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OF AFFORDABLE HOUSING IN THE CENTER OF THE CITY OF ZAGREB

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FIG. 1 ZAGREB, PANORAMA OF THE LOWER TOWN



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# SPATIAL PLANNING PREREQUISITES FOR THE DEVELOPMENT OF AFFORDABLE HOUSING IN THE CENTER OF THE CITY OF ZAGREB

AFFORDABLE HOUSING  
DENSITY BONUS  
INCLUSIONARY ZONING  
PLANNING PROVISIONS

This paper analyzes the concept of affordable housing and urban planning instruments that incentivize its development, especially in city centers. Considering the shortage of affordable housing in Zagreb, the research aims to identify contemporary urban planning practices that focus on the social function of housing and the role that local urban and housing policies have in ensuring access to it. By comparing the strategic documents for the housing development of the cities of Lyon and Barcelona and models of their implementation in the local urban plans for the areas of city centers and contact

brownfield areas, the provisions incentivizing the development of the affordable housing (*right of pre-emption, category of subsidized housing, inclusionary zoning, density bonus, and protection of residential use*) are singled out. In the context of urban renewal of the historic center of Zagreb and of brownfield redevelopment in the contact zone of the city center, inclusion of the aforementioned provisions in local urban plans is examined, demonstrating the potential that such instrument has for the development of affordable housing in the city center.

## INTRODUCTION

The importance of housing as a fundamental right and basic human need, but also as a structural element of urban development, is recognized and included in the goals of sustainable development of cities defined by several UN and European documents.<sup>1</sup> In addition to environmental requirements, a sustainable and responsible approach to housing implies housing affordability and social inclusion (Rosenfield, 2015: 99). Considering the concept of the “right to the city” in the context of social sustainability, and specifically “the right to the use of the centre, a privileged place, instead of being dispersed and stuck into ghettos” (Lefebvre, 1996: 34), the article<sup>2</sup> examines the role of urban planning in the development of affordable housing in city centers, often most exposed to gentrification processes. Spatial injustices manifest through the processes of gentrification and ghettoization (Dlabac et al., 2019: 4), while housing and planning policies of social mixing and housing affordability guide urban development towards the goals of a just city (Fainstein, 2010; EC, 2020).

The paper investigates the connection between the strategic local housing policy framework and the planning provisions integrated into implementation plans at the local level, as well as their implementation models. Planning provisions of inclusionary zoning and density bonuses have been applied in the USA since

the 1970s with the aim of expanding the affordable housing stock and equal spatial distribution of such units (Calavita, Mallach, 2010; Mellon Fox, Rosenfeld Davis, 1976; Johnston et al., 1990). In European cities, due to reduced public investment in social housing and growing housing unaffordability, there are also changes in relation to the traditional public provision of social housing.<sup>3</sup> New planning models that include social goals and incentivize the development of affordable housing stock are being developed (Marom, Carmon, 2015; Granath Hanson, 2019; Alves, 2022; Debrunner, Hartmann, 2020).

A comprehensive analysis of the planning and development of affordable housing has not been carried out either in Zagreb or at the national level. Affordable housing was analyzed within the framework of the programme of state-subsidized housing construction (Bobovec, Mlinar, 2013), and also from an economic (Vizek, 2009) and sociological aspect (Bežovan, Pandžić, 2020; Svirčić Gotovac, Zlatar, 2015). An insight into the consequences of the lack of housing policies in the area of Zagreb before and after the privatization of the housing stock in the 1990s indicates spatial stratification and an increase in housing unaffordability (Marčetić, 2020). Negative trends in the area such as depopulation, *touristification* (Jukić et al., 2021), “transitional gentrification” and “elitization of the city center” (Svirčić Gotovac, 2010) are evident in Zagreb city center, Lower Town.

Integral urban renewal of the protected historical core of the city of Zagreb Lower Town is a priority of the city’s strategic and urban planning after years of neglect and decay, and especially after the earthquakes<sup>4</sup> in 2020 (Gašparović et al., 2021). In this context, while new spatial plans for Zagreb are also being adopted, the paper examines the implementation of planning measures that incentivize the development of affordable housing as a service of public interest.

The conducted research aims to determine contemporary practices of urban planning that focus on the social function of housing in accordance with assumed international obligations, and the role of local authorities ensuring access to appropriate and affordable housing through social, urban, and housing policies. The objective is to identify appropriate planning measures for the development of affordable housing in Zagreb, focusing especially on historical center exposed to numerous transformational processes and pressures.

The research consists of three parts: i. Synthesis of measures for spatial planning of affordable housing in European context; ii. De-

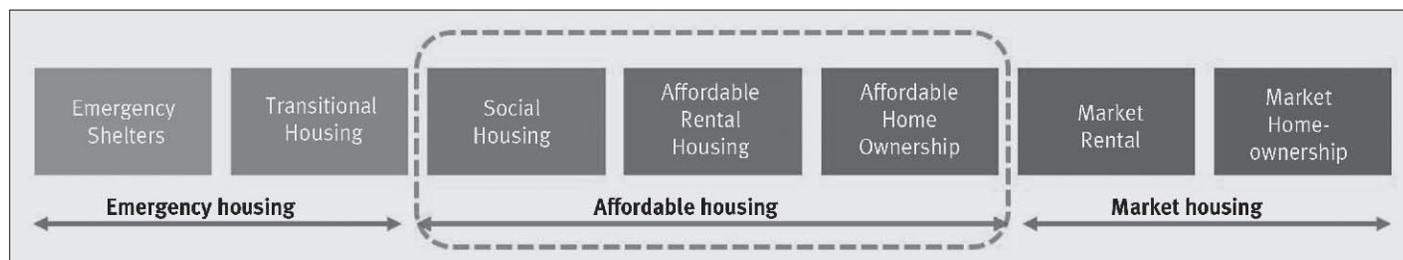


FIG. 2 WITHIN THE RANGE OF HOUSING OPTIONS, HOUSING CONTINUUM, AFFORDABLE HOUSING IS LOCATED BETWEEN EMERGENCY HOUSING AND MARKET HOUSING

termination of strategic and planning provisions for the development of affordable housing in central areas of cities referent to Zagreb; iii. Spatial and quantitative verification (simulation) of implementing established planning provisions for the development of affordable housing in center of Zagreb and in brownfield area of Block Badel.

Using the examples of Lyon and Barcelona, planning provisions incentivizing development of affordable housing which are incorporated into municipal spatial plans in order to implement the city's housing policies goals, have been considered and compared. The selection of mentioned cities for comparison with Zagreb is based on: similarity of planning systems, similarity of trends and challenges taking place in the city center (housing prices and housing costs increase, pressure of tourism, negative demographic trends such as low growth or decrease in population), and most important, selected cities have, in recent decades, introduced strategic and planning measures to incentivize the development of affordable housing.

Research was conducted using quantitative and qualitative comparative analyses methods by synthesizing bibliographic, carto-

graphic, and planning materials. Data on affordable housing were collected on the basis of spatial planning documents of two levels (strategic and implementation) and their implementation over a period of last two decades was considered.

The findings should serve to define the starting points of establishing planning measures for affordable housing in Zagreb. Although conducted and tested in the case study zone of Block Badel, the research can serve as a methodological approach for the planning of other similar urban areas of Zagreb or other cities.

#### RECOMMENDATIONS FOR THE DEVELOPMENT OF AFFORDABLE HOUSING IN CITIES IN EUROPE

Considering the diversity of the housing systems of European countries, the European Commission defines housing affordability as the ratio of household income to housing costs, and an indicator of affordability is when no more than 30% of household income goes for housing costs (Rosenfeld, 2017: 10). According to the Housing Partnership of the Urban Agenda for the EU, affordable housing is any subsidized or otherwise supported housing including social housing, affordable rental housing and affordable home ownership (Fig. 2).

For the spatial planning of the development of affordable housing in cities, the Action Plan of the Housing Partnership (Urban Agenda for EU, 2018) recommends planning obligations, i.e. the inclusion of private investments in the development of affordable housing as a condition for issuing permits, and the use of different models to capture land value uplift.<sup>5</sup> Minimizing land costs is one of the basic elements for the development of affordable housing (McKinsey Global Institute, 2014: 49). The costs of construction of affordable housing units are reduced by allocating municipal land, by provisions of inclusionary zoning that mandate that part of the project be affordable, or by incentive zoning and density bonuses in exchange for affordable housing units. The Action plan also

1 Such as: UN Agenda for Sustainable Development 2030 (2015); UN Geneva Charter on Sustainable Housing (2015); New urban agenda from Quito (2016); Leipzig Charter on Sustainable European Cities (2007); Urban Agenda for the EU (2016); New Charter from Leipzig (2020), New European Bauhaus initiative (2023).

2 The research is based on the final thesis of the postgraduate specialist study Architecture and Urbanism; Spatial planning, Faculty of Architecture, Babić Vujić, Z. (2023) *Planning and development of affordable housing in the city center*; mentor: prof. Gašparović, S., Ph.D.

3 After the Second World War social housing had a major role in housing provision, for example Operation Million carried out by the French government between 1947-1958.

4 The earthquake in the wider Zagreb area 22. 3. 2020. M = 5,5 degrees on the Richter scale and another near the town of Petrinja 29. 12. 2020. M = 6.4 degrees.

5 Land value capture is a policy approach that enables communities to recover and reinvest land value increases that result from public investment and government actions (OECD, 2022).

TABLE I SYNTHESIS OF MEASURES FOR SPATIAL PLANNING OF AFFORDABLE HOUSING

Level of measure	Type of measure	Description of the measure
Measures of strategic land management:	establishment of community land trusts and land funds	securing land for the development of affordable housing
	use of vacant land and properties	establishment of a register of empty land, taxes, incentives for reconstruction
	leasing models for municipal land	lease of city land instead of sale
Planning measures:	Right of pre-emption	acquisition of land and property by local authorities to increase the public housing stock
	category of subsidized housing	earmarking of plot or zone for affordable housing
	inclusionary zoning	determining the share of affordable housing units in housing projects
	density bonus	enabling the construction of a larger area in exchange for the realization of affordable housing units
	protection of residential use	preventing speculation on the housing market due to the pressure of tourism in cities
Measures for urban renewal:	integrated approaches to the neighbourhood revitalization	participatory approach, reconstruction measures combined with measures that prevent the capitalization of subsidies

Source: The Housing Partnership Action Plan (Urban Agenda for EU, 2018) and Managing Gentrification (Council of Europe, 2020); Processing: Authors

refers to the establishment of land and housing funds, community land trusts, as well as to the model of long-term lease of municipal land instead of its sale.

The aforementioned instruments of spatial planning are aimed at housing policies that support the heterogeneous structure of the population and prevent socio-spatial segregation. Unequal availability of housing for different social groups creates divisions in urban societies and encourages gentrification processes, which is particularly pronounced in city centers. The planning system can have a direct impact on socio-urban stratification of cities (Arbaci, 2007: 404), and urban planning is one of the key elements for ensuring space for affordable housing in “vibrant and socially mixed neighbourhoods, avoiding speculative land policy” (EC, 2020).

The study Managing Gentrification (Council of Europe, 2020) summarizes the policies and measures that ensure affordable housing in city centers, affirming the right to housing and confronting gentrification processes. Table I summarizes these measures, followed by the comparative analysis of the application of selected planning measures in centers of European cities of Lyon and Barcelona.

### COMPARATIVE ANALYSIS OF STRATEGIC AND PLANNING PROVISIONS FOR THE DEVELOPMENT OF AFFORDABLE HOUSING IN THE CITIES OF LYON AND BARCELONA

In order to establish useful correlations with Zagreb, cities that have recently placed af-

fordable housing development front and center of their housing and urban policies were selected for research. Lyon represents an example of a top-down model where affordable housing development is a result of implementation of national guidelines and policies, while Barcelona represents a bottom-up approach. Bearing in mind the diversity of housing systems and the level of economic development, the goals of each city’s housing policies set in strategic documents were reviewed, and their implementation in municipal spatial plans was investigated.

#### LYON

Lyon is the third largest city in France with 522,228 inhabitants and an area of 47.9 km<sup>2</sup>. Local housing policies in France are closely related to the national housing system, which sets different standards for social housing.<sup>6</sup> The main turning point for the development of affordable housing was the adoption of the Law on Solidarity and Urban Renewal<sup>7</sup> in 2001, which introduced that cities and municipalities must provide a share of at least 20% of social housing in their areas.<sup>8</sup> Local urban development plans (*Plan Local d’Urbanisme*, PLU) introduce the so-called Sectors of social mix (*Secteurs de mixité sociale*), in which housing categories are developed in accordance with specific needs.

Based on national legislation, the housing policy of Lyon, originally defined by the Local Housing Program (*Programme Local de l’Habitat*, PLH), is integrated into the Local Urban Development and Housing Plan (*Plan Local d’Urbanisme et de l’habitat*, PLU-H) as the Orientation and Action Program for Housing (*Le Programms d’Orientations et d’Actions pour l’habitat*). Integration enabled the connection of housing policies with spatial organization, and precise tools for housing development in accordance with set goals have been incorporated into the urban plan.

The plan designates the entire central area of the city as a Sector of social mix and in all housing projects, depending on residential floor area, a mandatory share and type of subsidized housing is determined (Fig. 3).

In one of the oldest parts of the center of Lyon, the 2<sup>nd</sup> arrondissement, in addition to the earmarking of plots for the implementation of the affordable housing programs, the minimum shares of residential area allocated to subsidized housing in all the housing projects were also determined, reserved for different models of affordable housing, as shown in Table II.

*The Lyon Confluence*, brownfield redevelopment project in the 2<sup>nd</sup> arrondissement is be-

ing developed as a Concerted Development Zone (ZAC – *Zone d'aménagement concerté*) in two phases:

– ZAC1 *Lyon- Confluence* covers 41 ha, between 2003 and 2018, about 1,900 apartments were built, of which 20% are social (PLUS and PLAI) and 15% for middle-income households (PLS).

– ZAC2 *Lyon- Confluence* includes 35 ha planned for construction from 2010 to 2025. The mandatory share of social housing has been increased, and since 2022, 35% of social housing (PLUS and PLAI), 5% of housing for middle-income households (PLS) and 20% of affordable home ownership (BRS) is planned (Grand Lyon, 2022.b). It should be emphasized that even in the prestigious newly built buildings in the Lyon Confluence area<sup>9</sup> a share of apartments is allocated to social housing service providers showing the orientation of the city authorities towards balanced social and spatial distribution of affordable housing (Zwicky, 2021: 236).

## BARCELONA

Barcelona is the second largest city in Spain, an area of 102.15 km<sup>2</sup>, with about 1.6 million inhabitants. It is the city with the highest rental prices and housing costs in Spain, faced with immigration, aging population, rising housing prices and great pressure from tourism (Ajuntament de Barcelona, 2016: 17).

By analyzing housing in the city prior to the creation of the Plan for the Right to Housing in Barcelona 2016-2025 (*Pla pel Dret a l'Habitatge de Barcelona 2016-2025*) it was found that the main gentrification processes take place in the city center due to three factors: growing profit from renting apartments, pressure from tourism and the city's rent legislation that does not provide protection. In order to fight against the gentrification and speculative development the city used participatory approach to formulate housing

<sup>6</sup> – PLAI (*prêt locatif aidé d'intégration*), standard for the most vulnerable groups;

– PLUS (*prêt locatif à usage social*), the most widespread standard type for middle-income households;

– PLS (*prêt locatif social*), standard for middle-income households up to 30% above PLUS;

– PLI (*prêt locatif intermédiaire*), for households with incomes higher than PLS, but too low for private rentals;

– BRS (*Bail Real Solidaire*), a model of affordable homeownership

<sup>7</sup> *Loi Solidarité et Renouvellement Urbain*, SRU

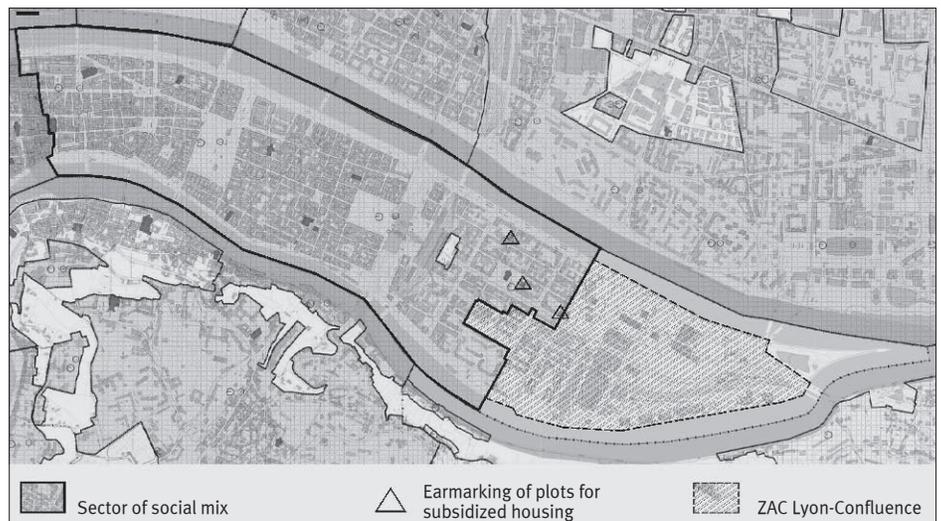
<sup>8</sup> In 2013, the share of social housing was increased to 25%, to be achieved by 2025.

<sup>9</sup> An example is the residential tower Ycone by architect Jean Nouvel, realized in 2019, in which 30% of the apartments are for affordable housing. Available at: <http://www.jeannouvel.com/projets/ycone/>

TABLE II MANDATORY SHARE OF AFFORDABLE HOUSING IN HOUSING PROJECTS IN THE 2<sup>ND</sup> ARRONDISSEMENT

Program	Obligation threshold m <sup>2</sup>	Min. share of floor area allocated to subsidized housing	Subsidized housing category
New construction or change of use	800-1,500	30%	PLUS-PLAI
New construction or change of use	1,500-5,000	35%	PLUS-PLAI-PLS min. 30% PLAI max. 20% PLS
New construction or change of use	above 5,000	45%	35% PLUS-PLAI 10% PLS-PLI-BRS
New construction or conversion for student accommodation	above 800	35%	PLUS-PLAI-PLS

Source: Grand Lyon (2022); REGULATION C.3.1 – Prescriptions d'urbanisme



policies directed towards developing public housing stock, mobilizing vacant housing, incentivizing renovation projects, co-housing and a range of leasing types (Ajuntament de Barcelona, 2016: 33-34).

The implementation of strategic measures from the Plan for the Right to Housing was made possible by amendments to the General Metropolitan Plan (PGM) made in 2018. In addition to the provision declaring the entire city a pre-emption right area for the benefit of the city authorities and earmarking of municipal plots for public housing development and cooperative housing models, the Amendment to the General Metropolitan Plan (Barcelona, 2018) stipulated a mandatory share of affordable housing of 30% of dwellings in new multi-apartment projects, renovations and additions above 600 m<sup>2</sup> of the intervention (Falagan, Colau, 2019: 138-140). The goal of the decision is to increase the public dwellings stock, especially in the central parts of the city, while encouraging the private sector to participate and share responsibility in ensuring the right to housing.

FIG. 3 LYON, EXTRACT FROM THE LOCAL URBAN DEVELOPMENT AND HOUSING PLAN (PLU-H) FOR THE 2<sup>ND</sup> ARRONDISSEMENT. CARTOGRAPHIC REPRESENTATION: HOUSING WITH A MARKED SECTOR OF SOCIAL MIX AND PLOTS FOR SUBSIDIZED HOUSING.

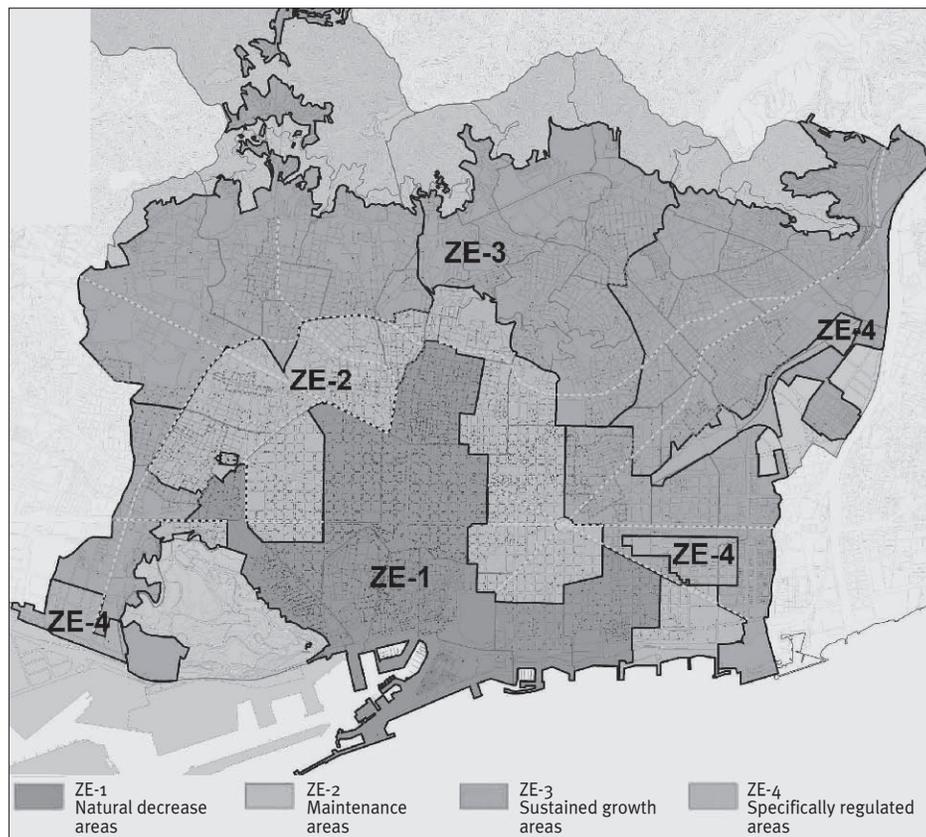


FIG. 4 BARCELONA, ZONES OF PEUAT

With the aim of regulating sustainable tourism in the city while preserving the right to housing, the Special Urban Development Plan for Tourist Accommodation was adopted (*Plan Especial Urbanístic d'Allotjaments Turístics*, PEUAT). The plan prevents the change of residential purpose and limits the tourist use of apartments marking the central zones of the city ZE-1 as areas of natural decrease in tourist capacities (Fig. 4).

As an example of the application of the density bonus, the modifications of the general plan for the Poblenou area, a former industrial zone in the contact area of the city center, are singled out. In 2000, *Plan 22@BCN Activity*, was adopted for the area, transforming 198.26 ha of the industrial zone into a district of mixed-use economic activities. By plan modifications, the floor-space index for the zone is raised by 50%. Such an increase brings advantages for private investors, but also benefits for the public interest, as 10% of the floor area is planned for affordable housing.

After 20 years of the implementation of the plan, in order to harmonize the planning regulations with the current socio-economic situation, in 2022 the 'Specific modification of the Metropolitan General Plan for a more sustainable and inclusive 22@ (MPGM 22@2022)

were adopted, enabling the construction of additional dwellings, of which 82 % were to be in the affordable social housing system (Menéndez, 2022; Fig. 5).

To summarize, a comparative analysis of Barcelona and Lyon's strategic housing development documents demonstrates their common goal of increasing the affordable housing stock. While the housing policies of Lyon are guided by the principles of social mix, in Barcelona the housing policies emphasize the right to housing and the fight against gentrification and property speculation.

These strategic guidelines (Table III) are implemented in the urban plans that regulate housing in the areas of city centers and contact brownfield areas. It can be determined that both cities use the following planning provisions (Table IV):

- the right of pre-emption for the development of affordable housing,
- category of subsidized housing,
- inclusionary zoning.

Planning provisions additionally implemented in Barcelona are:

- protection of residential use (implemented by a sectoral plan for tourist accommodation),
- density bonus (related to redevelopment of the former industrial district).

#### THE POSSIBILITY OF IMPLEMENTING ESTABLISHED PLANNING PROVISIONS FOR THE DEVELOPMENT OF AFFORDABLE HOUSING IN THE CENTRAL PARTS OF THE CITY OF ZAGREB

Comprehensive strategic goals of the housing policy have not been defined in Zagreb, nor at the national level. The development of the public housing program in Zagreb has only been set in principle in the city's strategic document Development Plan of the City of Zagreb.<sup>10</sup> Public housing programs are one of the topics of the city projects of the General Urban Plan of the City of Zagreb (Article 101) with tentatively determined locations for their development. Those programs have the potential to contribute to increasing the affordability of housing in Zagreb, however, due to the small scope of implementation and the planned peripheral locations, they do not have a significant impact on housing in the city center (Fig. 6).

<sup>10</sup> Within the framework of goal 11. *Improvement of the management system of city property and the entire area of the City*, by measure *Effective management of city property, with further development of the public housing program* (\*\*\*) 2023a).

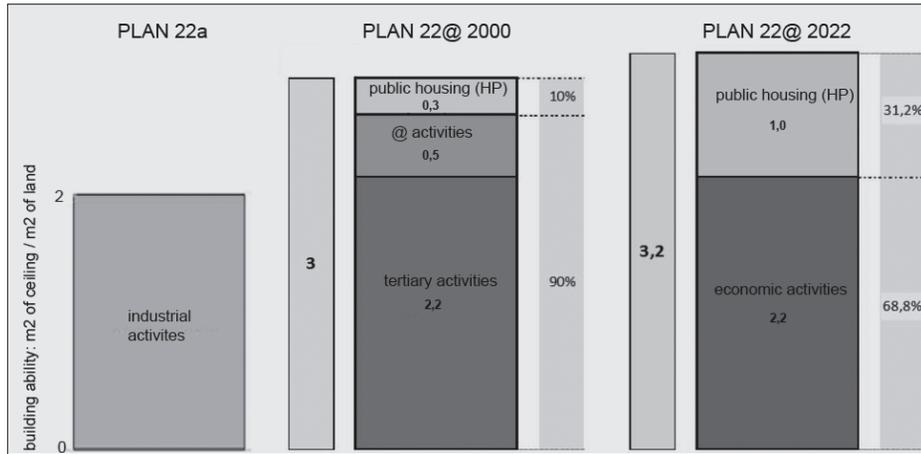


FIG. 5 BARCELONA, INCREASE IN THE FLOOR-SPACE INDEX BY MODIFICATIONS OF THE PLANS MPGM22@2000 AND MPGM22@2022, WHICH ULTIMATELY RESULTS IN THE SHARE OF 31.2% OF AFFORDABLE PUBLIC HOUSING IN MIXED-USE PROJECTS

TABLE III OVERVIEW OF THE STRATEGIC GUIDELINES FOR HOUSING DEVELOPMENT IN LYON AND BARCELONA

	LYON	BARCELONA
<b>Strategic document</b>	Orientation and Action Program for Housing <i>Le Programs d'Orientations et d'Actions pour l'habitat</i>	Plan for the Right to Housing in Barcelona 2016-2025 <i>Pla pel Dret a l'Habitatge de Barcelona 2016-2025</i>
<b>Strategic Guidelines</b>	A. Promotion of the construction of housing in significant quantities, with the guarantee of joint distribution of construction	A. Preventing and addressing the housing emergency and residential exclusion
	B. Developing the offer of affordable dwellings according to the principle of social mix	B. Ensuring the proper use of housing
	C. Improving the quality of the housing stock and the living environment	C. Expanding the affordable housing stock
	D. Guarantee access to housing in all life stages	D. Maintaining, renovating, and improving of the current housing stock
	E. Organizing local governance of housing policy	

TABLE IV OVERVIEW OF PLANNING PROVISIONS OF LYON AND BARCELONA IMPLEMENTED BASED ON STRATEGIC GUIDELINES

	LYON	BARCELONA
name of the plan	PLU-H; <i>Plan Local d'Urbanisme et de l'habitat</i>	MPGM; <i>Modificació del Plan General Metropolità</i>
scale of the plan	1:5000	1:5000
<b>Plan provisions</b>		
1. right of pre-emption	the entire area of the city	the entire area of the city
2. category of subsidized housing	reserved land for residential programs ( <i>emplacements réservés – ER</i> )	earmarked plots intended for affordable housing ( <i>HD/7</i> )
3. inclusionary zoning	established zones of social mix with shares of affordable housing units, – in the city center 30-45% of the residential area for residential projects above 800 m <sup>2</sup> . – in the brownfield zone ZAC Confluence shares 35-60 %	share of 30% for residential projects above 600 m <sup>2</sup> (in some central districts for all residential projects above 400 m <sup>2</sup> )
4. density bonus	-	in the brownfield zone Poblenou floor-space index has been increased by 60% compared to the original plan, and 31.2% of the area is intended for affordable housing.
5. protection of residential use	-	Special Urban Development Plan for Tourist Accommodation <i>Pla Especial Urbanística d'Allotjaments Turístics</i>

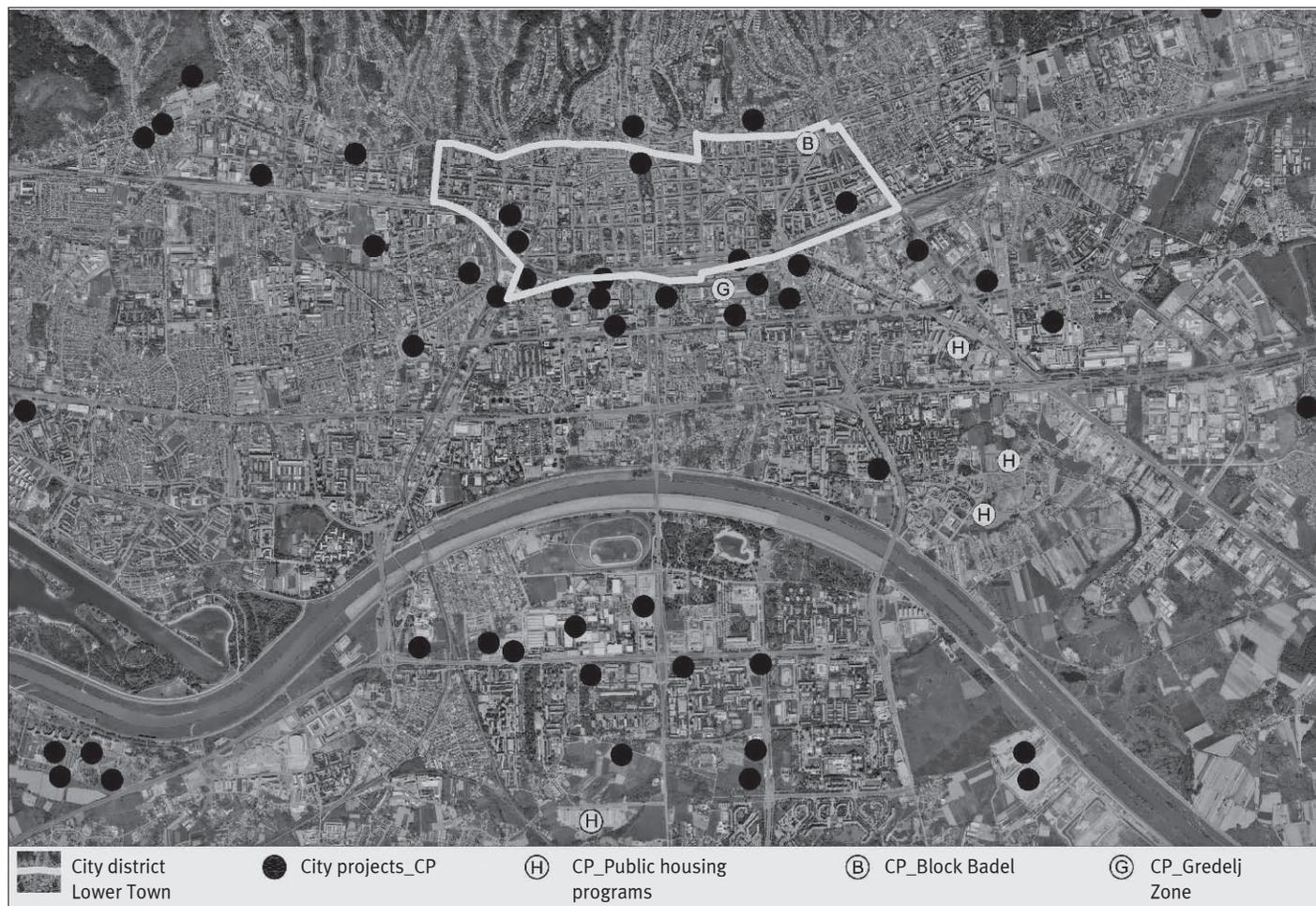


FIG. 6 PRESENTATION OF THE SPATIAL DISTRIBUTION OF CITY PROJECTS AND PUBLIC HOUSING PROGRAMS IN THE CITY OF ZAGREB

The census data show that the processes of depopulation, displacement of existing residents and weakening of the residential function are taking place in the city center, which has been particularly pronounced after the 2020 earthquakes. The decrease in the number of usable residential units and the increased demand for dwellings are the causes, among other things, of the increase in housing prices and the unaffordability of new residential units in the city center. Current affordable housing programs are small in scope, and located on the outskirts of the city. Including the development of affordable housing into programs of urban renewal of the city center and regeneration of brownfield areas in the contact zone of the city center and mitigate negative socio-demographic trends.

Since the General Urban Plan of the City of Zagreb does not contain planning provisions that encourage affordable housing development, the potential of the implementation of five planning provisions, determined by comparing Lyon and Barcelona, was discussed in

the context of the central city areas: the historical center Lower Town and the brownfield area in the contact zone of the city center: Block Badel<sup>11</sup> currently in the process of preparation for urban renewal. The proposed provisions tested on the model of Block Badel could also be applied to other similar city-owned brownfield locations such as Gredelj.

*a) Possibilities of implementing the provisions of right of pre-emption, category of subsidized housing, inclusionary zoning, density bonus, and protection of residential use in the area of Lower Town*

The right of pre-emption for the city for the development of affordable housing is not in use, although it is legally possible.<sup>12</sup> Established in the Lower Town area, the instrument would prevent property speculation and ensure active participation of the city authorities in urban renewal processes, while increasing the fund of affordable housing units. For properties in public ownership, the planning category of subsidized housing enables the development of affordable housing additionally adapted to the requirements of certain groups



(apartments for large households, for the elderly or for young people), as well as alternative models of housing (co-housing).

Given the marked inaccessibility of new residential construction in the city center, the significance of the introduction of the planning provisions of inclusionary zoning, is not so much about increasing the stock of affordable housing units, as it is about the preservation of social heterogeneity of the city center and inclusion of private investments in the development of affordable housing.

Applying the density bonus in the Lower Town is limited for individual interventions in view of the propositions of the system of protection of the historic urban complex. This provision has potential in the context of the complete renovation of city blocks, which is proposed for examination in detailed development plans for the Lower Town blocks, as well as to consider models of using such a provision as a driver of urban renewal and renovation of buildings.

Planning protection of residential use indirectly affects the affordability of housing. Regulation of business or tourist use of resi-

dential units in the center of the city is necessary for preserving the quality of housing, heterogeneous and vital city areas, and reducing displacement of existing residents.

*b) simulation – quantitative analysis of the application of provisions on the example of Block Badel*

The significance of the application of the mentioned planning provisions was examined and simulated in more detail on the example of the Urban Development Plan for Block Badel, the former complex of the Badel alcoholic beverages factory, an unfinished city block formed at the end of the 19<sup>th</sup> century. The plan covers an area of about 3 ha, while the area of the narrower scope, the Block Badel city project, is about 2 ha, mostly owned by the city. An area of high urban standard is planned, intended for business facilities and a significant part for residential use (Fig. 7).

The approximate gross floor area (GFA above ground) for the realization of the residential use provided for in the plan is 13,539 m<sup>2</sup>, which represents 135 calculated housing units.

Individual and simultaneous introduction of the following planning provisions was analyzed:

- category of subsidized housing,
- mandatory share of affordable housing of 25% of the residential area,

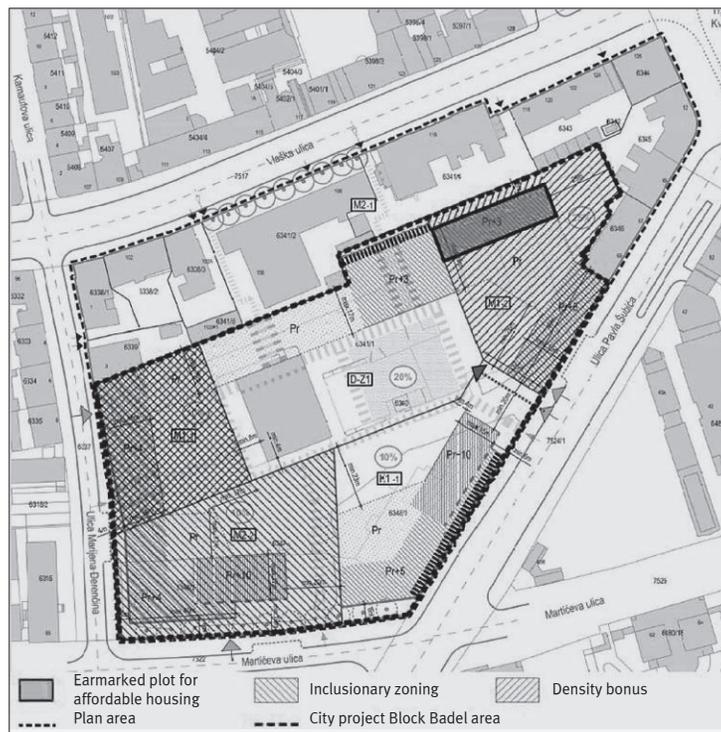


FIG. 7 ZAGREB, BLOCK BADEL, CARTOGRAPHIC REPRESENTATION: LAND-USE PLAN. NEW RESIDENTIAL USE IS ALLOWED IN ZONES M1-1, M1-2 AND M2-2.

FIG. 8 ZAGREB, BLOCK BADEL, PRESENTATION OF THE EARMARKED PLOT FOR EVALUATING PLANNING MEASURE OF CATEGORY OF SUBSIDIZED HOUSING, AND ZONES FOR INCLUSIONARY ZONING AND DENSITY BONUS

11 In 2012, an international urban architectural competition was held for Block Badel renewal and based on the winning proposal the urban development plan was adopted in 2023, providing for the construction of a new public, residential, commercial and business purpose.

12 Based on Art. 177 of the Spatial Planning Act, Official Gazette 153/13 (Official Gazette 67/23)

TABLE V SIMULATION OF THE INDIVIDUAL APPLICATION OF PLANNING MEASURES FOR THE DEVELOPMENT OF AFFORDABLE HOUSING ON THE EXAMPLE OF BLOCK BADEL

planning measure	zone of application of the measure	GFA for affordable housing (m <sup>2</sup> )	calculated number of affordable apartments
category of subsidized housing	M1-2	1 920	19
Building footprint area 600 m <sup>2</sup> ; storeys: GF+3			
<b>inclusionary zoning</b>	M1-1; M1-2; M2-2;	3 385	33
25% of the residential area within the project intended for affordable housing			
<b>density bonus</b>	M1-1; M1-2	2 562	25
25% increase in the floor-space index from 2.0 to 2.5 for the realization of affordable housing			

TABLE VI SIMULATION OF THE CUMULATIVE APPLICATION OF PLANNING MEASURES FOR THE DEVELOPMENT OF AFFORDABLE HOUSING ON THE EXAMPLE OF BLOCK BADEL

planning measure	zone of application of the measure	GFA for affordable housing (m <sup>2</sup> )	calculated number of affordable apartments
category of subsidized housing	M1-2	1 920	19
inclusionary zoning	M1-1; M2-2	2 339	23
density bonus	M1-1; M1-2	2 562	25
<b>affordable housing in total:</b>		<b>6 821</b>	<b>67</b>
<b>share of affordable housing in planned residential GFA:</b>		<b>50.4%</b>	<b>49.6%</b>

– density bonus for the purpose of realization of housing units of affordable housing (Fig. 8).

Tables V and VI show the quantitative effect of the application of each individual and all three measures for the development of affordable housing, the cumulative application of which would realize 67 housing units of affordable housing, that is, about 50% of total planned dwellings.

City ownership of land facilitates the realization of affordable housing units, and the proposed shares of affordable housing units bring the project closer to the goals set by, for example, the city of Lyon in the implementation of brownfield redevelopment (ZAC). Exact parameters for each measure should be determined according to parameters of project sustainability. It is also to be expected that in the area of the Gredelj zone, a brownfield location in the contact zone of the city center and predominantly in public ownership, the application of planning provisions for the development of affordable housing will have an even greater impact considering its central location and the size of the zone of about 20 ha.

## CONCLUSION

A comparative analysis of the cities of Lyon and Barcelona determined the implementation models of the local housing policy and

demonstrated the importance of connecting strategic and spatial planning, necessary for the implementation of strategic housing policy goals. In Zagreb, as well as at the national level, these goals have not yet been defined and the connection between the existing strategic and planning documents is insufficient. For the purpose of the development of affordable housing in Zagreb in general and city center in particular it is essential to define clear housing policy goals and the means by which to achieve them in the city's housing strategy. Programs for the development of affordable housing in the city center should encompass demographic challenges, aging population and emigration, depopulation, substandard housing and demanding building renovations, gentrification, the problem of vacant or abandoned properties, tourism, and the increase in housing unaffordability.

Comparative analysis revealed five main planning provisions that encourage the development of affordable housing: right of pre-emption, category of subsidized housing, inclusionary zoning, density bonus and protection of residential use, and models of their application are presented on the examples of the cities of Barcelona and Lyon. The possibility of implementing these planning provisions into the urban plans of the city of Zagreb was examined for the area of the historic center Lower Town and the area of the Block

Badel city project for which possible impact has been quantified.

According to ownership, we can distinguish: i. provisions that rely on public ownership: the right of pre-emption and the planning category of subsidized housing; ii. provisions involving private investment in affordable housing development: inclusionary zoning and density bonuses.

Provisions involving private property are more challenging to implement since they have to negotiate both private and public interests. On the other hand, the inclusion of private investments in the development of affordable housing is important for socially oriented urban development and local authorities play a key role in the implementation of urban policies in the public interest.

The city's landownership in Block Badel allows for the construction of new housing units at a price below the market rate. That's why importance of defining the planning provisions that encourage the development of affordable housing was highlighted. Such provisions determine housing typologies, tenures, and models of affordable housing for different social groups, as opposed to the decision of their potential construction being left to the politicians or future investors. The same should be taken into account when programming residential use in other brownfield locations, especially city-owned, such as the Gredelj zone. The introduction of the aforementioned provisions into the city's urban plans adopted with the participation of the public, in accordance with expertly based and plan-defined goals, would ensure transparency, planning certainty and safety, as well as the inclusion of all parameters in the cost analyses that precede the project.

The impact and cumulative application of the provisions for the development of affordable housing in the central area of Zagreb should be further examined in all aspects (regulatory, environmental, urban, economic, infrastructural, etc.) while pilot projects could be used as testing ground for their application.

The development of affordable housing in cities is necessary because the housing market cannot provide adequate and accessible housing for the majority of residents. Both national and local governing bodies should designate housing, social and urban policies that ensure access to affordable housing in their areas and urban plans including planning provisions for the development of affordable housing are one of the tools for implementing these policies.

[Translated by Tea Rašić]

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## ILLUSTRATION SOURCES

FIG. 1 Authors

FIG. 2 Urban Agenda for EU, 2018

FIG. 3 Grand Lyon (2022), Processing: Authors

FIG. 4 Source: Barcelona (2021)

FIG. 5 Barcelona (2022)

FIG. 6 GUP of the City of Zagreb. Processing: Authors

FIG. 7 \*\*\* 2023b

FIG. 8 \*\*\* 2023b. Processing: Authors

