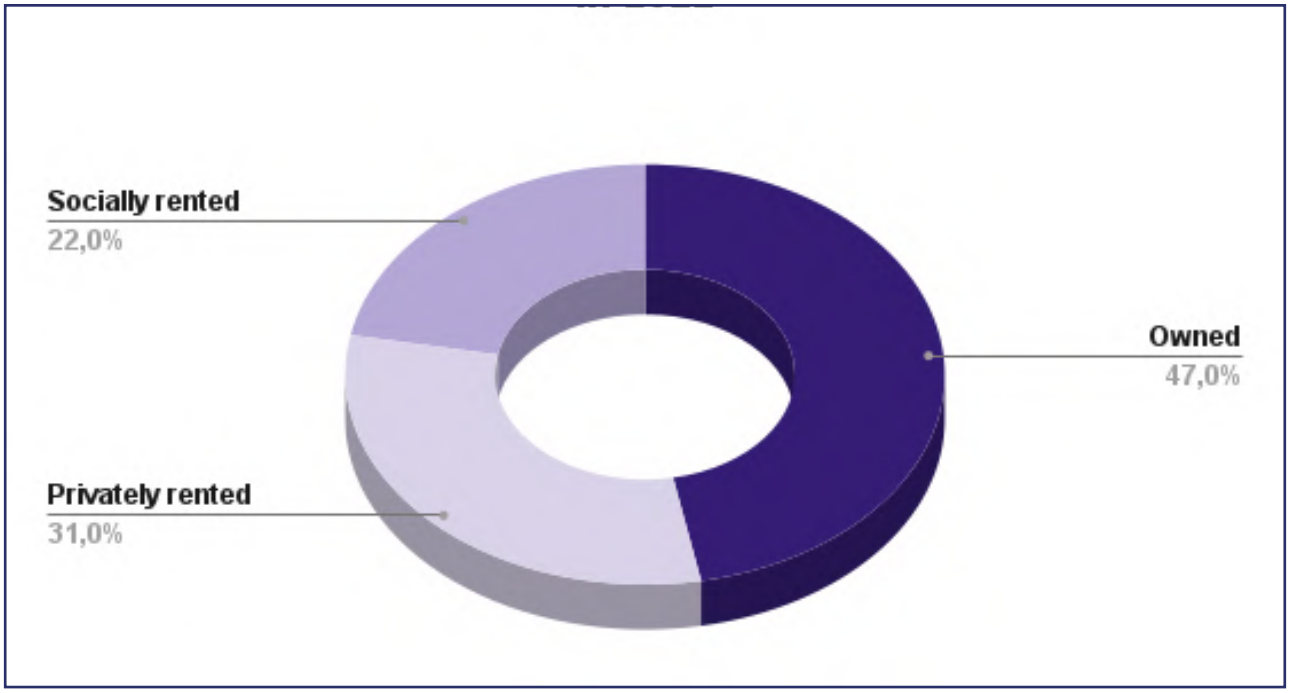

Fig. 2.5.2.1 Tenure types among main residences in London, 2020.
(Sources: London Tenants Report, 2022; Trust of London, 2024)

London's reputation as an unequal and prohibitively expensive city is well-documented, with a median monthly rent for a three-bedroom apartment exceeding 2,537€ (Mayor of London, 2024). Further underscoring these disparities, Figure 2.5.2.2 examines the self-reported financial well-being of Londoners based on their housing tenure. The data reveals significant gaps between homeowners, private renters, and social renters, with the latter two groups often facing greater financial strain.

Despite intense pressure on housing availability, London paradoxically has the highest proportion of unoccupied dwellings in England with an overall vacancy rate of 8%, compared with an average of 5.4% (National Office for Statistics, 2021). The housing strategy for London from 2018 identifies five key pillars, including: building more homes for Londoners, delivering genuinely affordable homes, high-quality homes and inclusive neighbourhoods, a fairer deal for private renters and leaseholders, tackling homelessness and helping rough sleepers. Social housing in the UK in-

cludes mainly two subcategories: Social rent and affordable housing. Social rent is also referred to as council housing, and functions 50% below market rate. Affordable housing functions at least 20% below market rate. (London's Housing Stock, 2024).

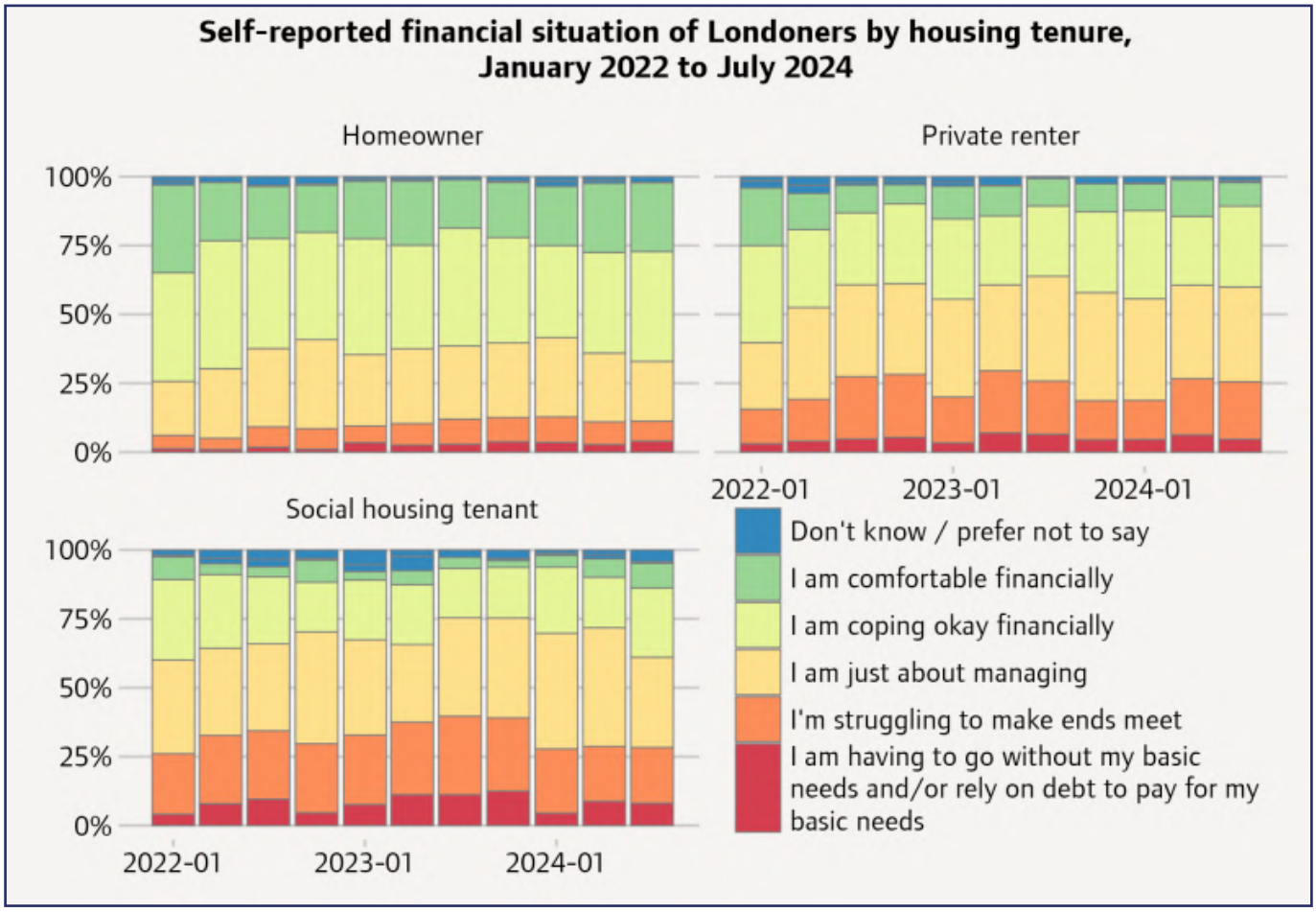

Figure 2.5.2.2: Self-reported financial situation of Londoners by housing tenure.
(Source: London Datastore, 2024)

2.5.3 Environmental and energy policies at the urban scale

This section introduces the three key environmental policies; Nature base Solutions, energy retrofitting and densification, in the case of London. The general context is briefly set and the main policies affecting the different EEPs are mentioned.

Nature Based Solutions

London is generally a quite green city, with 20% of the urban area being public green space compared with 13.8% in Milan and 14.6% in Paris (Mayor of London, n.d.). Additionally, the city is surrounded by the Metropolitan Green Belt, which contains more than 34000 hectares of green space (UK.gov 2023). The Metropolitan Green Belt is a longstanding popular policy, which has been criticized by Goode C. E. (2021) for exacerbating housing inequalities in specific areas. The use of nature based solutions in London is shaped largely by two governmental policies being the London Plan of 2021 and the London Environment

Strategy of 2018.

The London Plan sets the overall strategy for urban spatial development in greater London, for the next 20-25 years. The plan emphasizes the Mayor's vision of Good Growth, which is a growth strategy that takes into account both economic and social inclusivity as well as environmental sustainability. The London Plan is an overall plan for London, but the specificities are developed in each borough through their individual city development plans. The local borough plans then have to align with the London Plan and live up to a "general conformity" criteria (London Plan, 2021). The London Plan includes a lot of policies on nature based solutions, mainly concerning protection of existing green infrastructure. These include: Protection of the green belt, protection and enhancement of London's green infrastructure, protection of urban provisions of food, protection of urban forest and woodlands, and protection of Sites of Importance for Nature Conservation. Additionally, all new major development proposals should contribute to urban greening (The London Plan, 2021).

The London Environmental Strategy was developed in 2018 and deals specifically with bettering the environment to improve public health, adapting to climate change, and mitigating CO2 emissions. In the context of nature based solutions in the city, the most important policies are: Enabling the development of brownfields, enhancing London's open green spaces and the access to these and improving the adaptation to flooding and heatwaves (London Environmental Strategy 2018).

Energy Retrofitting

London's homes are in great need of retrofitting, with more than 40% of the housing stock having an EER of D, E or F (Mayor of London, 2024). This issue becomes even more prevalent considering the widespread energy poverty in the capital. The Environmental Strategy of 2018 aims for a net-zero carbon London by 2050. London's homes are responsible for one third of the city's carbon emissions, making retrofitting essential to reach net-zero in 2050 (Mayor of London, n.d.). Concerning housing retrofitting, the most essential policies are: Nearly 40% reduction in the total heat demand of buildings by 2030, requiring over 2 million homes and around 250,000 non-domestic buildings to become properly insulated, 2.2 million heat pumps in operation in London by 2030, 460,000 buildings connected to district heating networks by 2030.

Densification

The solution to the London housing crisis has been deemed to build more homes and densify the city. As the city is surrounded by the Metropolitan Green Belt, the city has to grow vertically to increase the amount of homes (LSE City 2020). The London Plan underlines the idea that density is a key component towards a more sustainable city, as it contains multiple policies promoting higher density. It further highlights the agglomeration effects of having both mixed use spaces and higher density. An example in the policy on making the best use of land, which states it as a goal on its own to create space for higher density (The London Plan 2021).

Historically, most neighborhoods in London have been characterized by consisting predominantly of low rise victorian terrace housing. This is in stark contrast to newer more dense development, which changes the aesthetic and the experience of the city (LSE Cities, 2020). According to LSE Cities (2020), the new high development housing

to a higher degree consists of small households, consisting of one or two people, compared to old terraced housing.

2.5.4 A detailed focus on specific districts

Our fieldwork consists of a series of interviews and case studies visits on site in London, to better qualitatively understand some of the dynamics at play between environmental policies and housing inequalities. The selection of case studies has been based on several principles. Firstly, we wanted to study resistance to gentrification and therefore focussed on grassroots organisations. Secondly, it was important to us to ensure diversity in the case studies, both geographically in the city, but also in the way they operate as organisations and in the way the different EEPs come into play in the different cases. The selection of organizations were thirdly driven by wanting to focus on actors operating in these areas, as they thereby could give us some insights on resistance to ongoing transformations. Thereby the selection took into account both the specific urban context and the trends of resistance in the chosen areas. The grassroots organizations we have interviewed/studied include Alton Action in Roehampton, the community land trust WECH in north Paddington, the city-wide grassroots Just Space, and the grassroots community group Homegrown in Tottenham. This will all be elaborated on in section e. Additionally, we chose to include two neighborhoods in the field work, which are elaborated Figure 2.5.4.1, including Elephant and Castle neighborhood and Queen Elizabeth Olympic Park, considered together with the Carpenter's Estate in Newham.

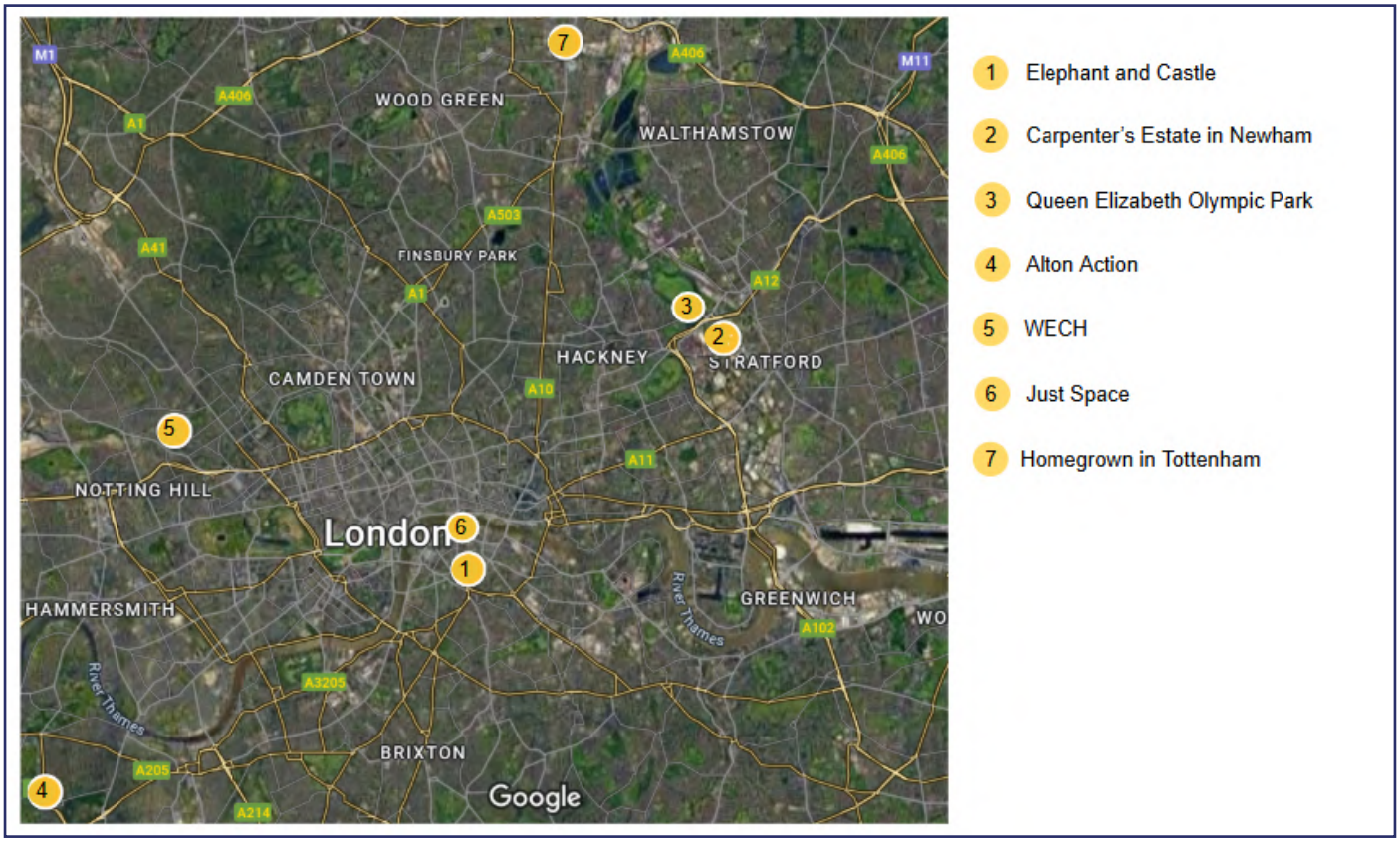

Fig. 2.5.4.1 Map of fieldwork in London.
(Source: Google Maps, 2025)

DISTRICTS	ELEPHANT AND CASTLE	STRATFORD NEWHAM: The Queen Elizabeth Olympic Park and Carpenter's Estate
Name of the project	*Demolition of the Elephant and Castle shopping center* + general regeneration of the neighborhood	*Regeneration of Stratford + creation of the Queen Elizabeth Olympic Park*
Time frame	2021 - ongoing	2012 - ongoing
EEPs involved	- Nature-based Solutions - Densification	- Nature-based Solutions - Densification - Energy retrofitting
Actors involved	- Southwark Council - The Latin American Community - Just Space (grass root)	- Populiving community organization - The city of London

Fig. 2.5.4.2 Summary table of fieldwork in London.

Elephant and Castle

The Neighborhood of Elephant and Castle, located in the borough of Southwark in South London, is commonly referred to as the ground zero of gentrification in London (Unicorn Riot, 2023; Román-Velázquez, 2024; Just Space, 2025). The neighborhood is interesting as a case study, as it is an example of regeneration with the purpose of densifying the city. The outline of the neighborhood is shown in Figure 2.5.4.3. It is further interesting, as it has been so heavily criticized for displacing ethnic minorities and thereby showcasing a trade-off between density and racial housing inequalities.

The neighborhood is located south of the river thames, and geographical location of the neighborhood is important to understand the dynamics at play. The coordinator of Just Space, who we interviewed, described how all the neighborhoods south of the River Thames were not considered part of the real London until the early 20th century. As Elephant and Castle is quite centrally located, development of this neighbourhood has been seen as a missed opportunity by the council, and it has therefore been subject to heavy regneration (Unicorn Riot, 2023; Elephant and Castle Partnership, n.d.). The coordinator of Just Space further described how the neighborhood historically has been home to the lower part of the working class and ethnically marginalized parts of the population. Additionally, the neighborhood has been, and still is, home to a large Latin American population and has served as a cultural center for Latin American culture in London (Román-Velázquez 2024).

The most prominent example of regeneration has been the demolition of the Elephant and Castle shopping centre in 2021. The development of the neighbourhood and especially the demolition of the shopping centre have been criticized for ruining the livelihoods of the small retailers that serve a quintessential role in the community by maintaining the cultural identity. (Román-Velázquez 2024). A new park and development containing more than 3000 new homes and will be places where the Elephant and Castle shopping centre used to be. This shows a trade-off between densifying the city, and protecting the cultural identity of ethnic minorities.

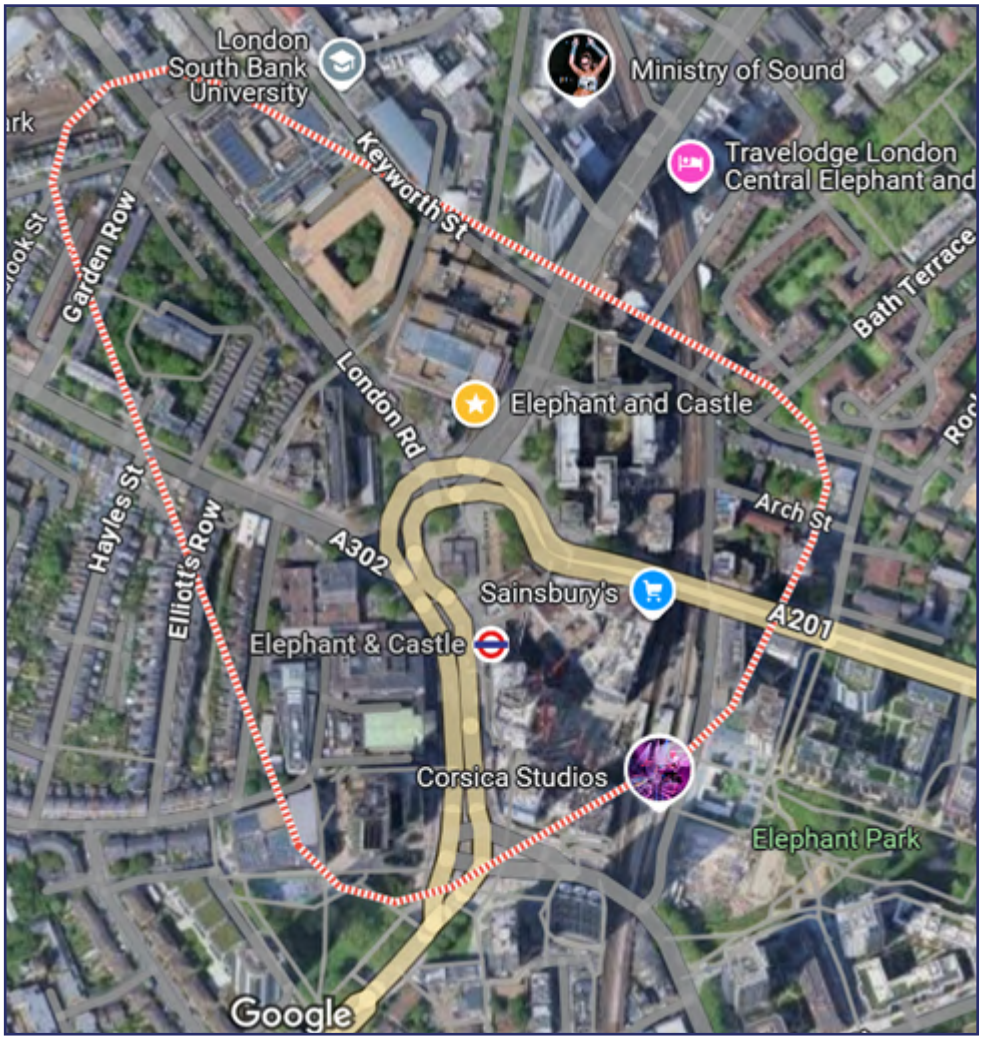

Fig. 2.5.4.3 Map of Elephant and Castle, London. (Source: Google Maps, 2025)

Stratford, Newham: The Queen Elizabeth Olympic Park and Carpenter's Estate

The Queen Elizabeth Olympic Park is located in the east of London and is bordering the neighborhood of Stratford in Newham, see Figure 2.5.4.4. The interplay between the Olympic park and the nearby neighborhood is interesting to our project as it touches upon all three of the EEPs we are studying. It's an area that is currently undergoing big development, and thereby densifying. Secondly, the area contains both new developments and very worn down housing in great need of retrofitting. Thirdly, the proximity to the Olympic park is interesting in the light of how the introduction of high quality green areas has affected the surrounding neighbourhood.

The Queen Elizabeth Olympic Park is located in the east of London and is, in a way, the biggest legacy of the 2012 Summer Olympics in London. According to BBC (2022), the goal was to build 9000 new homes, half of which at affordable rent. In reality only 200 homes at the lowest level of rent were built in 2022, making the project fail its promises to huge criticism of the public. Hosting the Olympics can be an opportunity to create transformative change in a city. As London bid on the 2012 Olympics, they sold it as a huge oppor-

tunity for regeneration of East London, which has historically been relatively poor, compared to the rest of the city (BBC 2022). As Paris hosted the summer Olympics of 2024, these long term lessons of lost promises of cheap housing from London are important to keep in mind.

Aside from being criticized for not living up to the promise of low-cost housing in the area , the Queen Elizabeth Olympic Park has been described as successful in terms of creating accessible green spaces for the public (Azzali, 2017; RioOnWatch,2013). Visiting the park in person, it was lively, well maintained and maybe a little empty. We also visited the neighborhood in the northernmost part of Newham, bordering the railway and the park. The case study we were interested in was the Carpenters Estate, which is a 22-story building surrounded by a quiet neighborhood consisting of a combination of worn-down housing and empty new development. The Carpenters Estate looked completely uninhabitable from the outside, but some laundry from a window served testimony to at least one of the apartments still having people living there. We ran into some locals in the street, who told us that it had been standing like that for a long time, and that it was common for old buildings like that to have a resident or two who refused to move, even though it was overdue. After taking a look at the estate, we found the local community center, which prospered with life, compared to the rest of the area. Here we get to talk to a representative of Populiving, a housing company developing the Carpenters Estate. When we asked about the state of the housing around the area, the representative said that they suffered from a dynamic where the council refused to renovate homes in time to justify demolition and thereby foster new development. This dynamic shows that there is a trade-off between energy retrofitting and densification, assuming that new development contributes with more homes per square meter than existing housing.

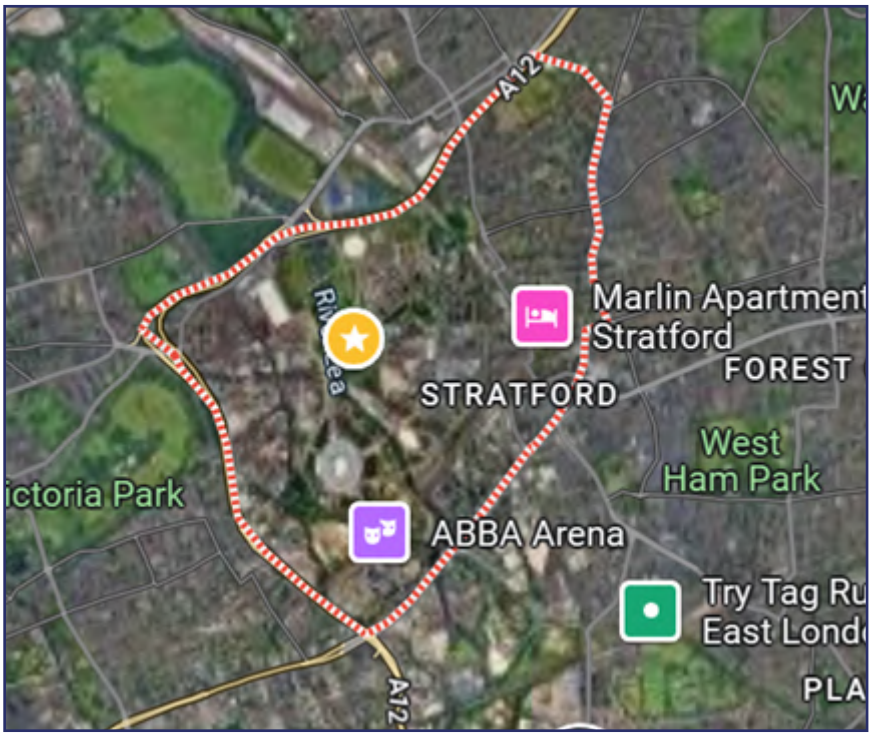

Fig. 2.5.4.4 Map of Stratford, London.
(Source: Google Maps, 2025)

2.5.5 The role of grassroots organizations in tackling housing exclusion

Alton Action

Alton Action is a community group based in Roehampton, London. They created the group in 2020 to create a People's plan, which is a regeneration plan for the Alton Estate made by the community that serves as an alternative to the plan made by the council. Compared with the council's plan, the People's plan includes less demolition, less new development, more refurbishment, and more community facilities.

They are resisting gentrification as their plan opposes some of the classical gentrification strategies, such as demolition and mass development, resulting in rising prices. They are also resisting by insisting on an extent of co-design, thereby opposing the paternalistic attitude of the council. The councils made it clear that they wanted to build affordable housing, but according to Angus Robertsen, who we interviewed, affordable housing is not affordable for people in the area. The best way for the community to control rent prices is therefore by securing already existing council homes (Alton Action, n.d.).

We had the chance to talk to one of the founders of Alton Action about the process of creating the People's Plan. We interviewed him and got a tour of the estate, to get a better understanding of the area. He emphasized the struggle of getting the people in the neighborhood involved. He described fatigue at the beginning of their organizing, which stemmed from the community not believing that their work would create any real difference. He further explained some of the crucial factors that made the People's Plan possible. These included the support from the Bartlett School of Planning at UCL and the political shift from conservative to Labour in the local council. By the end of the interview, we talked about the political dynamics at play in the area, where he pointed out that avoiding retrofitting council buildings (social housing) and letting them rot has been employed as an active tactic of the council to justify demolition and new construction. This dynamic matches the one we encountered in Stratford.

WECH

WECH is a community land trust and housing association based in North Paddington, London. It consists of 675 homes and a community center, offering a wide range of activities. WECH is owned by the tenants and democratically controlled. The board is elected at an annual meeting and who gets housing is decided by the housing board. The association has been successful in continuous development of the estate, while still being democratically governed. This includes both de-densification, densification, retrofitting, greening and development (WECH, n.d.).

Maintaining being democratically controlled and owned by the residents, despite external pressure for privatization, serves as an act of resistance. We interviewed one of the founders of WECH, who described how the most essential key to keeping the structure of ownership has been to exploit the fact that the people living in WECH have strong personal ties to the place. He argued that the willingness of the community is absolutely crucial to maintain the structure, and that it, in return, gave residents a sense of belonging and ownership, which resulted in improved quality of life. This dynamic allows for a more efficient government of the estate, as they could move people around between apartments according to their shifting

housing needs. He also argued that this commitment and willingness of the community were key in allowing the continuous development of the estate

Just Space

Just Space is a community-led network of action groups working to influence planning policy and the plan-making process in London located in Waterloo. The network seeks to ensure that issues of social justice, economic equity, and environmental sustainability are at the heart of planning. They work mainly as a communication body that coordinates between local groups and provides information on important current topics. Their biggest focus is to mobilize against and inform about the London Plan, the big development plan for London that all the local councils have to follow (Just Space n.d.).

Challenging the dominance of developers and public bodies, many of which are themselves deeply influenced by property development interests, Just Space calls for a more democratic and inclusive planning process. This is the stated purpose of Just Space according to the head coordinator, who we got to interview. He further pointed out: "the gap between policy and practice is immense where democratic engagement is concerned."
The way of resistance is mainly through coordinating and informing the local groups who do the campaigning for different issues concerning planning. In this way, the way Just Space is resisting is very bottom-up. Besides helping the local groups campaign, they've also developed their own London Plan in 2015 as well as a Covid recovery plan post the pandemic. One of the key ways that these plans have differed from the ones made by the official authorities have been their approach to so-called "opportunity areas". These are often old industrial areas, typically inhabited by poor people of ethnic minorities. Just Space is very actively trying to change the way these areas are being developed, as they argue that the council does not treat them with the required local sensitivity, which results in social cleansing and exacerbation of inequalities.

By the end of our discussion, the conversation turned to some of the bigger underlying dynamics of development and gentrification in London. The head coordinator questioned the difference between social cleansing and natural development, along with the notion of improvement and crime. He further underlined that there is a general lack of repurposing, and that one of the greatest challenges is the massive need of retrofitting of the old victorian houses that comprise a large part of the total housing stock.

	Alton Action	*WECH*	*Just Space*	*Homegrown*
Association	- Created in 2020 consisting of a core group of five people	- Community land trust of 675 homes - created gradually during the 80s	- Umbrella organization for local organizations resisting the London Plan	- Community center and language school
Actions	- Creating an alternative community development plan	- Running a democraticall y owned community land trust	- Providing information and coordinating between different groups	- Saturday school, food bank, community center. Occupied their space when kicked out
Claims	- More inclusion in local urban planning - Prioritizing community space and cheap housing	- Providing cheap high quality housing	- A more bottom-up approach to planning - Highlighting London Plan's growth focus	- The importance of including and preserving community space
Relationship to municipal authorities	- Has varied depending on the political orientation of the party in power - Argue that the paternalistic attitude from the municipality is damaging for local communities	- A constant push from the council for them to take on more people for social housing	- Trying to support local community groups in opposing the municipal authorities	- Very stressed. The local authority promised to provide them with a new space for their actions, which never happened.

Fig. 2.5.5.1 Summary table of grassroot initiatives met in London and their actions.

Occupy Tottenham: Homegrown - Discussion and Documentary showing at Rich Mix

Homegrown was a grassroots community group working with children and young people, organizing a free Saturday school along with a community kitchen, a social hangout space, and a food hub. Many of the children using the group came from low-income households, were of ethnic minority background, asylum seekers, and refugees. The club thereby served a key function as a home away from home, binding together the community. When they got evicted from their space a year before initially agreed on, they decided to occupy the space, which led to the creation of the documentary, Occupy Tottenham. We attended the showing of this documentary and a following panel discussion which included the founders of Homegrown along with other hou-

sing activists from all over London (Homegrown in Tottenham, 2022).

The following discussion on the housing crisis in London revolved around the question of who spaces are for. Various participants in the panel described the patterns of how low-income people of color got displaced from their communities and replaced by concrete jungles of empty, unaffordable apartment buildings. This process is called regeneration. Nabil Al Kinani questioned the whole notion of regeneration, pointing out that it means breathing life into something dead. He argued that whether some was considered dead, and in need of regeneration, has strong ties to class and race.
They further discussed resistance to gentrification and the role of education. They pointed out that there is a growing frustration among the people, feeling the consequences of gentrification, but not having the resources and knowledge to understand the dynamics at play. This again emphasizes the importance of having access to community spaces, where these connections could be made, and thereby turning individual grievances into collective action.

2.5.6 Trade-offs and relationships between green transition initiatives and housing inequalities

Based on our overview of the city, its housing market and EEPs, case studies and interviews with grassroots, this part will provide an analysis of the trade-offs and relationships at the municipal level between our studied EEPs and housing inequalities.

In addressing the hypothesis of green gentrification in the context of London, especially the question of the interaction between housing inequalities and densification is relevant. As stated by Just Space the Mayor has recognized the cost of living crisis and is treating it like a supply and demand problem. Talking to various grassroots organisations about resistance to gentrification in London, we've identified two main trends across cease studies.

The neoliberal regeneration and logics of mass development

During the different interviews we've conducted, it became clear that all the different grassroots shared the opinion that neoliberal development strategies with economic growth at the center were to blame for the housing crisis. They described this as a focus on preserving the status quo by favoring mass development and not taking the specificities of different neighbourhoods into account. They for example described how this dynamic was materialized through the different councils' approaches to retrofitting. Both Alton Action and the panel at the discussion with Homegrown at Rich Mix, argued that the councils deliberately avoided retrofitting buildings and let them further deteriorate to justify demolition, which then cleared land for new development. This strategy is at great cost to residents living in bad quality housing and very environmentally taxing. This interplay where a neoliberal approach to retrofitting and densification lead to housing inequalities is supported in the literature by Baeten et al. (2017) who points to the same dynamic in cities in Sweden.

This dynamic can be analyzed as a trade-off between densification and housing inequalities through two different dynamics. Firstly, deliberately choosing to not retrofit bad quality housing, exacerbates existing housing inequalities as it

worsens already existing energy poverty as the housing continues to deteriorate. Secondly, when the buildings are in a worse enough condition to demolish and are getting replaced by new denser development, the new housing is unaffordable to some of the communities who used to live there, according to our interviewees. This is despite council demands for constructing a certain amount of affordable housing, as multiple people we interviewed also pointed out the use of the notion of affordable housing. They argued that affordable housing, which is 20% below market rate, wasn't actually affordable for working class people, and that calling housing affordable was an opt out for developers to get building permits. This trade-off is supported by Debrunner (2024), who argues that strong protection of tenants rights and careful implementation is crucial in order to secure socially sustainable housing development in a densifying city.

A Lack of Priority of Community Space

Another trend across different case studies is the fight for community space. The different actors all stressed the importance of public available space, where the community could hold community events, meetings, discuss politics and organize politically. They described they had to actively work to preserve these kinds of spaces, when faced with regeneration plans . A dynamic of outside developers not prioritizing the establishment of community space when building, was also pointed out. Exactly this was the case in Roehampton, where the community created their own local development plan, the People's Plan, which opposed the plan made by the council. One of the main differences between the two plans was that the one made by the local community prioritized indoor and outdoor public space higher. Also in Tottenham, this exact dynamic was at the core of the conflict between the developers and the community group Homegrown. Homegrown was getting kicked out of their space a year before they had been told, leaving them with no place to continue their activities. They were promised a new spot in replacement, but it was never given to them, neither by the local authorities nor the developers. They found this dynamic strange, as they knew that a lot of the apartments that were being developed stood empty. This dynamic suggests that there might be a trade-off between densification of the city and securing community space.

PART 3 - COMPARISON AND POLICY TAKEAWAYS

The comparison work we conduct takes inspiration from Cavicchia et al. (2023), who themselves take inspiration from Robinson (2011). Our main motivation is to highlight how the trade-offs between EEPs and housing inequalities may vary in their outcomes depending on the context and the policies that were conducted. We thus try to prove how contextual factors shape these trade-offs while looking for policy insights and instruments that could be mobilized to tackle housing inequalities and environmental issues at the same time.

Our cities differ on many points: their size, their population and density, their need to respect EU regulation, their public finances and prerogatives, their political situation, etc. Nonetheless they share certain elements making them prone to a comparison with Paris and the same type of EEPs are looked upon in every city, creating a field for comparability.

Conducting a two-fold analysis, at a national and European level, allows us to compare Paris within two frameworks that illustrate two of its aspects:
Paris with Sens and Orléans as French cities of varied sizes, sharing a common legislative code and a national context of housing crisis combined with progressive financial withdrawal of the State from local affairs.

Paris with Milan and London as global economic hubs which have exposed them to considerable amounts of housing market pressures and increased their visibility in the fight against climate change.

3.1 A CROSS-COMPARISON AT THE NATIONAL LEVEL

The comparative analysis of the three cities selected for this national-level study—Paris, Orléans, and Sens—constitutes a crucial first step toward understanding the trade-offs that arise when Energy and Environmental Policies are implemented. This section examines issues and challenges that manifest in similar ways across the three municipalities, while also highlighting divergent outcomes. The aim is to produce an informative overview of the topic within the French national context. In doing so, it calls attention both to the influence of nationwide policies and to the legacy of local political traditions on the roll-out of public measures designed to optimize energy use of land and to maximize environmental co-benefits, all the while contrasting their effects on housing access in three urban settings (a metropolitan city, a medium-size city and a rural context) with markedly different characteristics.

A rigorous national comparison first requires acknowledging the distinct contextual features of the case studies. Paris, with just over 2.11 million inhabitants—and treated as its own département

within the French territorial system—differs substantially from Orléans, whose population exceeds 110,000 (nearly two million fewer than Paris), and even more so from the rural intermediate urban centre of Sens that numbered 27,275 residents in 2022. Moreover, these cities have experienced markedly different demographic trajectories. Figure 3.1.1 shows a pronounced decline in Paris's population since 1968, in sharp contrast to the notable increases recorded in Sens and Orléans from the 1970s onward—a trend that aligns with the broader resurgence of intermediate urban centres discussed earlier in this report. The mean population density (in hab/km2) followed the same evolution between 1968 and 2021.

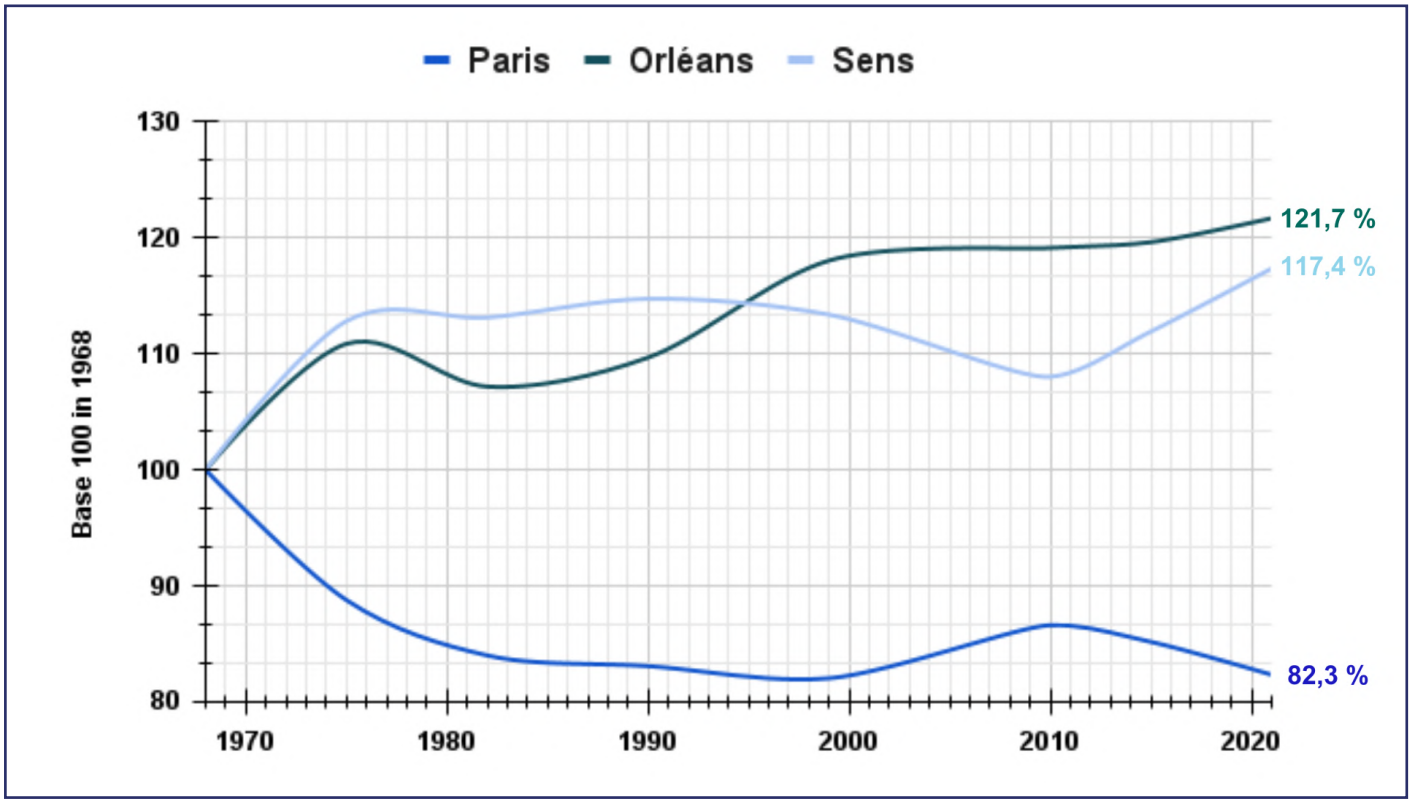

Figure 3.1.1 Total population growth's evolution in Paris, Orléans and Sens (in % base 100 in 1968).
(Source: INSEE, 2021)

In addition, an examination of the age-group distribution across the three cities quickly reveals marked differences (see Figure 3.1.2), which in turn leads to distinct patterns of housing demand and accessibility in the 3 municipalities. In fact, in terms of youth concentration (0-29 years). Orléans stands out for its exceptionally large 15-29 cohort (25.6 % of residents), a reflection of its university base, while Paris has the smallest share of children (0-14 years: 13.2 %). Sens, by contrast, maintains the most balanced youth distribution. But when it comes to prime working-age groups (30-59 years), Paris gets to dominate in the 30-44 bracket (21.6 %), consistent with its role as a magnet for mobile professionals, whereas Sens and Orléans show lower but comparable proportions (≈18-19 %). The 45-59 group is broadly similar across the three cities (≈17-19 %), suggesting that mid-career households may face comparable labour-market and housing pressures. Older residents (60 + years) tend to be

more represented in the total municipal population of Sens, and the city hosts the highest shares of seniors: 17 % aged 60-74 and 11.3 % aged 75 +. Paris, by contrast, records only 14.4 % and 8.2 % respectively, underscoring its greater turnover and potential higher cost of ageing in place. A major outcome of this observation that can inform our comparison is that Paris' structure centered around young adults without children seems to amplify demand for compact, high-priced rentals, whereas Sens' sizeable elderly population tends to point to different needs, namely adapted dwellings. Moreover, Orléans's student-heavy profile might stress short-term leases and shared accommodation.

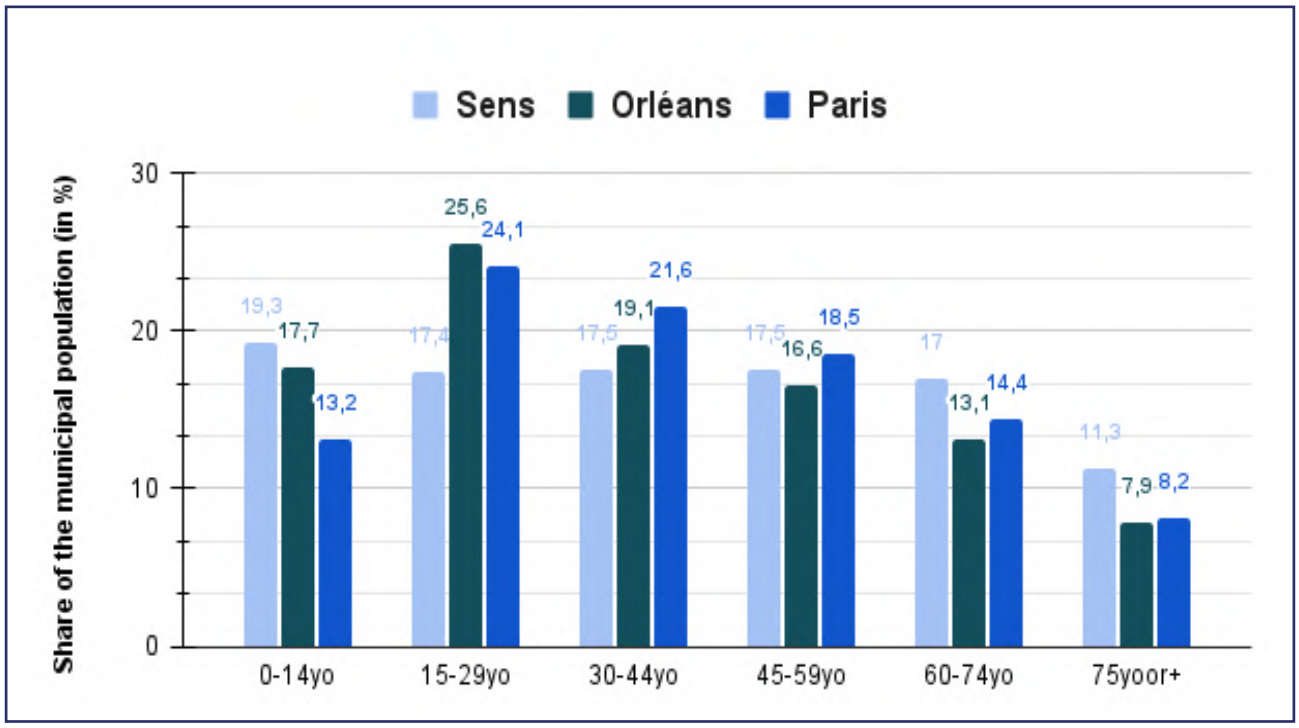

Figure 3.1.2 Total population growth's evolution in Paris, Orléans and Sens (in % base 100 in 1968).
(Source: INSEE, 2021)

However, the three cities also display common patterns in the evolution of socio-professional categories within their total populations. Since 2010, all have witnessed a general increase in the proportion of executives and higher intellectual professions, accompanied by a decline in the share of employees and manual workers, as illustrated in Figure 3.1.3 and Figure 3.1.4. A significant disparity nonetheless remains: the share of executives and higher intellectual professions in Paris being almost twice that observed in Sens or Orléans; and, in returns, the part of employees and manual workers in Sens and Orléans being significantly higher than the Parisian part.

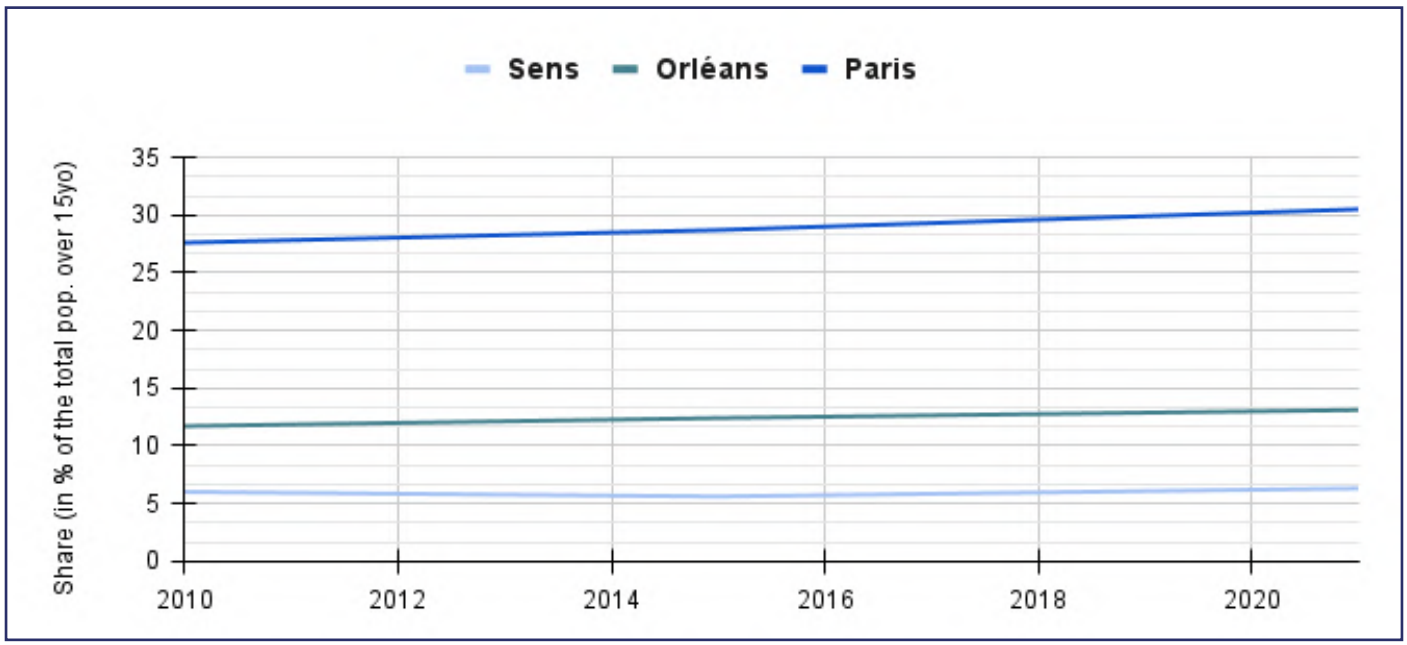

Figure 3.1.3. Executives and higher intellectual professions' share of the municipal population in Sens, Orléans and Paris between 2010 and 2021.
(Source: INSEE, 2021)

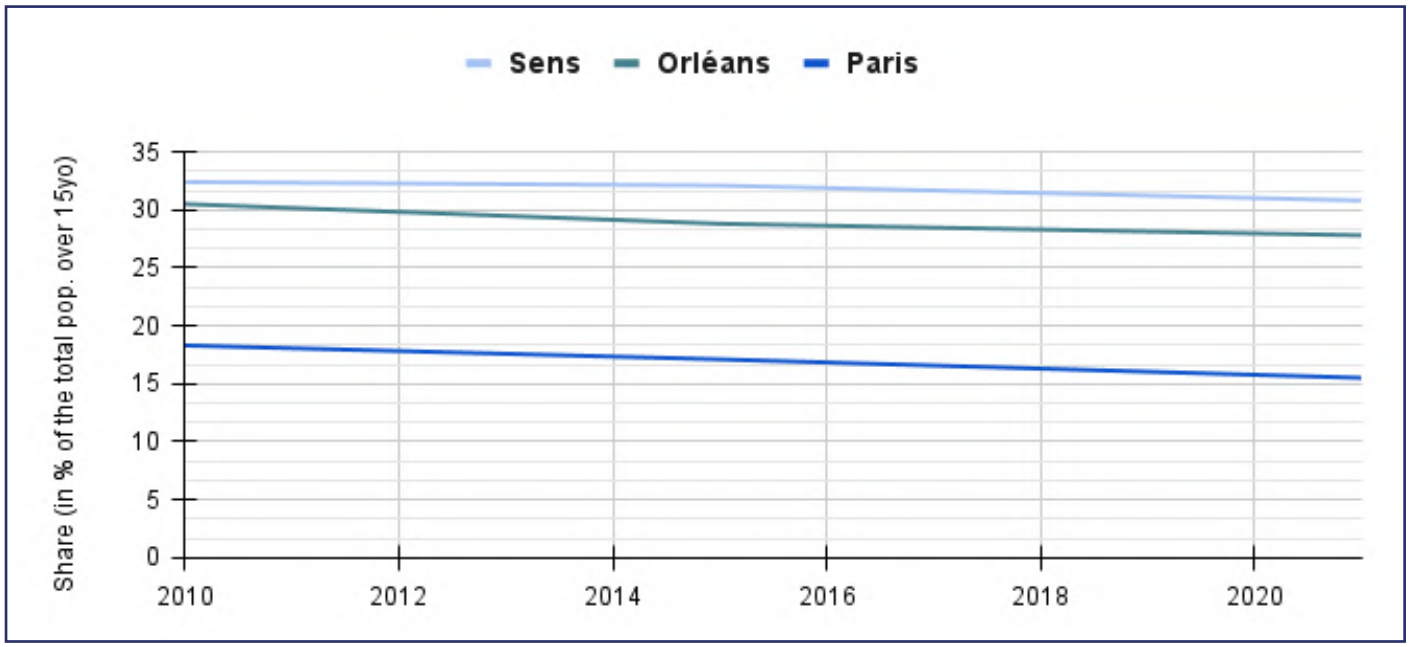

Figure 3.1.4. Employees and manual workers' share of the municipal population in Sens, Orléans and Paris between 2010 and 2021.
(Source: INSEE, 2021)

These cities therefore experience clearly differing degrees of demographic, spatial and regional pressures. Nevertheless, by undertaking this comparative exercise, we contend that it is possible to identify shared, interrelated dynamics that will ultimately inform the policy recommendations presented in the final section of this work.

3.1.1 Identifying EEPs similarities, differences and housing implications

Contrasting densification strategies and land-use constraints

Population and built-space density varies significantly among the three cities. Paris exhibits an exceptionally high average density (over 20,000 inhabitants per km^2 within its municipal boundaries) whereas Orléans and Sens are, respectively, five and twenty times less dense (see Figure 3.1.1.1). Even so, all three urban cores remain far more compact than France as a whole, whose metropolitan average was a modest 107 inhabitants per km^2 in 2019 (vie-publique.fr, 2019). Because urban centres display such substantial demographic and built-form densities, it is essential to examine how these configurations affect access to housing and what municipal management strategies are employed to accommodate them.

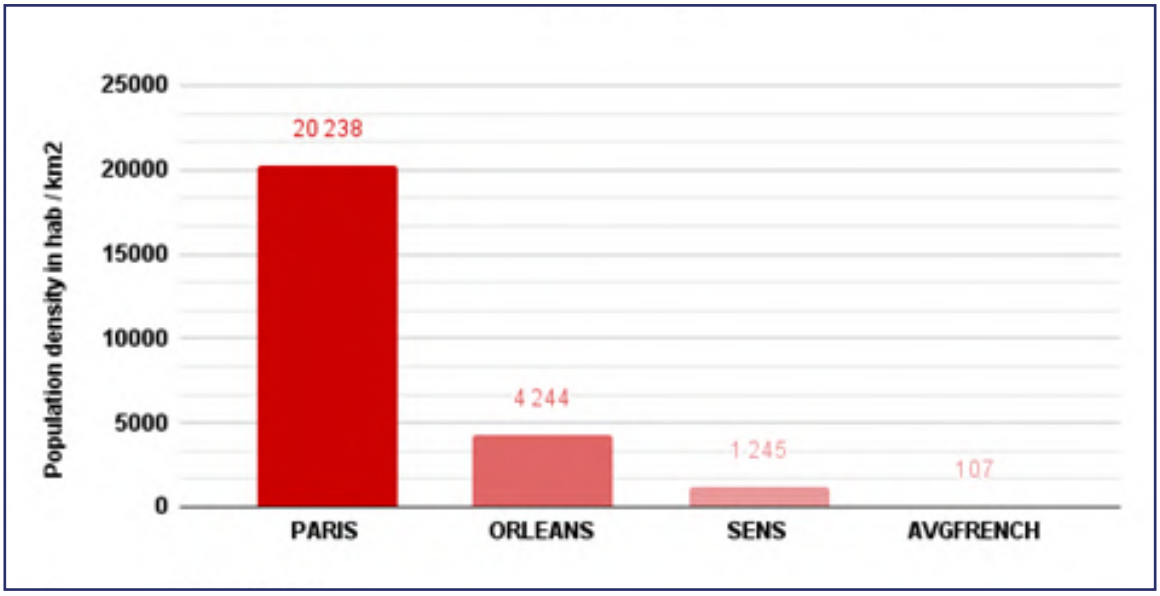

Figure 3.1.1.1 Population density in Paris, Orléans and Sens, 2021.
(Source: Vie-publique.fr, 2019; INSEE, 2021)

In Paris—one of the most dense cities worldwide—there is little scope for ambitious, large-scale densification. If the municipality engaged in vast regeneration of brownfields projects during the 2000s (Clichy-Batignolles, Paris Rive Gauche etc.), this process currently starts to touch its end with a near absence of vacant land. Additionally, collective housing is already the norm, given the lack of possibility for urban sprawling and new constructions, so policy makers prioritise maximising the residential capacity of the existing fabric rather than erecting entirely new complexes. The few large intra-muros developments currently underway are however subject to the city's new bioclimatic local urban plan (PLUb), which requires that at least 10% of the site must be allocated to housing. The same PLUb also increasingly promotes vertical extensions of existing buildings, with a long-term target of creating 1,000 new dwellings per year inside the capital—an incremental "vertical" strategy that often encounters technical and heritage constraints.

By contrast, the Orléans metropolitan authority positions itself as an active promoter of urban densification, benefiting from greater latent capacity than Paris—referring here to a greater proportion of vacant housing units as well as the number of brownfield sites that are present in this city. Two main strategies dominate: the regeneration of industrial wastelands and the densification of the historic core. These efforts align with the national "ZAN" law's land-use objectives, by aiming to reduce gross land artificialization by 70% by 2030 and to restore more than 5,000 hectares of natural areas. A major obstacle, however, is the city's recent pattern of suburban expansion: an increasing number of households settle in the municipal periphery, following a claim for private gardens and green spaces (the lotissement model), reinforcing urban sprawl.

A similar sprawl-oriented land-use pattern characterises Sens, where a demographic "drain" from the center toward the periphery — partly facilitated by car-oriented urban development as well — has left a growing share of central housing stock vacant. Unlike Orléans, Sens has undertaken few, if any, residential-densification policies aimed at revitalising and maximising the use of existing central-city buildings. Instead, development activity has shifted to the urban fringe, as illustrated by the recent eco-district project on former farmland at the northern edge of the city, which development was recently accelerated due to upcoming ZAN-related land transformation restrictions, thus engaging the municipal densification strategy in a whole other conception than the one developed in Orléans. Further, the creation of a "landscaped parking lot" on a brownfield site in Rue André Gateau, right in the city centre, runs counter to the residential-density objectives discussed here and contributes to keep housing prices artificially high by failing to expand the stock of dwellings in central Sens, thus reducing the residential attractiveness and affordability of the historical center.

Thus, the comparison of these three case studies illustrates the different contexts and strategies operating at the national scale in terms of urban and demographic densification. As these three cities do not share the same land-use potential (understood here as vacant or underutilized housing) and/or significant areas in need of revitalization, Paris stands out for its vertical densification dynamic based on the elevation of certain already existing buildings and made possible by an ambitious local urban plan (PLUb). However, it is important to keep in mind that this municipal ambition is just one part of the picture, as the vertical densification process entails multiple obstacles, ranging from political disparities to historical legacy constraints and socio-economical considerations.

Following the same orientation but adapting it to the municipal specificities detailed above, the municipality of Orléans aligns its actions with objectives set by national regulatory frameworks, such as the «Zéro Artificialisation Nette» (ZAN). Conversely, the City of Sens—whose local urban plan imposes strict limits on vertical development and which perceives the ZAN more as a constraint than as a target—does not engage in a meaningful densification of its historic city center. Instead, it favours a peripheral, self-centred form of development, despite its considerable untapped potential (vacant, substandard, or optimizable housing, as well as extensive urban wastelands). The effects of these varied policies on housing distribution and accessibility are therefore both numerous and diverse. In Paris, the very few recent residential densification projects, such as the Clichy-Batignolles housing development, attracted many new inha-

bitants from higher social classes, despite the initial inclusion of social housing in the project (Piganiol, 2021). Furthermore, such developments are often accompanied by the creation of green extensions designed to offset the densification influx, yet they raise the issue of unequal access to nature-based solutions (NbS), which will be discussed in a subsequent section. In the case of Sens, the restrictive nature of the local urban plan (PLU) can appear to hinder efforts to renovate or enhance existing housing, thereby contributing to the gradual decline of the city centre's residential fabric. As a result, it helps maintain artificially high settlement costs in an area that is nonetheless experiencing economic decline. On the periphery, the development of projects prompted by a restrictive interpretation of the ZAN guidelines has led to the construction of green-branded housing (eco-neighbourhoods). These projects further reduce the density of the urban core without making housing more affordable, as they incur additional installation costs due to the predominance of individual housing typologies being developed in these areas. Finally, the case of Orléans offers a further perspective on municipal efforts to achieve ZAN objectives and promote the densification of the city centre, while facing a local conception of housing that aligns more closely with those found in intermediate or rural urban centres. This tension highlights the limitations of applying the Parisian density model uniformly across the French territory.

Mitigating ambitious goals and strong barriers in retrofitting an aging housing stock

First, it is important to highlight the fact that all three cities have a relatively old building stock which is likely to include many thermal sieves. In Paris, 58% are thermal sieves in 2018 (Fideli 2019). This creates a strong need for energy retrofitting to reduce energy consumption and cut greenhouse gas emissions, since the housing sector is responsible for about 10% of France's emissions (ADEME, 2024). However, exact data on poorly insulated homes is lacking because not all buildings have energy performance certificates (DPE), and these smaller cities often lack the resources and capacity to complete full assessments quickly.

Second, the three cities adopt distinct approaches to energy reduction targets, reflecting their specific local contexts and institutional capacities. Sens has the most ambitious goal, aiming to cut energy use by 50% by 2030, followed by Paris at 30% and Orléans at 26%. The lower target in Paris partly reflects the complexity of retrofitting in a dense urban environment where technical and legal constraints slow progress. It may also be due to the fact that a larger share of the housing stock has already undergone energy retrofitting compared to the other two cities. In Paris, efforts focus heavily on motivating individual homeowners to renovate through grants and coordinated support from the Agence Parisienne du Climat, which provides technical advice and simplifies access to subsidies. This model mainly benefits owner-occupiers and owners in general as they can benefit from municipal and national grants to retrofit their homes. On the other hand renters have limited influence on renovations and face the risk that poorly insulated homes could become harder to rent, ending up with a diminished rental stock. This is because recent regulations in France restrict the rental of energy-inefficient properties, progressively banning the worst-performing homes from the rental market, as already explained above in this report. By contrast, Orléans and Sens rely more on municipal-led programs with fewer local grants beyond the national subsidies, which may limit individual homeowner engagement but re-

flect different governance styles and smaller budgets.

Third, social housing presents different challenges in each city. In Paris and Orléans, social housing tends to be newer and more energy efficient. In Paris, renovations carried out on over 9,000 social housing units resulted in an average energy consumption reduction of 34% by 2023 (APUR 2024). In Orléans, while access to data is more limited, the "Les Cèdres Bleus" family pension and the "Mosaïque" intergenerational residence in Saint-Jean-de-Braye are examples of recent developments aimed at providing energy-efficient housing for vulnerable populations. Despite pressure to build more housing to meet densification and climate adaptation needs, retrofitting social housing is complicated due to tight budgets and decreasing state funding in a context where the country faces austerity policies justified from the government by a historical public deficit. Sens differs in that its social housing stock is older and less energy efficient, so policies there focus more on upgrading the existing estates, such as Champs-Plaisants and Les Arènes, highlighting a clearer retrofit priority.

Fourth, none of the cities prioritize energy renovations in historic buildings, largely due to heritage protection rules and the technical difficulties involved. Whether it is Haussmannian apartments in Paris or half-timbered houses in Orléans, these buildings pose significant challenges that make retrofitting complex and expensive, limiting large-scale interventions in this segment.

Finally, Paris faces specific legal and social complexities due to its dense urban form. Many residential buildings are condominiums co-owned by multiple individuals, which requires collective agreement to proceed with retrofitting and which often slows down projects. This model may also exacerbate inequalities insofar as poorer owners face higher difficulties to finance these necessary renovations. In contrast, Sens and Orléans mostly consist of single-family homes or smaller-scale properties, making coordination easier and accelerating retrofitting processes.

Aiming for integrated nature-based solutions and greening policies in the three cities

Concerning NbS, our three cities share a common will to add greenery into the urban fabric, yet at different scales and with varied methods due to their different sizes and political leadership. Paris, as a densely built capital with limited accessible green space has focused, despite some large-scale projects like the Martin Luther King Park, on inserting vegetation into the urban fabric through small-scale, dispersed interventions: greening streets, small "urban forests", and depaving projects. These actions, driven by long-term political leadership under mayors Delanoë and Hidalgo, aim to address air pollution, urban heat islands, and biodiversity loss while aligning with the city's broader bioclimatic planning goals, including the ambitious target of 300 new hectares of green space by 2040 in the latest PLUb. However, Paris's NbS strategy, though ambitious and well-resourced, also reveals tensions around the possibility of green gentrification: the participatory "Du vert près de chez moi" initiative, while innovative, shows a pattern where interventions are mostly concentrated in areas where higher social classes now come and settle, especially in traditionally underserved areas. Furthermore the complexity of multi-actor governance often slows or obstructs implementation, as seen in projects like the green roof promoted by the association Les Jardins Suspendus des Batignolles.

In a similar way, Orléans has adopted a greening policy aiming at tackling urban heat islands through small-scale interventions. The city shares a similar approach to the fight against heat through increased presence of green coverage, especially in schools, exemplified by the promotion and implementation in Orléans and Paris of vegetalized "Oasis schoolyard". This action exemplifies a pragmatic, targeted NbS policy used in the two cities to implement greenery . Other forms of greening, around the cathedral of Orléans in the inner center have also been widely accepted by the population according to our interviews with residents, despite some dissatisfaction linked with the reduction of car parking spaces. Greening efforts have also been integrated into the neighborhood of La Source, a QPV (Priority Urban Policy District), as an example of how environmental and social goals can be reconciled with an integrated greening policy that takes into account socio-spatial injustices in the access to green spaces .

Sens, by comparison, exhibits a more fragmented and project-based NbS landscape. Its greening policies are driven largely by attractiveness and ecological visibility such as the requalification of riverbanks and promenades (still very much occupied by cars) rather than a comprehensive greening agenda. While small-scale interventions like flowerpots in the historic center contribute to visual appeal, they offer limited ecological function and are unevenly distributed. However, recent projects in neighborhoods like Champs-Plaisants and Les Arènes, involving micro-forests with local school and urban agriculture initiatives, may suggest a shift toward more ambitious and participatory greening strategies.

In summary, while Paris leads in ambition and scale as its status as a global city would suggest, its NbS strategies are challenged by social equity concerns and governance complexity. Orléans offers a similar pattern of small-scale greening policy mostly with a pragmatic approach and a will to improve the living environment but also a particular attention to certain neighborhoods. Sens, still in an exploratory phase, presents a case of evolving practice, where NbS may begin to bridge the gap between aesthetic enhancement and more in-depth transformation of greening practices.

3.1.2 Main mechanisms about housing inequalities

Identifying EEPs integration and structural problems in the social housing stock

Social housing appears in the three cities as a crucial element favoring housing affordability and our interviews have proved that asking for more social housing is a common claim among grassroots organizations trying to tackle housing inequality. Nonetheless, it is important to dive more into the topic from a comparative perspective to see how social housing supply may or may not adequately meet the needs in their design and how it interacts with EEPs in a French context.

In Paris, social housing remains a central pillar of housing policy, supported by sustained public investment and a growing stock. The city has made concerted efforts to geographically rebalance this stock, though with limited success; poorer households often remain confined to specific areas and given the very high market prices of the city, they are often unable to pay for a dwelling that would guarantee good housing conditions on the private market. These households thus need social housing, as a way to access good living conditions for a rent they are able to pay for. Furthermore, there is a systemic mismatch between demand and availability of the most affordable forms of social housing creating a paradox in which lower-middle-class households benefit from easier access to it than the most precarious populations (Clerval, 2016). Moreover, trade-offs with densification arise, as social housing units tend to have a larger surface per inhabitant than the private affordable housing they often replace, placing pressure on land and planning priorities. Despite these tensions, social housing plays a vital role in Paris's energy retrofitting as publicly owned buildings. This retrofit must nonetheless be engaged by social dwellers in the context of stretched finances and withdrawal of national fundings.

In Orléans, social housing policy is shaped by both formal compliance with national mandates and spatial strategies that raise concerns about equity. While Orléans Métropole reports an overall SRU compliance rate of 27.84% in 2023, this masks disparities at the municipal level, where seven constituent towns remain below the legal threshold. The municipality prioritizes the development of PLUS units (aimed at lower middle-classes), which receive 78% of funding, over PLAI units (targeted at the most precarious), which receive just 4%. According to a USH member we interviewed, this is a policy choice that appears designed to meet legal quotas without addressing the most urgent social needs. The spatial distribution of social housing is also problematic: La Source, a geographically isolated and peripheral district, concentrates the bulk of the city's social housing, suggesting a strategy of geographical marginalization rather than integration. Although vacancy and turnover rates align with national averages, the under-provision of deeply affordable units highlight a systemic reluctance to fully commit to inclusive housing distribution.

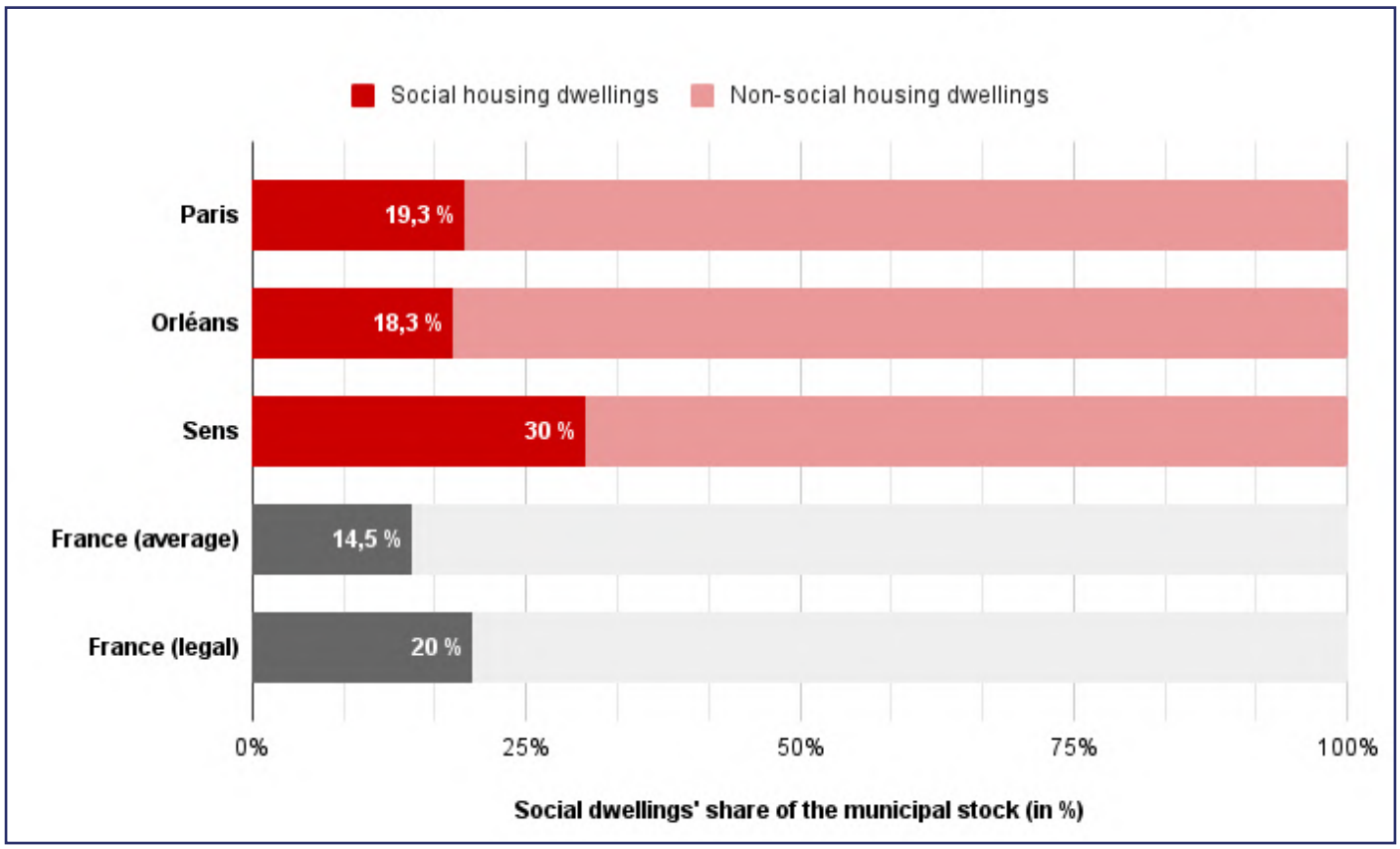

Figure 3.1.2.1 Social housing part (in % of the total stock) in Paris, Orléans and Sens in 2023.
(Sources: Observatoire des Territoires, 2023; APUR, 2024; Loi n°2000-1208)

Sens presents a different scenario, where the municipality openly aims to reduce the share of social housing, favoring an expansion of the overall housing supply and redistribution strategies. Social housing is heavily concentrated in peripheral QPV neighborhoods such as Champs-Plaisants and Les Arènes, both of which are undergoing significant transformation through the national NPNRU urban renewal program. This includes large-scale demolitions of 617 units, selective reconstructions of 309 units and "residentialisation" projects intended to reshape the image and physical form of 585 units. However, this upgrading process often lacks accompanying investment in social infrastructure or community services, raising concerns about exclusion, social disconnection, and the moral impact on stigmatized residents adding to the overall loss in the share of social housing units on the total housing stock. The near-total absence of social housing in Sens's historic center further exacerbates spatial segregation. Yet, this absence could also be reimagined as an opportunity: reintegrating social housing into the center through the requalification of vacant buildings could both diversify the housing landscape and revitalize underused urban areas in a process that would allow both densification and energy retrofitting while improving housing accessibility.

In sum, Paris demonstrates a solid but tense system where social housing is growing but with demand mismatches and a sustained concentration in peripheral areas. Orléans illustrates a more compliance-oriented model that tries to minimize most subsided forms of social housing and avoid its implementation in the center, at the risk of dee-

pening housing inequalities. Sens, by contrast, has a policy trying to reduce its social housing share by demolishing units and upgrading the rest of the stock with the support of nationally-led housing policy. Despite shared national objectives, we can conclude that social housing policy varies by their integration into a broader political agenda that takes EEPs into account when designing a social housing policy and the commitment that municipalities put in ensuring affordable housing for all.

Concentrating EEPs spatially: a driver of housing inequalities?

This section shows that energy and environmental policies can either help reduce or reinforce housing inequalities, depending on how and where they are implemented according to each city's context.

In both Paris and Orléans, some projects show that EEPs can be implemented without undermining housing equality. The La Source neighborhood in Orléans and, in a much more limited way, the Clichy-Batignolles district in Paris seem to manage to combine densification, energy-efficient buildings, and large green spaces while keeping a significant share of social housing. But in both cases, there are clear limits. In Paris, Clichy-Batignolles depends on planning exemptions like height limit waivers and financial deals that let private developers remain profitable while including social housing. This model relies heavily on market logic and one-off planning rules, which makes it hard to reproduce and raises doubts about its long-term inclusiveness, especially given that only 10% of its housing is reserved for PLAI, which are very low-income households (Piganiol, 2021). Similarly, in Orléans, the Bourgogne Village project targets a central area already undergoing gentrification according to the members of grassroots organizations we met on the field, which risks reinforcing socio-spatial inequalities by making the area less accessible to lower-income groups. In Sens, the picture is more ambiguous but equally concerning. While EEPs tend to be concentrated in social housing districts—making them more accessible to vulnerable populations—they are often unevenly distributed and spatially isolated. In several cases, only certain buildings within a district benefit from upgrades while others are left untouched, and new green spaces or infrastructure are not well connected to the rest of the city. For instance, an eco-district is being built on former agricultural land on the northern outskirts of the city, far from the urban core. This project raises concerns about urban sprawl, car dependency, and the risk of reinforcing segregation by placing sustainable infrastructure away from the city center.

These three cases ultimately show that while EEPs can support housing equality under certain conditions, their impact largely depends on spatial choices and governance frameworks. However, these dimensions cannot be fully understood without considering their articulation with broader real estate market dynamics and capital accumulation through housing. In all three cities, urban greening and energy-efficiency goals unfold within a context where land and housing are not only social goods but also key assets for financial investment. Public authorities often rely on private developers to deliver these projects, but these actors are primarily guided by profitability, leading to compromises in the allocation and quality of affordable housing. As property values increase, the risk is that low-income households are gradually displaced or excluded from upgraded neighborhoods. In this context, EEPs may inadvertently serve capital accumulation by enhancing the exchange value of housing at the expense of

its use value. Without stronger safeguards such as public land control, non-market housing provisions, or long-term affordability guarantees, these initiatives risk reproducing urban inequalities under the guise of ecological progress.

Restricting urban change: the impact of heritage and preservation in housing inequalities

The conservation of heritage — and its implication on housing accessibility — in a country such as France also deserves to be examined through the lens of national and municipal Environmental and Energetic Policies (EEPs). Sens, Orléans, and Paris are cities that embody the cultural, architectural, and religious heritage of French urban territories, shaped by several millennia of history and legacy. Accordingly, heritage-related regulations are identified in all three cities as significant constraints, particularly limiting the vertical extension of historic residential buildings, such as those found in the historic centres of Sens and Orléans. These same regulations also hinder urban greening initiatives, exemplified by the widely publicised controversy surrounding the planned greening of the forecourt of Notre-Dame Cathedral in Paris (BeauxArts, 2024). Even more restrictive, the ongoing "museumization" of the French capital (Fiori, 2013) has turned energy renovation of atypical Haussmann-era buildings into a veritable obstacle course. These buildings, often topped with zinc roofs, significantly contribute to the "thermal kettle" effect in former maid's quarters (chambres de bonnes), yet cannot undergo renovation due to strict regulations on minimum dwelling dimensions and the historically protected status of Parisian façades.

In Orléans, the historic housing stock of the city centre — composed largely of timber-framed buildings (see Figure 2.2.6.2) — accounts for a substantial portion of residential energy consumption due to poor insulation. However, in this case, the constraints on renovation are attributed less to heritage regulations than to technical and financial barriers: the pedestrianisation of the city centre complicating the access for construction equipment, and high renovation costs being often cited to justify the limited progress of heritage restoration policies. In this instance, pedestrian-oriented urban design indirectly limits energy retrofits in parts of the historic centre, preventing efforts to address residential energy insecurity. A comparable dynamic is observable in Sens, where the historic centre is progressively being abandoned by residents due to energy poverty — exacerbated by the recent and drastic increase in energy prices — and the degradation of housing stock. Here, the historical and patrimonial value of the built environment contributes to municipal inaction on renovation, thereby reinforcing the exclusion of lower-income households from the historic core.

This national comparative analysis reveals that inequalities in access to housing are closely linked to the historical dimension of Environmental and Energetic Policies. Heritage preservation imposes structural limitations on the adaptive reuse and energy renovation of housing, especially in older urban centres. These constraints tend to disproportionately affect socio-economically vulnerable households, who are less able to bear the financial burden of living in protected areas — or, when they are, they only have access to highly energy-inefficient housing, such as the small Parisian maid's rooms. Ultimately, the cases of Paris, Orléans, and Sens show how historical legacies continue to shape urban inequalities as these dynamics suggest several hypotheses regarding the broader impact of heritage preservation on hou-

sing inequalities. First, the regulatory prioritisation of aesthetic and historical values over residential functionality may contribute to a dualisation of urban centres, where preserved areas become either exclusive enclaves for affluent populations able to finance costly renovations, or neglected zones with declining living standards for those unable to relocate. Second, the path dependency created by long-standing heritage policy can be reinforcing spatial inequalities by concentrating energy-inefficient housing stock in historic cores, disproportionately exposing lower-income residents to energy insecurity. Third, the administrative and financial complexity of retrofitting heritage buildings may deter both private and public investment in affordable housing within these zones, thereby pushing social housing projects and densification efforts to less constrained peripheries.

3.2 A CROSS-COMPARISON AT THE EUROPEAN LEVEL

In an era of accelerating climate change and deepening social disparities, major European cities are increasingly called upon to reconcile the need to advance in energy and environmental policies, and the equally pressing demand to address structural housing inequalities (Housing Europe, 2023). While these objectives are not inherently contradictory, the ways in which they are operationalized within urban governance frameworks frequently result in tensions, trade-offs, and unintended consequences. This section compares how three European metropolitan cities (Paris, Milan, and London) navigate these overlapping agendas, shedding light on the complex interplay between environmental ambition and social justice within distinct institutional and territorial configurations.

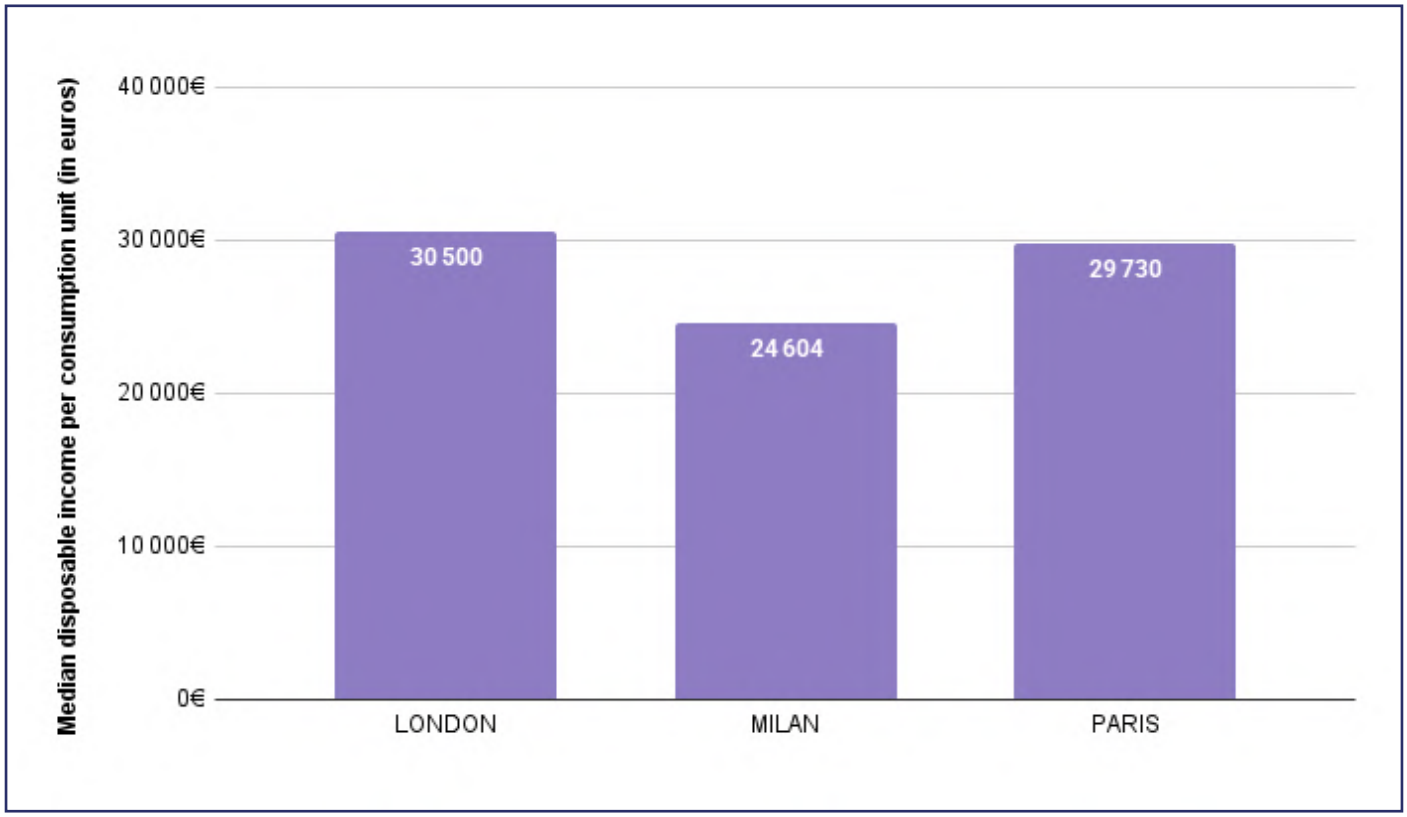

Fig. 3.2.1. Median disposable income per consumption unit (in €) in London, Milan and Paris.
(Sources: Office for National Statistics, 2021; neilseniq.com, 2021; INSEE, 2021).

The cases selected offer both contrasting features and complementarity elements. Paris, London, and Milan share the status of national economic and political hubs, with global city functions that subject them to strong market pressures (Sassen, 2001). They share a common status as rich cities, both on a global scale and compared to other cities of the same country. Furthermore, they are all under the political leadership of center-left to left-wing governments, even if policy choices vary

between the three executives. At the same time, they differ significantly in their planning traditions, housing regimes, and the urban governance through which environmental and housing policies are conceived and deployed. By examining these differences alongside recurring patterns, the comparative analysis examines how large cities in different countries engage in affordable housing and EEPs.

The focus lies on the political instruments and institutional arrangements mobilized in each context to promote energy and environmental transition and the degree to which these are attentive to, or complicit in, the reproduction of housing inequalities. The aim is to identify the structural tensions that recur across diverse contexts and to interrogate the scope for urban environmental policy to be more redistributive and socially inclusive.

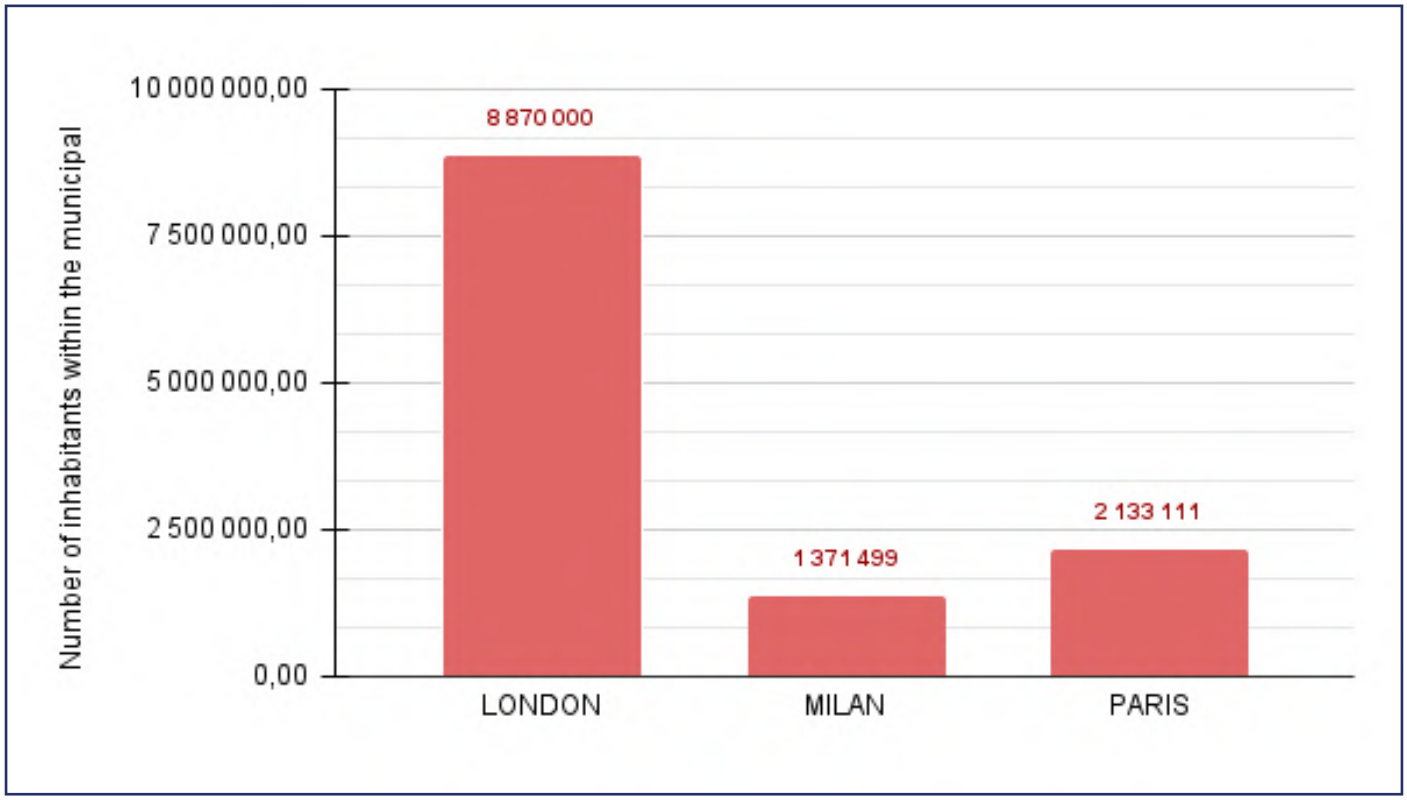

Fig. 3.2.2. Total municipal population size in London, Milan and Paris. (Sources: INSEE, 2021; Statista, 2025; Britannica, 2025)

Diving into data allows us to primarily see what elements are distinctive or similar in our three cities. While Paris and Milan have a somewhat similar surface and close number of inhabitants, London is way larger and populated than the other two cities, integrating in its core what would be considered as suburbs and thus different municipalities in the other two cities. However, Paris exhibits a significantly higher population density—more than double that of both Milan and London—highlighting its notably compact urban form compared to the other two cities.

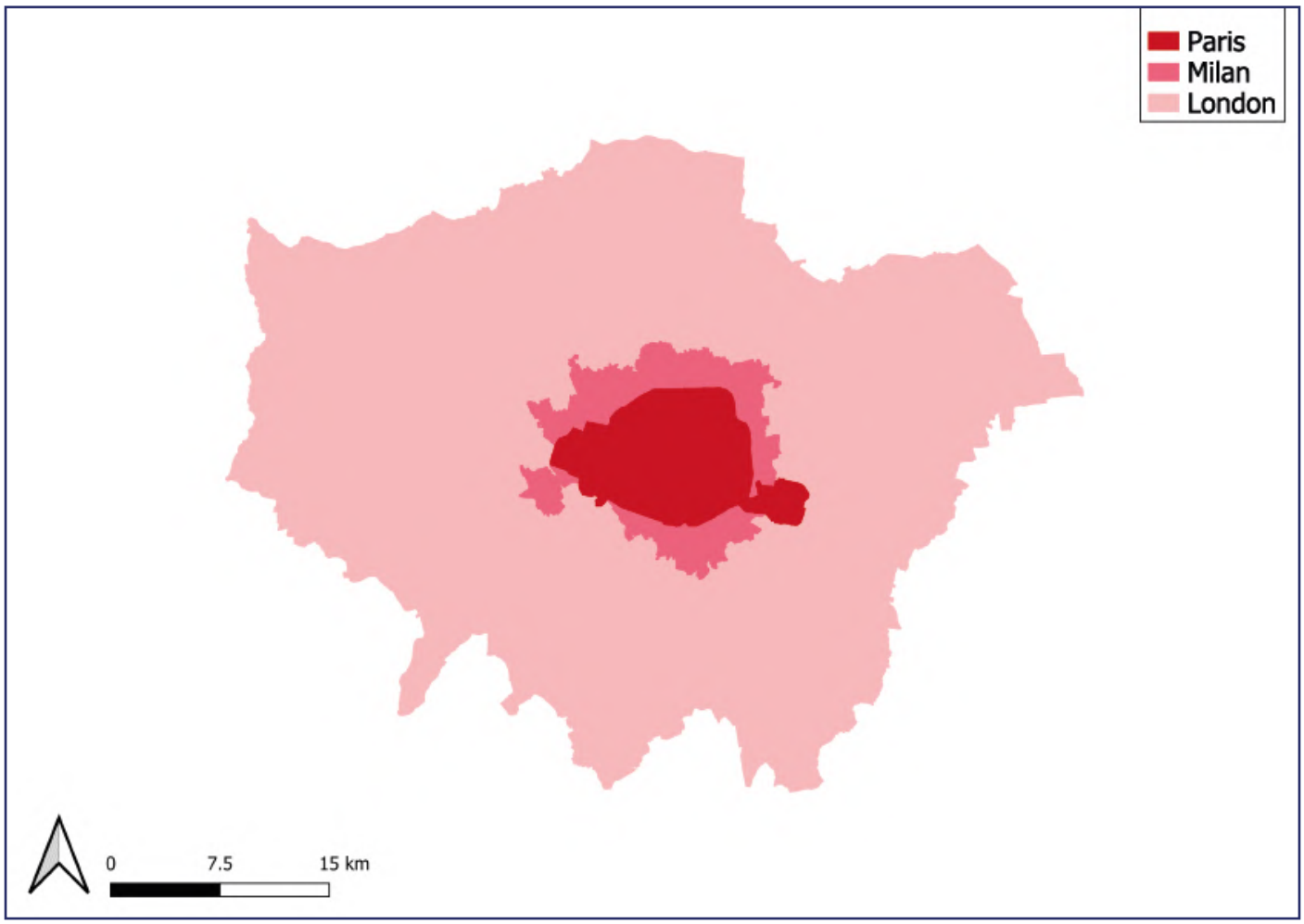

Fig. 3.2.3. Map of Paris, Milan and London at the same scale.
(Source: Authors' own, 2025)

The three cities also vary in their main residence tenure status. Milan, and to a lesser extent London, are cities where owning your primary residence is the most common status, while Paris is a city mostly populated by renters. This difference is important in the analysis of the cities as renters and owners do not benefit from the same rights when dealing with topics such as energy retrofitting. Furthermore, they are subjected differently to market pressure: when prices increase, owners see the value of their home increase and thus benefit from it. If an increase in real estate prices can create market pressure for new owners, the pattern is not the same in the Parisian case where most of the inhabitants are exposed to higher prices without benefiting from this increased value for housing.

Varying patterns of housing accessibility are also observed in the share of social housing in the three cities. Paris and London have a similar share of around 20% of their housing stock that are social housing units while this number is halved in Milan, constraining the access to the city for many people from more precarious backgrounds.

Finally, major differences appear in the access to green spaces among the Parisian, Londonese and Milanese cases, with London counting on a stronger green coverage (48% of its surface covered by green spaces) than Paris and Milan which are denser and more mineral cities (with respectively 14,6% and 13,8% of their surface).

It thus can be argued that these cities experience clearly differing frameworks on market pressures and problems related to EEPs, as also observed at the national level. Nevertheless, by undertaking this comparative exercise, we contend that it is possible to identify context-sensitive dynamics that will ultimately inform the policy recommendations presented in the final section of this work.

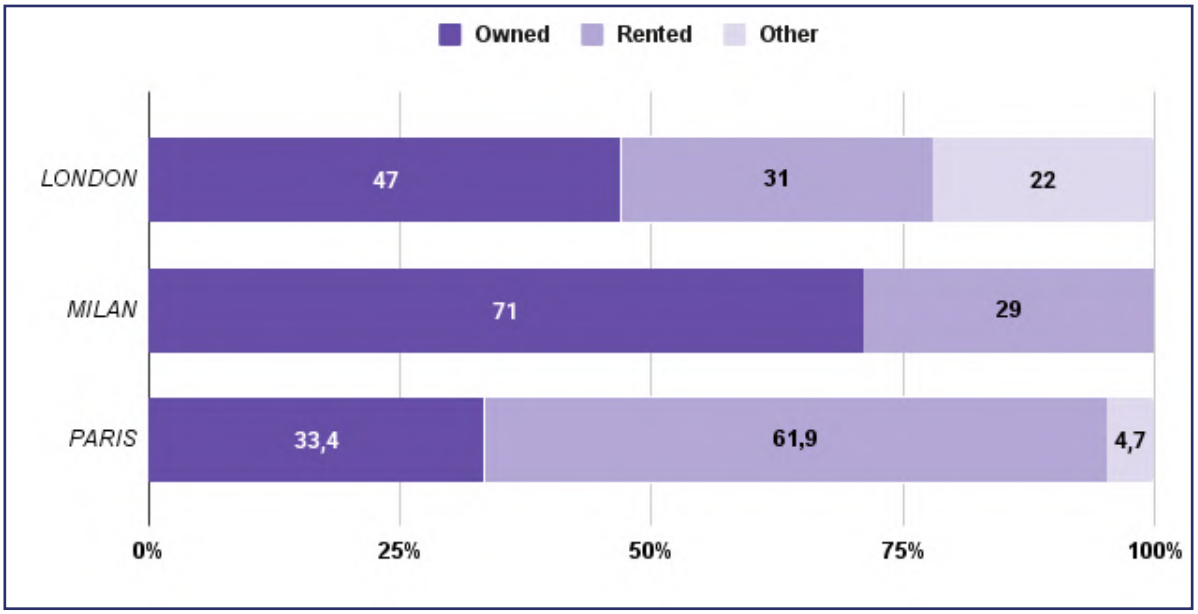

Fig. 3.2.4. Main residences' tenure status (in %) in London, Milan and Paris. (Sources: INSEE, 2021; Cavicchia et al., 2023; Trust for London, 2024)

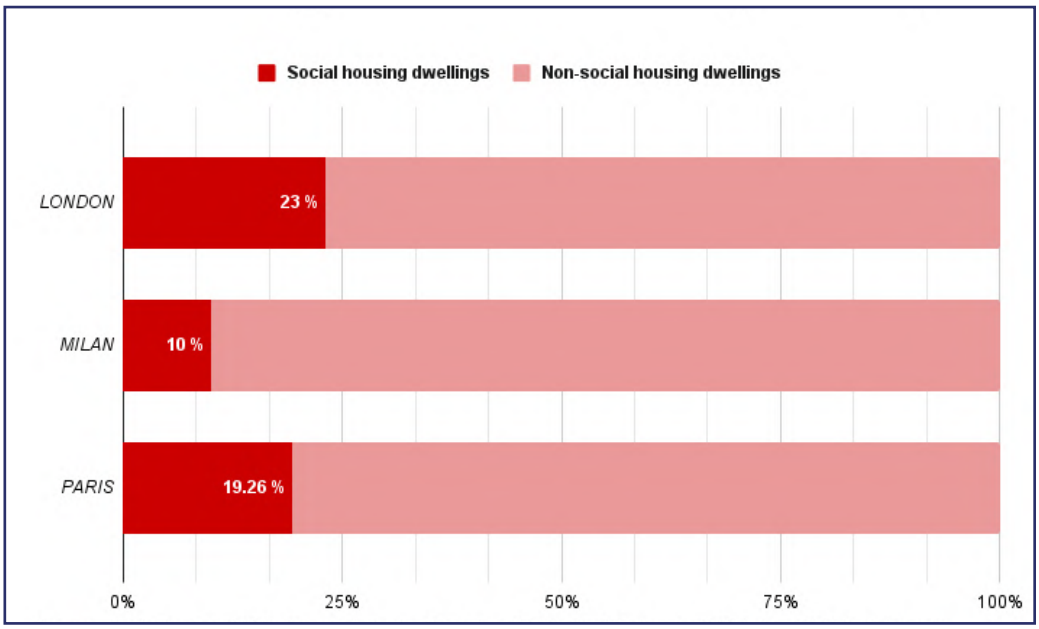

Fig. 3.2.5.
Social housing part (in % of the total stock) in London, Milan and Paris.
(Sources: Cavicchia et al., 2023; Trust for London, 2024; APUR, 2024)

3.2.1 Identifying EEPs similarities and differences

Balancing urban densification and housing equality: contextual trade-offs at play

Urban density and densification policies vary significantly across London, Paris, and Milan, as each reflects the approaches to development, history of the cities, and current challenges.

London is, on average, a lot less dense than Milan and Paris, as seen in Figure 3.2.7. This is mainly due to the city boundaries we chose to use for our analysis, which will be discussed in the section on limitations. Two other things are important to understand about urban density in London. The first one is that the city is surrounded by the Metropolitan Green Belt, which is protected and thereby prohibits the city from growing horizontally. Secondly, London is dealing with a severe housing affordability crisis, where high rent prices are causing even working-class people to struggle to make ends meet. The mayor has therefore decided on promoting densification policies as a general goal in the overall development strategy, the London Plan, to solve the housing crisis. This strategy has, though, in some of our case studies, shown to cause a trade-off between densification on one hand and affordability and the prioritization of community space on the other.

Paris is dense throughout the city, with an average of more than 20,000 inhabitants per square meter. There is, after two decades of urban regeneration on brownfields, not a lot of land available for new dense development inside the city boundaries, and densification policies therefore focus more on maximizing density in already existing buildings. This is done by for example, in the latest bioclimatic PLU, requiring at least 10% of new large construction projects to be housing and by promoting rooftop extensions on buildings. Density is also not distributed equally throughout the city. The areas bordering the ring road have the lowest density and also the highest percentage of social housing. A new policy on social housing by the municipality is, though, aiming for building more social housing in less peripheral areas. Clerval (2016) has shown that renovation work in traditional working class neighborhoods in Paris, has led to lower density, as the neighborhoods counted many over-occupied units to begin with. This suggests a trade-off between housing inequality and density. The areas right at the border of the ring road have the lowest density in Paris, and here some large developments are underway. A flagship new development neighborhood, Clichy-Batignolles, which consists of high-rises, tries to compensate for density by implementing a park. Developing this has only been possible because of derogations that the municipality gave to the developers about the height of buildings. The underlying mechanism between these derogations is rent extraction i.e the ability of municipal authorities to obtain payments in some form in exchange for favorable legislation (in this case the agreement that developers would build a strong share of social housing in exchange for building height derogations). Such type of urban development based on rent extraction has been identified in the literature as increasingly used in financialized property markets such as Paris (Sanfelici, 2025).

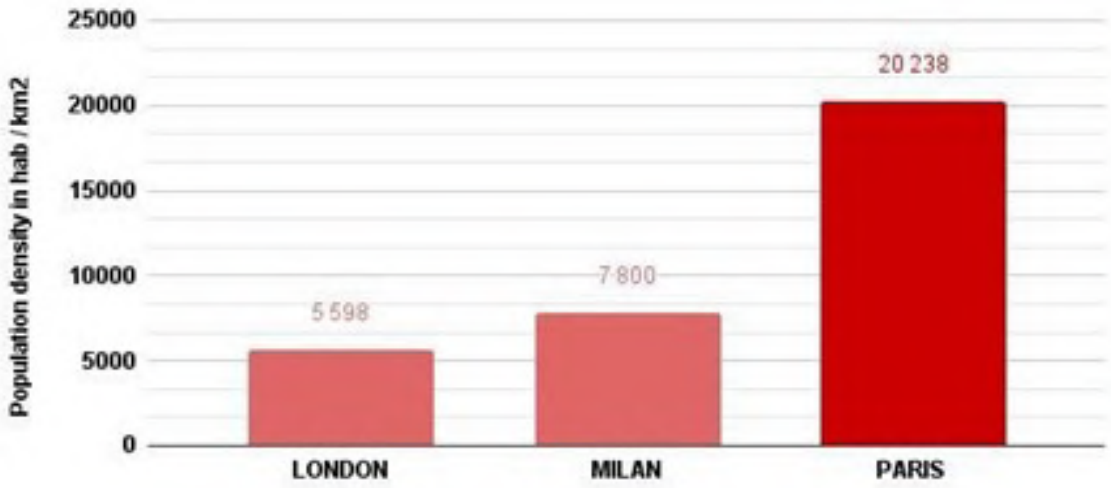

Fig. 3.2.1.1 Population Density in London, Milan and Paris.
(Sources: INSEE, 2021; Comune de Milano, 2023; Britannica, 2025)

Milan is relatively dense compared to other Italian cities. It contains a lot of brownfield wasteland, which to some extent carries potential for new development, while the context varies a lot and is crucial to whether development is possible or not. Milan has promoted policies that work actively towards creating a denser city, e.g. through Piano di Governo del Territorio which aims at decreasing land consumption, and recognize both the economic agglomeration effect and the environmental benefits of having a denser city.

Comparing the three cases shows that the already existing urban context makes the densification policies vary across the cities. This highlights the importance of context sensitivity when implementing policies. Especially the difference between Paris focusing on improving existing building stock, is in contrast to the London strategy of densification, which to a high degree seems to include demolition of old building stock in favor of new, denser,-major development. Densification efforts in London are materialized through new development, which is unaffordable to the poorer parts of the population, resulting in a trade-off between densification and housing inequalities. In Paris we also observe a trade-off between housing inequalities and densification, but the trade-off is caused by a very different dynamic, where creation of social housing in degraded neighborhoods is associated with lesser population density. The differences in trade-offs might also be attributed to differences in context, Paris being a lot more densely populated than London.

Navigating varied frameworks and levels of ambition in energy retrofitting policies

Energy retrofitting efforts in London, Paris, and Milan reveal stark contrasts in political will, financial investment, and social equity. London exhibits a distinct lack of commitment to retrofitting, with a strategy that often lets buildings deteriorate to justify demolition in favor of economically driven new developments favoring growth. The city's aging Victorian housing stock suffers from widespread energy poverty, and the 2018 retrofitting plan never reached its ambitious objectives, particularly neglecting social housing.

In contrast, Paris demonstrates more proactive policymaking, with both national and municipal grants supporting retrofitting, and the creation of the Agence Parisienne du Climat allowing private owners to find all the energy retrofitting support they can obtain in one agency. However, the focus on owners excludes renters, and co-ownership complications often hinder collective building-level retrofits, creating new inequalities for poorer owners.

Milan faces similar challenges of outdated housing with over 64% classified as thermal sieves (see figure 4.8) and also suffers from limited local control over the housing stock while the national state largely withdrew from this issue. While national schemes like the Superbonus offer some support, municipal financial engagement remains weak. The Dar=Casa representatives we met mentioned the fact that, given their financial means and the absence of additional help, they could only retrofit windows, without broader structural upgrades when renovating buildings.

Overall, the three cities face a similar challenge of aging building stock that needs to be retrofitted both for ensuring comfort and to save energy in the context of gradual decarbonization. An aging unit creates housing inequalities for people living in compared to people who live in retrofitted units, as the former are exposed to cold and hot weather while paying higher energy bills and using more energy that they should to heat or refresh the place. On the other hand, cities may obtain long-term returns for social inclusion, and citizens' wellbeing by retrofitting their stock, thus fighting housing inequalities (Monteiro et al., 2017). However, retrofitting processes can create inequalities as poorer owners may not have the financial means to engage if they cannot benefit from sufficient public help and may thus stay in energy poverty. Concerning renters, energy retrofitting may also lead to a process of "renoviction", when poorer households see their dwelling being renovated and retrofitted, leading to an increase in the renting price and their potential eviction if they cannot afford it (Busà, 2024). None of the actors we met on the field had seen examples of renoviction in their experience, it is nonetheless a process mentioned in the literature that must be considered when dealing with retrofitting. Additionally, many of our interviewees mentioned the risk of increased rental prices and property speculation after renovation works.

The status of the studied cities, European metropolises on which dense, collective housing is the norm in the center, is both advantageous and disadvantageous in that regard. On the one hand, density of housing allows energy saving as the heat is shared at the scale of the whole building (you are "heating your neighbor's flat as well" when you turn on the radiator). On the other hand, a larger building, containing multiple owners and renters, complexifies the process of intervention, as a representative institution for the building must agree and engage funds to retrofit it. This must be understood as a twofold trade-off between housing inequalities, density and energy retrofitting.
However, the local authorities commit to the problem in different ways. Paris has engaged significant funds into renovation and tried to streamline the process by creating a single agency in charge of all help directed at owners while financially supporting social housing providers when they engage in the energy retrofitting of their units. The process is though limited by the financial distress of social housing providers and the inability of private renters to constrain their owners to engage in retrofitting works (even if law will soon forbid

the renting of certain thermal sieves). On the other hand, London and Milan show less signs of political will, as their strategy is either lacking or fails to reach its goals. This statement can nonetheless be nuanced by the fact that, in Milan, the municipality and ALER promote energy retrofitting of public housing. The shortcomings in terms of energy retrofitting policies in the two cities is reinforced by the lack of engagement of the national state and the economic benefits that developers find in letting buildings deteriorate to engage into new "regeneration" plans, creating housing inequalities. Residents living in the building are housed in poor conditions while not benefiting from quality insulation after renovations. Moreover, actors we have met in the three cities have noticed a true lack in the integration of summer comfort (i.e. quality insulation against heat rather than cold) in retrofitting works hindering the resilience of buildings against the consequences of current and future climate warming.

Implementing Nature-Based Solutions: between integrated strategies and community-based gardens

As shown on Figure 3.2.1.2 below, London exhibits significantly greater green coverage than Paris and Milan. This advantage is, among other NbS, attributable to the presence of the extensive Green Belt, a larger metropolitan area, and lower population density. The broader green area is however largely located in the peripheral areas of the city, which have seen an increase of housing prices (Goode C.E., 2021). In contrast, Paris and Milan share a comparable green infrastructure model, characterised by a small number of large parks, such as the Bois de Vincennes in Paris and Parco Sempione in Milan. These spaces, while important, are particularly susceptible to overcrowding. In Milan, for instance, Bazzoni et al., 2020 calculated that 38% of public parks could face a risk of congestion, as they would provide less than 2 m2 per residents (Bazzoni et al., 2020). Similarly, in Paris, when excluding the two major peripheral woods, the average green space provision falls to just 3.9 m^2 per inhabitant—well below the 9 m^2 per capita recommended by the World Health Organization (Pastore et al., 2025).

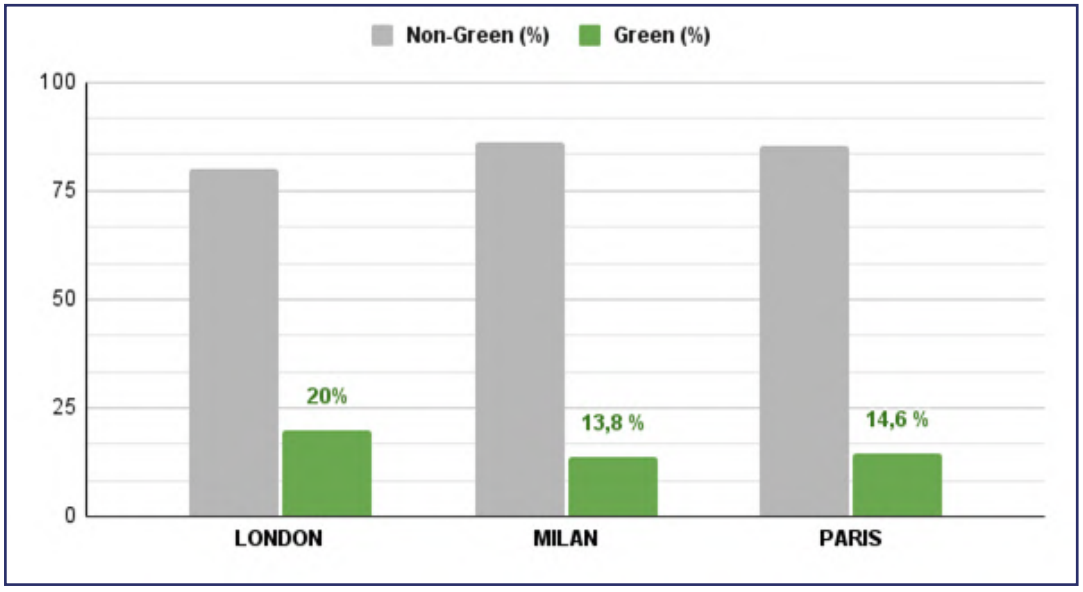

Fig. 3.2.1.2: Green cover comparison in London, Paris, and Milan
(in % of the municipal area).
(Sources: Data.london, 2019; Istat, 2022; INSEE, 2025).

However, Milan benefits from lower building density across a wider urban territory, from agricultural areas in the southern part, and from the existence of unmanaged green areas on former industrial brownfields, which may help mitigate the perception of green scarcity in the city. Paris, lacking such underutilized space within its metropolitan boundaries, has oriented its nature-based solutions towards the requalification of existing infrastructures. The municipality has prioritized depaving fragmented urban surfaces as a key greenification strategy. The PLU bioclimatic sets ambitious targets: 300 hectares of new green spaces by 2040 and the depaving of 40% of the city's surfaces by 2050, supported by the 2018 Biodiversity Plan. Initiatives such as the pedestrianisation and greening of the Seine riverbanks, street closures, and the development of pocket parks have contributed to enhanced air quality and reduced urban heat island effects, all achieved by reconfiguring existing urban structures.

Nevertheless, in both Paris and Milan, the implementation of green amenities by municipal authorities also aligns with urban branding strategies aimed at attracting investment and affluent populations (Deschamps, 2024). Similarly, the development of new eco-neighbourhoods, especially in the northern and eastern peripheries of Paris like in Clichy- Batignolles, illustrates how green urbanism is attractive for financial investments. Field research indicates that even in districts explicitly designed to promote inclusivity and equitable access to green space, pre-existing patterns of socio-spatial segregation frequently persist. A comparable trend is visible in Milan, where new green infrastructures embedded in urban regeneration projects reflect the priorities of a technologically oriented and investment-driven elite (like in Bovisa La Goccia). Rather than fostering cohesion or reintegrating marginalised post-industrial areas, these eco-districts often contribute to processes of green gentrification.

Milan also hosts a range of grassroots civic initiatives that reclaim residual urban spaces and convert them into community-managed green areas. These spaces, designed and maintained by local residents, function independently of municipal oversight and outside commercial logics. As such, they offer an alternative model of urban greening, one that resists commodification, supports social inclusion, and promotes equitable access to green space. In Paris, similar citizen-led projects exist, such as community gardens and the greening of public roadways (Du vert près de chez moi). However, these initiatives remain largely overseen by municipal authorities, as the integration of vegetation in the designated areas is carried out by public gardening services. Moreover, as demonstrated by our maps, they tend to be concentrated in neighbourhoods recently inhabited by middle- and upper-class populations. For these reasons, it is difficult to consider Parisian civic green initiatives as equally inclusive as those observed in Milan. In this context, environmental justice and the issue of equitable access to green spaces must be further integrated into Paris's urban planning strategies.

3.2.2 Main mechanisms about housing inequalities

Nuancing forms of gentrification in the three metropolises

Gentrification unfolds differently across London, Paris, and Milan, shaped by varying urban strategies and socio-economic dynamics. In London, gentrification is driven largely by supply-side pressures, with new developments priced far beyond the means of existing residents. These projects often cater to foreign investors, leaving units unoccupied and transforming neighborhoods into what is labelled by one of the members of Homegrown as «community-less concrete jungles.» This erodes the local sense of place and community, which is frequently lamented by residents, as communal spaces are lost to densification (Hamnett, 2003). We here classify such a type of displacement led by supply-side dynamics as "developer-driven" gentrification.

Paris, by contrast, experiences more demand-side or "individual-driven" gentrification, driven by households renovating their own homes rather than large-scale redevelopment. This process mostly occurs on the already existing building stock rather than through new construction on unused or demolished areas (Clerval, 2016). The phenomenon is spreading into the North and East of the city (Clerval, 2016) and is partly fueled by policies aiming to foster social diversity, such as integrating middle-class social housing (PLS) into historically working-class neighborhoods in urban regeneration processes usually including some forms of retrofitting (Clerval, 2016). Yet, municipal tools to resist displacement such as the rent cap and investment in social housing face significant limitations and enforcement challenges. If the literature emphasizes the role of grassroots organizations and community mobilizations in resisting gentrification (Clerval, 2016; Goossens, Oosterlynck & Bradt, 2020), the social housing policy cannot by itself resist it (Clerval, 2016) and the rent cap is largely unregarded by owners (APUR, 2024). On the other hand, the private market seems very reactive to greening and NbS. In the case of Clichy-Batignolles, for instance, developers ensured that proximity with the park would be saved for private rather than social housing and in the case of the greening project above the railway trench in the same arrondissement, real estate agents used it to convince more well-off households to invest in the area.

Milan mirrors London in experiencing supply-side «developer-driven» gentrification, especially through green-branded developments like Bosco Verticale, exemplifying «super-gentrification» (Manzo, 2012) led by affluent elites mostly working in finance. If, according to our interviews, earlier phases of population change saw coexistence between artists and historical residents in central areas, projects like Porta Nuova displaced this fragile balance. Milan now faces an acute shortage of affordable housing for those who fall between eligibility for public housing and the affordability of market prices (Bricocoli and Peverini, 2024). Local residents though try to maintain a sense of community, sometime by implementing nature-based solutions such as community garden

Despite differences in intensity and form, all three cities reveal tensions between development and displacement, and between green urbanism and socio-spatial equity. We observe in London a strong trade-off between densification and the destruction of a sense of place for people living there which may be considered as a form of housing inequality. Same goes for Milan with

an additional consideration for so-called "green urbanism" in the case of Porta Nuova. Paris, on the other hand, had experienced a later form of gentrification (Clerval, 2016) as social housing and rent control are stronger allowing for more equity in housing. This resistance to gentrification has led to a form of gentrification where private individuals are leading the way rather than developers or public authorities. Trade-offs can nonetheless be observed between NbS, energy retrofitting and housing inequality as access to greening seems harder for poorer households and massive renovation plans often demolish affordable housing and attract more middle-class households.

Providing adequate social housing while integrating EEPs: trade-offs and synergies

In previous sections, it has been shown how the introduction of NbS, housing retrofitting and new development projects can lead to an increase of housing prices and social displacement. These phenomena are causing environmental justice issues and increase vulnerability to climate change issues like urban heat island effects. In this section, we compare the social housing policies in Paris, London, and Milan, and try to draw the trade-offs and synergies that can emerge when crossed with environmental policies.

Paris has the highest proportion of publicly owned social housing, with 23.7% of its housing stock, followed by London at 23%, while Milan lags behind at just 10%. All three cities face a structural housing crisis with a persistent mismatch between housing demand and available supply, though the underlying causes of this imbalance differ from one city to another.

A primary shared issue is the lack of sufficient affordable housing. In London and Milan, this is especially for lower-middle income households - who earn too much to qualify for social housing, yet not enough to access the private market. In Paris, social housing exists for lower-middle income households, but remains insufficient in number to meet current demand (70% of households registered as housing applicants in Paris have income below the PLAI ceiling, 21% have an income for PLUS and only 9% can ask for no more than PLS). In London, affordability is a contested concept. The threshold fixed at 20% below market rates still exceeds the means of many households. Interviews with stakeholders also revealed widespread concern about developers failing to meet promised targets for affordable housing delivery. In Milan, affordable housing provision largely depends on non-state actors, such as philanthropic foundations and private-sector social housing companies. This reflects a withdrawal of the public sector in favour of public-private partnerships. While public authorities recognise the lack of social housing, it remains marginal in municipal planning, with for instance the Territorial Government Plan (TGP) only mandating 5% public housing in new developments.

By contrast, social housing has become a cornerstone of Paris municipal policy since 2001. Institutional commitment has produced tangible results: the city is nearing the national legal target of 25% social housing as required by the loi SRU, although it remains far from the 35% target set for 2035. However, a mismatch persists between demand and allocation criteria: around 70% of applicants qualify for the most deeply subsidised housing, while only 25% of the stock meets this level of affordability. This produces a structural exclusion of the most precarious populations, reinforcing the idea that social housing policy, while ambitious, is neither neutral nor fully inclusive.

Integrating a strong share of social housing has been identified in the literature as a guarantee that low-income and vulnerable groups benefit from new developments such as greening interventions (Anguelovski et al., 2023) which also makes it a crucial aspect in balancing the access to NbS.
In addition to quantitative shortages, we can also highlight issues related to the quality of their existing housing stock. In London, social housing is intentionally left to deteriorate as a political strategy that paves the way for demolition and more profitable redevelopment projects than retrofitting works. This results in a tension between densification goals and the preservation of affordable units. By contrast, the municipalities of Milan and Paris, have engaged in renovation strategies for their social housing stock (Ville de Paris, n.d.; Comune di Milano, 2022) with the latter being more advanced in the process. If a retrofitting policy has some serious social benefits, renovation works ask for substantial investment from social housing providers, that they cannot invest in new units which appears as a trade-off between retrofitting and social housing supply. In the context of France, social housing rents are capped and may not be largely increased after a renovation work (article L442-1 of the Code de la Construction et de l'Habitation), meaning that there is no financial returns for providers when they renovate. Thus, in the French context, retrofitting can only be a cost for social housing providers.

In Milan, the legacy of public disinvestment has left public housing authorities with limited financial capacity to maintain or upgrade the housing stock, leading to visible deterioration and reduced liveability. In Paris, social housing units tend to be more recent and often better aligned with current energy efficiency standards than the older Haussmann-era private stock. However, the main challenges lie in accessibility and inclusion. Social housing is predominantly located in peripheral areas, limiting integration.

Additionally, the integration of social housing can be an interesting approach to densification (Guidoum et al. 2024). As social housing usually takes the form of collective housing, its integration may densify single-family houses areas in Milan and London (in Paris, the share of people living in a house is close to zero), thus creating a synergy between social housing and densification. A credible solution emerging from our field visits observations revealed that community self-organisation can offer viable alternatives to speculative land use. In London, the Westway Estate Community Housing (WECH) functions as a tenant-managed housing association that prioritises long-term affordability and community control. In Milan, cooperative models such as Social Housing via Cenni and the Dar=Casa initiative provide examples of bottom-up social housing governance, offering inclusive alternatives to profit-driven development.

Engaging in urban regeneration - but for whom?

The socio-spatial impacts of, and motivation behind, recent urban regeneration projects in Milan, London and Paris each take different forms depending on the city context. This section seeks to compare some key case studies, to identify the different effects of urban regeneration on social mix and segregation in the cities.

Urban regeneration in London has, across our case studies, been criticized for setting economic growth above the needs of the community. This was both the case for the Alton Estate, where the community created a separate development plan for the area, as the one developed by the council

did not prioritize keeping community space and existing affordable housing. They thereby resisted a form of regeneration that, according to them, would have pushed the poorest people out of the neighborhood. Also in Tottenham, the community argued that major regeneration and development projects had segregating effects. The local community grassroot described how the major development projects going on in their area, was creating concrete jungles of empty apartments. They also emphasized how the existing community consisted mainly of people of color, but that the new development was mainly being occupied by white upper middle class. The probably most explicit example of this is in the neighborhood Elephant and Castle, where the regeneration of the area has been criticized for destroying the cultural heritage of the Latin American population in London.

The regeneration project, Clichy-Batignolles, in Paris was constructed in a space where there were not any residents to begin with, and did not therefore push any existing residents out. The project included the regeneration of a railway area and resulted in good quality housing and the creation of a park. The project is referred to as a flagship of ecological and just urban planning, even though it did not live up to all its initial promises. It is, though, reasonable to question the social impact of this area, as it has been criticized for contributing to a more socially segregated neighborhood, as the people moving in were generally well-off. This was a trade-off which arose from the need to generate profit.

Milan's urban regeneration, guided by the PGT (Territorial Government Plan), prioritizes strategic areas with «Major Urban Functions» enhancing attractiveness through large-scale projects like Porta Nuova. Built near Garibaldi train station, this high-end district replaced community gardens and cultural spaces (such as La Stecca) with luxury towers, symbolizing the city's global ambitions. These projects rely on financialization and public-private partnerships, with flexible planning tools to attract international investment. While they revitalize underused areas and add housing, critics argue they exacerbate rising housing prices and lack transparency. For instance, Porta Nuova's development involved close ties between the mayor and the U.S. firm Hines, raising questions about democratic oversight. Thus, while Milan's regeneration boosts economic competitiveness, it often sidelines affordability and community needs. Additionally, using ecology as a selling point when developing 'ecological housing' such as eco neighborhoods seems to be quite prevalent in both Milan and Paris. It's important to bear in mind the ecological footprint of new development opposed to renovating old stock. This is an example of branding being used to attract rich people to newly developed neighborhoods.

Multiple interviewees across case studies argued that their neighborhoods had been subject to segregation to some extent. This mainly being due to new high profile development being unaffordable to the existing community, and thereby inserting richer people into areas previously prevalently populated by poorer people. This also connected to, in both the case of Milan and London, a criticism of centering economic growth when developing regeneration projects, as rent seeking seems to overpower community needs and affordability. In Paris, in the case of Clichy-Batignolles, it seems to be more a question of what creates social mix. Is developing apartments for the upper middle class in poor areas creating diversity?

3.3 EEPs POLICY GUIDELINES

This final section builds on the findings from our case studies as well as the comparative analyses at both the French and European levels to propose policy recommendations. Its main goal is to help policymakers design energy and environmental policies that are both ecologically ambitious and socially just in addressing housing inequalities in order to limit displacement risks and adapt implementation strategies to local contexts and governance capacities.

Nature-based Solutions & Housing inequalities

Improving quality of life and urban resilience to climate change requires ensuring fair access to both housing and green spaces. These rights are essential and interconnected elements of sustainable urban development. Our following recommendations aim to promote synergy between increased green coverage and housing affordability in cities.

1° Integrate intentionally unmanaged green spaces in urban planning

Building density as a means of population densification policies should not come at the expense of green coverage. In urban contexts, vegetated interstices and unmanaged green spaces such as brownfields play a crucial role in reducing heat wave exposure and mitigating urban heat island effects.

Therefore, regeneration plans for urban brownfields must be conceived as part of integrated urban planning. A careful allocation of developable areas and intentionally unmanaged spaces can be designed according to socio-territorial characteristics and local needs. Zoning and preservation policies could be considered to limit the consumption of green spaces within city limits. This could take the form of the regulations protecting the Parco Agricolo Sud Milano in Milan, but for unmanaged areas.

2° Increase the urban green coverage for all to answer locals needs

Overall, cities lack sufficient green spaces, especially in the most disadvantaged neighborhoods. If green spaces were equally accessible across the entire urban area, the dynamics of higher property prices around them could be less pronounced.

Therefore, increasing vegetation coverage throughout the city is essential. Special attention should be given to supporting citizen-led initiatives for greening streets (such as Du vert près de chez moi), encouraging active participation from residents of lower-income neighborhoods. The expansion of community gardens as social hubs is also a policy worth promoting, provided their creation stems from the will and involvement of long-term residents.

3° Apply a context-sensitive rent cap

Policies should prevent the introduction of nature-based solutions from triggering displacement of stigmatised and low-income populations.

Therefore, rent caps below the market prices should be applied on urban territories, with a particular attention paid to areas characterized by strong market pressures and areas around green spaces. The cap should follow the orientation of the housing market in order to fit the local realities.

Energy Retrofitting policies & Housing inequalities

Combining retrofitting policies with policies that reduce housing inequalities not only helps limit land take and energy consumption, but also ensures equitable access to quality housing. This integrated approach promotes social and spatial justice while contributing to the energetic transition of cities. Accordingly, the implementation of the following recommendations is strongly advised:

1° Improve access to incentives for retrofitting works.

The beneficiaries of renovation assistance are mainly homeowners and the wealthiest households. Besides, due to their costs, renovation works risk triggering speculative dynamics.

Therefore, increasing subsidies through more financial and technical support to low-and-middle class households and the social housing stock is essential to:

- reduce energy consumption thanks to global rather than small-scale renovations;
- fight against housing inequalities and energy poverty thanks to better support for low-income households.

2° Include private renters as stakeholders in retrofitting works.

So far, grants and subsidies are essentially directed towards owners, which may raise some housing inequalities when renters and owners oppose on whether or not they should engage in works. It would give more leverage to renters so that they are not only in an inferior position in front of the owner but can also express their needs and ask for a sanction against an owner that does not engage in any retrofitting work despite their substantiated demands.

Therefore, the possibility of renters to be provided an independent diagnosis of their flat could be integrated. Additionally, renters should be guaranteed the right to request that the municipality formally requires property owners to commit to carrying out necessary works.

3° Strengthen and Standardize Energy Performance Diagnostics (EPDs)

Energy Performance Diagnostics (EPDs) should be reinforced as a key policy tool. Currently, their implementation is too irregular and inconsistent to provide reliable, comparable data across the housing stock. This lack of systematic assessment limits the ability of policymakers to accurately identify and address energy-inefficient buildings.

Therefore, we recommend the establishment of a standardized and regular EPD protocol, applied at key moments in a building's lifecycle—such as during sales, rentals, or major renovations. Furthermore, harmonizing EPD methodologies and criteria at the European level is essential to ensure coherence and facilitate cross-national comparisons. Regularly updated EPDs would better reflect the actual condition of buildings and support more effective environmental and housing policies.

Densification & Housing inequalities

A strong and unitary housing system is required to have a better housing supply (Cavicchia et al., 2023) that can overcome urban planning conflicts between environmental policies and social housing policies. The following recommendations should help build a better adapted and more resilient housing stock through densification strategies.

1° Ensure a sufficient provision of affordable housing on all the urban territory.

Providing more affordable housing not only in new development projects but also in already existing buildings is a good solution to fight both under-occupation in the city-centre and spatial segregation. A particular effort must be put in the diversification of social housing (for very-low income, middle-class …) but not at the expense of limited options for very low incomes.

Therefore, tools like SRU must be increased and applied more specifically at the neighbourhood or district level. Affordability should be determined by a rent cap based on the local population's socio-economic conditions, rather than on market prices. For instance, an added criteria should be included to make sure that a sufficient provision of social housing for very low income is guaranteed, based on the actual share of applicants that meet the conditions for such types of units. Such a policy should aim at guaranteeing a more homogeneous repartition of social housing and create a synergy between policies for more densification and social mix.

Densify already existing buildings.

To create housing without building (Guidoum et al., 2024), there is a need to requisition vacant or under-occupied dwellings. With smaller households like students, elderlies, or single-parent families, the type of dwellings available in the housing stock does not meet the reality of the needs. Policies on under-occupation are efficient solutions to both reduce housing shortage, land use, and the share of the budget dedicated to housing for each occupier.

Therefore, several measures can be implemented to reduce the share of vacant housing:

- Create a progressive tax on vacant properties, with tax rates increasing according to the number of vacant properties owned (and the total area) by the same owner, in order to make this tax more effective and fairer by targeting mainly owners of multiple vacant properties. If tax on vacant properties already exists in some cities like Paris, the introduction of the progressive aspect would reflect the consideration for equality and well-being: the purpose is not to punish leisure and the comfort of any, but guarantee an equal access to it for all. Understanding the context of affordable housing shortage, limiting home ownership through a progressive tax should curb the short-term rentals.
- Rethink the type of dwelling to adapt it to demographic changes of the urban population. Awareness on under-occupation and promoting forms of co-living should be promoted, together with monitoring and assessment tools to prevent from over-occupation (the minimum living area is 16m2 for a two-persons household, 34m2 for a four-persons household, and 70m2 for a eight-or more-persons household (Code de la construction et de l'habitation, 2019).

Creating housing without increasing land use

In medium and small-sized French cities, vertical densification through building elevation could be an additional solution to consider. According to Guidoum et al. (2024), "between 3 and 5% of a city's built environment can be raised to create new housing units." In these specific urban contexts of rural intermediate urban centres, this can be achieved without compromising residents' safety or the city's aesthetic character, but might not be true for denser and bigger cities (Bouchet-Blancou, 2025).

Therefore, in small and medium-sized cities, new PLUs should allow for more flexibility towards vertical densification, taking into account technical

feasibility and historical heritage. Adding approximately two additional floors is a sensible measure to consider for densification of depopulated city-centres.

Other recommendation: Promote community-managed initiatives and sense of belonging

Co-ownership can lead to status-quo and inaction when it comes to mobilising all the residents and coordinating their interests. Yet, community-managed ensembles can best fit with residents' needs (as shown with WECH in London), even more when a professional structure like a cooperative provides the structure (as shown with Dar=Casa in Milan).

Therefore, partnerships between public authorities and associations should help create a sense of belonging and mobilise members of a community to engage in the management of their living places.

LIMITATIONS

While this study aims at providing valuable and context-sensitive insights into the links and trade-offs that can be observed in urban contexts between municipal Environmental and Energy Policies and housing inequalities at the French national and European scales, several limitations must be acknowledged. Therefore, this last part delves into the identification of several constraints and restrictions that framed our project, namely concerning the methodology, the scope, the generalizability of our arguments as well as the data employed in the making of this report.

Methodological limitations

Justified by time and accessibility constraints, our analytical methodology includes only a very limited sample of grassroots social actors, ranging from approximately 2 to 10 local residents interviewed per city. This first limitation likely shaped our understanding of local dynamics from a somewhat biased perspective, as it was influenced by the narrow range of encounters and interviews conducted in each studied city. We argue that building a larger sample of grassroots actors in each case could have contributed to a more comprehensive and less partial analysis. However, this argument must be qualified by the fact that the willingness of grassroots associations and movements to respond to our contact attempts was relatively low, despite the variety of outreach strategies we employed.

Scope limitations

From a geographical perspective, this report structured its analysis around a main case study in Paris, extended and compared along two axes: national and European. Within this analytical approach, several scope-related limitations can be identified.

First, the comparison between the cities of London, Milan, and Paris is open to debate and could be further refined, particularly regarding the comparability of the areas under study. Indeed, limiting the analysis to municipal boundaries resulted in difficulties in establishing operationally comparable scales. Namely, the administrative jurisdiction of Paris and Milan are way smaller than London's ones, creating complexities in our comparative process. This partly explains discrepancies observed in population density, green coverage, or average income across these three European urban centers. We argue here that it would have been valuable to extend the scope of our analysis beyond Paris's municipal boundaries in order to incorporate the wider metropolitan area, which likely hosts complementary and diverging dynamics not captured in the conclusions of this report.

At the national scale, the scope of the study is somewhat less contentious, especially given that the scale differences between cities were explicitly acknowledged. However, broadening the sample of cities included could have brought additional insights to our research topic—particularly through the inclusion of intermediate cities (in size and influence, between Paris and Orléans or between Orléans and Sens), cities with different climatic conditions (which affects the impacts of urban heat island, or the difficulties , or those less affected by historical and heritage-related urban constraints. At that scale, the extension of the study scope outside of the municipal boundaries

could also be a way to capture differing metropolitan dynamics, and thus to complete the observation we make in this report.

Data availability

A major limitation of this work concerns dataset accessibility during the contextualization, mapping, assessment, and comparison phases across the different case studies. At the European scale, this issue is largely due to the absence of a common database compiling key characteristics of major European cities — unlike in France, where the INSEE provides a comprehensive empirical dataset, notably the 2021 production wave, which was extensively used in this report. As a result, certain comparative criteria had to be discarded due to a lack of data, or the European comparative framework had to be restructured. Additionally, language barriers, particularly in accessing documentation related to the city of Milan, further partially constrained our research. Overall, these issues represent a considerable limitation to the comprehensiveness and consistency of the report's comparative approach.

Case Selection and Political Dimension

In the realm of the ReHousin project, national cases were selected to illustrate contrasting urban dynamics, while the European cases were picked to reflect different governance models and housing regimes and the comparison section builded on those specificities to enhance its outcome. However, one aspect of the case selection process that has been overlooked in this work is the political dimension in which the five cities evolve, even though briefly described but not deeply assessed in the first section - Overview of the city's main dynamics - of the analytical framework. This limitation encourages further discussion and research toward aiming to explain the differentiated trade-offs outcome through the lens of local political priorities, ideological identity and partisan legacy. In that sense, the municipal political dimension of Sens have shown contrasting long-lasting socialist influences while embedded in strong conservative inertia and recent rise of the far-right at the supra-local level (see Figure 2.3.1.5). Following that way of thinking, the three European cities seem to be showing strong political connivance, characterized by a long-lasting green-socialist governance (see Figures 2.1.1.5, 2.4.1.3 & 2.5.1.4). However, in that case, differentiated traditional partisan anchoring may appear as additional explanatory elements to further analyse when seeking to explore the differences in EEPs and housing inequalities trade-offs outcome.

Generalization

The generalization of the findings presented in this report is also constrained by a thematic limitation. The methodological development of the project led to the exclusion of certain themes, resulting in the presence of thematic blind spots that are entirely absent from the report's conclusions. Notably, issues related to race and ethnicity were not addressed, even though they could offer additional insights into the inequalities of access to housing in relation to urban environmental enhancement projects (EEPs). Furthermore, the role of tourism was also set aside in the methodological design, despite the fact that all three cities in the European comparative axis have recently hosted—or are set to host—the Olympic Games (London 2012, Paris 2024) and Winter Olympic Games (Milano-Cortina 2026), a globally recognized event with significant influence on urban residential dynamics.

CONCLUSION & FURTHER DISCUSSIONS

This report has taken on the challenge of investigating a complex and increasingly urgent issue: how environmental and energy policies, central to the green transition, intersect with housing inequalities. Through a comparative analysis of cities in France (Paris, Orléans and Sens) and across Europe (Paris, Milan and London), we examined the multifaceted effects of three key policy domains (densification, energy retrofitting, and nature-based solutions) on housing systems and urban social fabrics.

At the heart of our reflection is a paradox: while climate adaptation and mitigation are vital for the future of cities, the way these policies are designed and implemented often risks deepening existing socio-spatial inequalities. Despite ambitious goals, cities continue to struggle with the political and material tensions between ecological sustainability and social justice.
Our research was guided by four initial hypotheses, which our findings help to clarify:

- **H1: Environmental and energy policies are highly context-dependent.** This is confirmed across all cases. The effects of densification, energy retrofitting, and greening differ significantly depending on local governance models, urban structure, housing markets, and socio-political priorities. While large cities like Paris and London struggle with market-driven densification policies, smaller cities like Orléans and Sens offer more flexibility for inclusive planning. With lower land pressure and slower market dynamics, they can more easily implement mixed-income housing and green infrastructure without immediate displacement. This flexibility, however, depends on local political will and planning capacity.

- **H2: Green transition initiatives can reinforce housing inequalities and social exclusion.** Our analysis strongly validates this. In all four cities studied except for Sens, sustainable initiatives often favor owner-occupiers and wealthier areas, while lower-income tenants face barriers to enjoy the co-benefits of EEPs or risk displacement. The symbolic value of green spaces increasingly functions as a tool of urban distinction, especially in dense, competitive housing markets. Large densification plans tend to create socially segregated areas and disrupt the sense of community for people living around. Wealthier households can engage more easily into energy retrofitting and public grants that are distributed for this purpose are directed at owners rather than renters.

- **H3: Inclusive planning strategies can help limit negative social impacts, but remain unevenly applied.** We noticed that participatory processes do exist, but they are often concentrated in already well-resourced or middle-income neighborhoods. The most vulnerable groups (especially renters and residents of aging social housing) are rarely meaningfully included in decision-making or benefit from targeted interventions.

- **H4: urban greening could generate long-term economic benefits for low-income residents.** This remains difficult to assess because most greening initiatives are recent and their long-

term effects are not yet visible. Crucially, rising property values and increased attractiveness of green neighborhoods raise the risk of long-term displacement, unless strong anti-speculation and affordability measures are enforced, which to date remain largely overlooked or insufficiently implemented in most contexts.

Our findings reveal that:

- **Densification policies,** intended to curb urban sprawl and reduce land consumption, can accelerate housing pressures if not accompanied by adequate planning for affordable housing. In already dense, big cities like Paris, London and Milan, densification policies tends to favor market-rate development, risking further displacement of vulnerable populations as it results in increased rent prices. In smaller cities like Sens or Orléans, densification policies offer more leeway for inclusive planning, but they also risk becoming overlooked priorities in less economically dynamic territories.

- **Energy retrofitting policies**, framed as both an ecological and economic opportunity, shows signs of becoming more socially oriented. However, retrofitting often benefits owner-occupiers and higher-income households first, with tenants and low-income residents struggling to access subsidies or facing rent increases in renovated buildings. This undermines the transformative potential of the ongoing renovation wave unless stronger social safeguards and governance tools are put in place.

- **Nature-based solutions,** such as the greening of public spaces, hold great promise for enhancing urban resilience and well-being. Yet, as our study confirms, well-intentioned greening efforts can also trigger processes of green gentrification, i.e., the process whereby public investments in green infrastructures attract wealthier residents in former working class neighborhoods, reshaping neighborhood dynamics and displacing those they were originally meant to serve. This is especially pronounced in major cities, where green amenities become new markers of privilege.

Our central argument is that these tensions cannot be resolved with one-size-fits-all solutions. The impacts of green transition initiatives on housing inequalities depend heavily on local governance structures, the robustness of the social housing stock, market dynamics, and institutional capacities. Following Cavicchia et. al (2023)'s reflection, a relational approach, i.e., one that considers how environmental policies interact with local housing systems and socio-economic dynamics, is essential to avoid reproducing injustices under a green label.

By providing key recommendations based on the dynamics observed in each city, our research underscores the need to shift urban governance: from green transitions that assume equity to transitions that are consciously designed through equity. But this work also opens up a wider field of inquiry. Future research should explore how climate governance can be democratized, not just in terms of participation, but in how decisions are made, whose knowledge counts, and whose interests are prioritized. It should also investigate what institutional innovations are needed to prevent the green transition from becoming a new frontier of exclusion.

Rethinking how we value land, housing, and environmental amenities is central to this task. And so is expanding the focus beyond urban centers. While rural areas are associated with greater proximity to nature, they remain structurally disadvantaged in terms of access to services, infrastructure, and economic opportunities, which partly explains why the income gap is around 10% lower than in urban spaces across the European Union (Meloni et. al, 2024). As cities grow greener and more desirable, what will be the spillover effects on surrounding rural territories? How do we ensure that ecological transition does not deepen the rural-urban divide?

Ultimately, confronting climate change is not only a technological or ecological challenge but it is, above all, a social one. This means placing housing justice and territorial equity at the heart of climate strategies. Only then can green cities also be just cities.

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