

LAV – Housing Laboratory

LAV (Housing Laboratory) DENSIFICATION IN LATIN AMERICA CITIES

MEXICO

URBAN THINKER CAMPUS | WORLD URBAN CAMPAIGN

UHPH Thematic Agenda; Regulatory Frameworks

*UHPH¹ Thematic Agenda Framework Towards the implementation of Sustainable International Agendas:
Thematic: Management of the City | Regulatory Frameworks, Public Policies and Governance*

Concept Note

FACE-TO-FACE SESSION: Saturday October 26 of 2019

08.30h – 15.30h of Mexico City

Joint LAV | Residents in Mexico City, Venue INFONAVIT² - Virtual Assistants³

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Objectives

Discuss necessities and alternatives to promote sustainable urban growth and densification processes, as well as the development of sustainable cities, both in physical and proper aspects of the materiality of the habitat, as well as in those that make up the planned urban expansion.

Key words

Density – optimal density – urban voids – sustainability – urban growth

¹ The Urban Housing Practitioners Hub -UHPH-, is an open platform for the exchange, meeting and dissemination of practices, knowledge and key participants working for housing and urban habitat in Latin America and the Caribbean. It combines the digital space with face-to-face interactions so that the people who work in the sector can connect with each other and access information and practical solutions in real time. For more information, visit <https://www.uhph.org/es>

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³ Zoom Platformer link <https://zoom.us/j/809565225>

Problem description

Latin America is the most urbanized continent on the planet. The urbanization rate of the region went from 41% to 80% between the years 1950 and 2014, and current estimates predict that this number will be close to 100% in 30 years (IADB, 2016). Accelerated urban growth without sustainable planning has produced territorial and environmental imbalances in the region. On the one hand, the dispersed and extensive urban expansion, with some areas of dense population concentration and, on the other, the operation –In some cases, totally deregulated- of land market and access to housing, have led to a profound territorial inequality and a social and spatial segregation. As a consequence, Latin American cities currently face serious problems of habitability and sustainability such as: low-income population facing difficulties in accessing housing, persistence of precarious settlements and illegal or informal land occupation, vulnerability of the inhabitants who live in slums facing disasters, increased economic and social costs to provide inclusive access to basic infrastructure (qualified urban goods and services), a long distance from opportunities, underutilization or abandonment of buildings located in areas that have an adequate provision of services and infrastructure, vacant areas and discontinuities in intermediate and peripheral neighborhoods.

In an increasingly urbanized region, concerns about environmental sustainability and urban expansion seem to be a priority (UN-Habitat, 2012). In fact, for ECLAC, the two main priorities are promoting sustainability and inclusion. Thus, climate change and the risks that this may imply for human settlements adds up challenges to the issue of inclusion in Latin American cities: more frequent floods, landslides, heat waves, water shortages, among other issues, add to the pending agenda of inclusion. Therefore, it is necessary to identify different alternatives and strategies for the transition towards more sustainable, inclusive and fair cities. In this framework, dense cities seem to be "a rational option for an increasingly urbanized world" (Libertun and Guerrero, 2017: 236). In fact, density is one of the main ways to distinguish the nature and quality of the built environment and an essential concept for professionals and responsible politicians.

The residential density, in the first instance, is equivalent to the ‘inhabitants/territory’ ratio. Its rate (high or low) does not have a predefined value since its perception and the conditions of habitability that it can offer involve other variables such as, for example, the height of the building, the rate of land occupation and the configuration of the urban mesh, among other.

In terms of urban planning, there is normally two most used measures: inhabitants/area or dwellings/area. The first, especially when using census data, provides a picture of the residential density at the moment of measurement. The second, on the other hand, provides what could be called the residential ‘carrying capacity’ of the built environment (considering both vacant, underused and overcrowded homes). Also, there is gross density and net density. The gross density considers the total area (including streets, parks, and open spaces in general), while the net density only considers the area within the building lines. In addition, some important measurements to be considered related to residential density and densification processes are:



- Constructability coefficient: expresses the building intensity of a sector and is calculated as 'total built area/area'. It indicates the number that the land surface is included in the built surface.
- Coefficient of land occupation: expresses up to what measures the ground level is built and it is calculated as “first floor-built area/land area”.
- Residential use coefficient: measures the ratio between residential use and other uses in terms of the built area. It is measured as 'built-up area for residential use/total built-up area'.
- Open space coefficient: indicates the surface of public space (streets, green areas, parks and squares) per house. It is calculated as 'gross area-net area/number of dwellings).

Despite the centrality of the topic in the international debate on housing developments and urbanization, no consensus seems yet to have been reached as to what is the optimal density for the development of cities. On the one hand, too low a density leads to dispersion, inefficient use of resources, and expensive housing solutions. On the other, overly dense environments cause psychological stress, social tensions and a decrease in quality of life.⁴ In addition to these problems, a series of processes of economic and social order must be considered, such as the gentrification phenomena and other speculative practices that lead to more expensive land and its subsequent effect of elitization of the central city. What urban densities enable meeting NUA's objectives and build a city for all (fair, safe, healthy, accessible, affordable, resilient and sustainable? How can urban densification projects be inclusive and participatory? Can our cities adapt to more sustainable patterns of urbanization? How to take advantage of the gains in urban quality linked to density to finance improvement projects? "A large number of authors state that the appropriate density levels are not rigid, but vary depending on the characteristics of each city. However, optimal ranges are established, ranging from 120 to 350 inhabitants per hectare to 350" (Gómez Piovano and Mesa, 2017: 133). Despite this, there are debates about how to measure density. On the one hand, there is the classic distinction between gross and net densities. On the other hand, the definitions vary according to the portion of the territory and the aspects considered in the calculation: plot density, residential density, population density, and varying the elements included in the measurement (green areas, water, urban areas, business areas, etc.). Other related measures such as intensity of land use, occupation and height of building surge (Zapatero Santos, s/f). The definition of optimal densities seems to vary too depending on the size of the cities - intermediate or metropolitan cities. Finally, it is evident that making decisions about optimal densities requires reliable information that is not always affordable. In this framework and taking into account that the National Housing Policy currently promoted by the Government of Lic. Andrés Manuel López Obrador is based on the concept of adequate housing from a human rights perspective, it is pertinent to consider these elements in the debate as well as the availability of services and infrastructure and location.

⁴ It should be noted that “the appropriate density levels are not rigid, but vary depending on the characteristics of each city. However, optimal ranges are established ranging from 120 to 350 inhabitants per hectare (Higuera, 2009; Marín, 2012; Rueda, 2011)” (Gómez Piovano and Mesa, 2017: 133).

Libertun and Guerrero (2017:236) summarize the debates on the issue. The authors point out that “among its many advantages, dense cities help preserve fertile land for rural uses (Jenks & Burgess, 2000), decrease the time spent on transport and transfers (Gaigne, Riou y Thisse, 2012) and contribute to reducing greenhouse gas emissions (Stone, Mednick, Holloway y Spak, 2007). Furthermore, density is positively correlated with the accumulation of human capital (Glaeser, 1999), the innovation rate (Carlino, Chatterjee y Hunt, 2007), labor productivity (Ciccone y Hall, 1996), and social inclusion (Burton, 2000), being the agglomeration of economic activities in the territory a determining factor in the formation of human concentrations (Krugman, 1991)”. Bensús Talavera (2018) points out that in Latin America the concept is used both to analyze the process of transformation of the territory and to name a fundamental positive characteristic in the proposals for urban compactness.

In their study for municipalities in Brazil, Chile, Ecuador and Mexico, Libertun and Guerrero (2017) conclude that density benefits are associated with environmental benefits and with levels of productivity. However, such benefits do not appear to be automatic consequences of population density, but rather the product of an adequate institutional and technological context. Likewise, when analyzing the impacts of density on municipal spending per capita on basic urban services, it carries specific costs:

“Densification contributes to reduce expenses in low and medium density municipalities and to increase them in high density municipalities; the threshold between these two conditions is approximately 9,000 inhabitants per square kilometer [...] increasing the density decreases the cost per capita in the less dense municipalities because it contributes to amortize the cost of service provision, while in the more dense municipalities it increases them because a broader and more expensive set of technologies is required to provide coverage of services to a population and a building set with more diverse and complex needs. And in addition, other cost factors such as land and labor” (p.263).

In this framework, “in the search to integrate economic development policies with environmental and social objectives, urban densification is promoted in both developed and developing countries. The United Nations (UN-Habitat, 2012), the World Bank (World Bank, 2014a), the Organization for Economic Cooperation and Development (OECD, 2012), and the Inter-American Development Bank (Inter-American Development Bank [IADB], 2013), among others, support urban densification. Interestingly, the New Urban Agenda only makes five explicit references to density. The arguments for promoting densification are developed in only four out of 175 paragraphs (all of them linked to planning thematic).

The development plans of several countries such as Mexico (2013), Colombia (2011), China (2011) and South Africa (2012), also advocate for greater urban density. Even the development plans of cities considered dense, such as London (2013), New York (2011) and Monterrey (2011), apply explicit policies to increase their density. Likewise, in cities such as São Paulo, Recife, Buenos Aires, Santo Domingo, Medellín, Bogotá, Santiago de Chile and Lima, densification processes were developed in different contexts and urban typologies:

- a) In *precarious settlements (slums)*: These settlements - also called “villas” in Argentina, neighborhoods “barriadas” in Peru, “favelas” in Brazil and ranches “ranchos” in Venezuela - have diverse characteristics. There are high-density precarious settlements, with problems of overcrowding and there are others with low construction and demographic density, which require proposals for urbanization and elimination of risk areas through well-planned housing densification (spacing), to guarantee the permanence of the population in their dwelling places (in those places where it is possible to do so), as well as rationalization of investments in urban infrastructure.
- b) In *urban centers*: Urban centers have grown in a disorderly way. On the one hand, in the absence of adequate interventions for regeneration and revaluation of urban centers, slum processes are developed in buildings. The families who live there do so in overcrowded and extremely precarious conditions. On the other hand, commercial and housing gentrification processes are extremely common. Both trends subject public services to increasing pressures that they cannot always process. Without clear rules, speculation processes are frequent, meanwhile there is a gap in the rents obtained from a particular land and the one that can be obtained from the same space once transformed by private capital due to its particular location. The data is opaque, but the evidence is many.

Mexico City, in particular, is going through a real estate *boom*. Currently, large buildings have been erected in the central areas of the capital city. This *boom* occurs within the framework of public densification policies, the so-called Bando Dos and Norms 26, 30 and 31, whose objective was to generate incentives for private actors to build more and with a greater density in the central area of the City (IDEA, 2014). However, "since 2000, when Bando Dos was enacted, and up to today, the controversies over these policies are numerous [...] densification policies are being beneficial for a minority (developers) to the detriment of urban life [...] vertical developments do not constitute a residential densification, but speculation for business and commercial uses (de Coss, 2017)". <https://labrujula.nexos.com.mx/?p=1244>

Despite this, interventions in urban centers seem to be necessary: How to promote the production of social housing within the framework of the built city? How to integrate densification with the promotion of mixed land uses?

- a) In *urban peripheral areas*: In urban peripheries, densification is associated most of the time with the processes of relocation of population from illegal settlements, population in risk areas, or gentrification of central city areas. Faced with these dynamics, some countries such like Colombia and Uruguay have made progress with adequate planning and management instruments, with a sustainable, equitable and inclusive vision, managing to reduce urban segregation and the cost of infrastructure, which allows to capture the surplus value of the change in urban land use to finance investments. In Brazil, Mexico and Argentina important efforts have also been made. As mentioned above, particularly in Mexico public policies and densification standards have been designed. However, densification policies benefited developers, making it possible to build housing units on land far from the city, contributing to the growth of the phenomenon of housing in abandoned subdivisions.
- b) In *urban pericenters*: Urban pericenters are interstitial areas that in the past were part of the periphery and which, due to the urban processes themselves, today have a condition of centrality. These are well-located areas in constant transition and with significant flows and mobility as well as potential for densification.

So the question about the particularities of the process in each of these typologies arises: do densification processes generate the same impacts on all of them? Do appropriate densities vary by typology?

In this framework, countries and cities have been moving towards regulating and ordering processes and effects of densification. For example the city of Bogotá advanced in a process of selecting areas that were susceptible of being densified. In order to do so, “a detailed study was carried out that allowed defining the areas based on: 1. The role of the processes in the urban structure. 2. The existing development dynamics. 3. The capacity of the infrastructures. 4. The type of activity that could be carried out against the costs of the renovation and the model. 5. The profitability of such operation. In this context, the densification of the following areas was favored: 1. The metropolitan center and the centralities, both in tertiary activity and in high-density housing, promoting an ongoing or a very dynamic pattern change. 2. Moderately in residential areas near employment centers. 3. In deteriorated areas that border the traditional center and some important centers (Calle 72, Calle 100).” (Salazar Ferro, 2001:30).

In the cities of Ecuador, the application method to increase, regulate or plan densities is based on a strategy for evaluating the typology of collective housing parting on three fundamental axes: occupation, height and habitable module (buildable). From that evaluation and following the standards proposed by the model to be followed, it has been shown that without exceeding 20% of occupation of the plot or sector, densities greater than 800 inhabitants per hectare can be obtained (Cuenca Rosillo and Espinoza Carvajal, s/F). In addition to the question of densities, initiatives are developed to identify idle buildings with the potential to be intervened by public policy. In Uruguay, through different legal frameworks and five-year plans, governments try to link urban development policy with housing policy. To do this, a strategy was developed that was based on good land management, on three core topics: 1. Optimization and sustainability in the use of urban land. 2. Public acquisition of urban land. And 3.

Management of public urban land.

The Federal Law known as the City Statute in Brazil, which regulates Articles 182⁵ and 183 of the Federal Constitution of 1988, provides the regulatory instruments for the municipalities to incorporate densification in urban planning. Those instruments contribute to densification by combating the retention of empty buildings in central areas and their use for social housing, for example. Article 183 considers the right of property for those who use it in a compatible way with the property’s legal vocation (Furbino, A and Todtmann, D. 2016).

Within this framework, Brazil has developed a vast experience with the vision of a compact city, in the recovery of underutilized areas. Some key aspects have been identified in that process:

1. The need for open legal frameworks that contain a diversity of instruments and that are agile to manage.
 2. The need to take into consideration the diversity of cities in different contexts and the decision-making capacity that each city has.
 3. Define what actions are optional or compulsory for the public power.
 4. Promote institutions that have the capacity to manage these interventions.
- In this framework, in Recife, a mapping of idle properties was carried out, which showed that currently more than 2000 properties that have tax debts, can be incorporated by the local government in the idle housing offer. In addition, the implementation of other instruments is currently being explored for the recovery of private buildings with high debts and some of them abandoned.

San Pablo case

San Pablo has faced numerous challenges to transform its radial urban structure, which was developed from the urban transport and the roads. Around these urban motorways, numerous formal and informal settlements of low density, and all the more precarious the further from the center, developed. In general, the urban policy developed since the 2000s, supported by the legal framework known as the City Statute, sought to recognize the rights of the inhabitants of informal settlements to the land and carry out interventions to urbanize and regularize land tenure. Urban planning processes were integrated with housing and environmental planning processes. Mappings (supported by Cities Alliance) allowed the municipality to program comprehensive interventions in different sectors of the city.

Thus, some areas were classified as **Zones of Special Social Interest (ZEIS** for its acronym in Spanish). During the years 2001 to 2012, more than 250 thousand homes were urbanized and/or regularized, promoting the densification of the densest areas, generally more precarious and located in risk areas.

However, the most significant advances in terms of changing the uneven urban structure were promoted through the recent Master Plan (2014). Within this framework, processes of integration of urban instruments for densification were promoted around the medium and high capacity urban public transport motorways.

⁵ Article 182 establishes that urban policy is the responsibility of the municipality and must guarantee the social function of the city and the development of its citizens

In order to leverage densities in areas that are well served by transportation, private developers are allowed to build taller buildings with mixed uses and smaller apartments, on these urban motorways. As a counterpart, developers must pay fees to an urbanization fund (through land valuation capture instruments). This fund allocates 30% of its resources to purchase well-located land –classified as ZEIS- for the construction of affordable social housing. Additionally, in those areas and mainly in the city center, idle or underutilized buildings receive notifications for use and in the cases where the owners do not use them, property rates increase progressively. During 2013, 2,000 properties with these characteristics were notified (about 2 million square meters of built area). That area is in the utilization phase, some of it for social housing.

Source: Teresa Herling, 2019

Balanced Densification: The Chilean case

To ensure the progress of the construction of more equitable and just cities, socially integrated, democratic and participatory, on March 2014 in Chile, the new **National Policy for Urban Development** (PNDU for its acronym in Spanish) was approved. At the same time the **National Council for Urban Development** (CNDU for its acronym in Spanish) was created as a consultative and advisory body that on a permanent basis elaborates reform proposals and verifies progress in the implementation and compliance of the PND. The actions of the CNDU begin with groups working around specific and relevant issues for the country. One of these issues was **Balanced Densification**.

The Balanced Densification working formed by CNDU's directors and their representatives and specialists that were invited, recognizes that the PNDU, by focusing on people's quality of life and equity of opportunities that the city generates, has the fundamental task to find a balance in the processes of urban growth due to densification –which bring both benefits and costs– in Chilean cities. Furthermore, it recognizes that, like the PNDU, both UN Habitat through the New Urban Agenda and the OECD have made recommendations along supporting these lines of actions. For example, a call for urban planning to subordinate private interest to the social function of the land and encourage re-densification. The OECD (2013) recommends residential densification in central areas to allow better connectivity and less risk of socio-spatial segregation.

Subsequently, progress was made in a process on a diagnose the situation at the national level. In fact, it is verified that during the last decade the Chilean population has not only preferred to live in urban areas but also, within large cities, strong processes of densification have been experienced accompanied by socio-demographic changes and new citizen demands. This growth by densification has been marked by a strong tension between the preference of citizens to live in well-located places and a negative perception of a sector of the population regarding densification and its urban impacts. The question then arises about how to reconcile this tension to promote the benefits that densification brings and control its negative impacts, this is, how to achieve a balanced densification. Densification was established supported on the synthesis of the diagnosis –transcending to the concept of density–referenced to the General Law of Urbanism and Construction that defines urban growth by densification as that process that *“increases the intensity of land occupation, be it as a consequence of the increase of its inhabitants, occupants or construction”*. In other words, it refers not only to residential densification processes. Then, in order to understand how to achieve a balanced densification and to advance towards the solution of this tension between the benefits promotion and impact control, the following four areas were proposed in order to be examined:

An **efficient densification** that avoids infrastructure's underutilization, controls that which it is overloaded, and promotes mixed uses of urban land.

An **equitable densification** that promotes access to the opportunities of the city in an affordable way to all its inhabitants, considering the socioeconomic and demographic characteristics of the families that demand to live well located.

A **harmonized densification** that promotes the sustainable use of urban land and public space through the urban form and its designed mechanisms and interaction with the neighborhood in which it is inserted.

A **cohesive densification** that puts people at the center and encourages good relations between communities - both among those who live in densification projects, and with the residents receiving these projects – and reduces conflict situations and strengthens social capital.

Within this framework, the definition of **Balanced Densification** is proposed as “an urban growth process that increases the intensity of land occupation and that is at the same time efficient, equitable, harmonious and cohesive”. Likewise, the Group came up with proposals with specific objectives, forms and implementation mechanisms, which are currently being considered by the Board of Directors of the CNDU.



Source: Margarita Greene, 2019. Based on the document “Proposals for a Balanced Densification in Chilean Cities, National Council for Urban Development”. October 2019. Available at: cndu.gob.cl/propuestas

Despite these initiatives, maintaining dense populations has a cost. Urban density increases: land prices (Glaeser, Kolko & Saiz, 2001), wages (Wheaton & Lewis, 2001), congestion (Wheaton, 1998), and crime rate (Glaeser & Priest, 1999). Its impact on public spending is not yet clear. Some studies confirm that density is related to savings in fire protection, waste collection and education services (Bollinger, Berger & Thompson, 2001). But others correlate density with economies of scale for those same services (Abrate, Erbetta, Fraquelli & Vannoni, 2012). Other studies no impact on spending on fire protection and solid waste collection is attributed to high densities. But they indicated that it does contribute to reduce spending on police and education services, as well as on construction of new infrastructure and roads (Carruthers & Ulfarsson, 2003, 2008). Finally, others propose a U-shaped relationship between density and expenditure, suggesting that after a certain optimal density, expenses increase (Holcombe & Williams, 2008; Ladd, 1992) (Libertun and Guerrero, 2017:236). In fact, as suggested by Vaggione’s report for UN-Habitat (2014), once cities reach a certain population and territorial extension, the benefits of agglomeration can decrease, turning the relationship between income and the size of the city into a negative one.

In this way, the policies that promote densification seem to be debated between models that rely on regressive social demarketing and models that promote planned urbanization processes supported by progressive social demarketing⁶ of some of the components that ensure the reproduction of the population, among they urban goods and services.

The New Urban Agenda and SDG11 raise many questions over this issue. With the horizon set on the right to the city and the social function of land and property, it seems necessary to recognize the limitations of the management of urban goods and services to benefit the common good, so that we can redistribute the city’s loads by identifying potential densification areas, relocation of risk areas, and the reuse of idle properties and underutilized lands to allow Latin America to advance in the consolidation of a compact city.

The objective of the LAV is to generate a debate on recent advances on urban densification in the LAC region. In this framework, it is expected to address the following questions through deliberations based on the presentation of cases, good practices and collaborative exchanges. In this framework, it is expected to dialogue on:

⁶ It is related with the reduction of the financial cost of the purchase and/or access to urban goods and services through initiatives from the State (Pirez, 2014)

- (i) What do we understand by densification? Are there agreements in the region? What is the ideal density?
- (ii) What are the benefits of the compact city? How to ensure its environmental sustainability?
- (iii) Low density plots, their decrease and underutilization: risk or opportunity to implement the New Urban Agenda? How does the low-income housing (social interest) market behave?
- (iv) How does the progress of densification impact universal access to housing?
- (v) What are the criteria that should dictate the interventions in urban voids? What role does the social function of property play in this context?
- (vi) How do rental housing markets operate in a densified city? How does it impact young people's access to housing? Who are the ones that enjoy centrality?
- (vii) How to plan dense urban environments? (The role of financial tools and planning).
- (viii) How to link the densification processes and the financial tools available in the different countries in a sustainable way?
- (ix) Is it possible to integrate the current housing financing policies with densification processes? How?
- (x) What actors intervene and what role do they play in planning (or against) dense urban settings? How to promote the consensus process among the actors (public and private) to achieve efficient or inefficient dense urban environments?
- (xi) Success and failure experiences in managing water stress in densified urban settings.
- (xii) Successful experiences worldwide in the territorial de-concentration of the public function (France case).
- (xiii) Singapore experience as an inclusive densification experience.