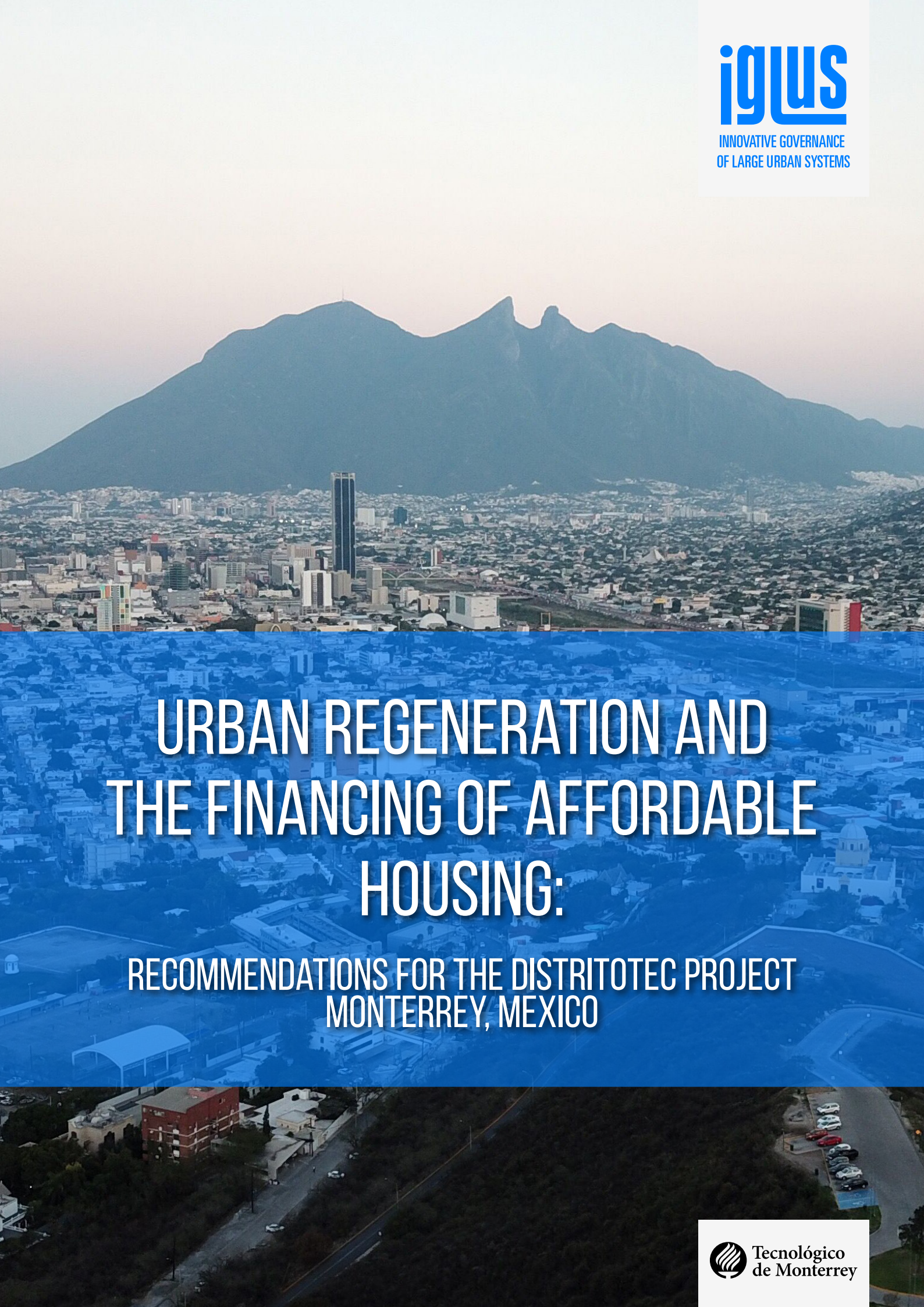




URBAN REGENERATION AND THE FINANCING OF AFFORDABLE HOUSING:

RECOMMENDATIONS FOR THE DISTRITOTEC PROJECT
MONTERREY, MEXICO

Foreword

This report is an exploratory research on viable solutions to finance affordable housing in the context of an urban regeneration project called DistritoTec, which is currently implemented in the city of Monterrey, Mexico, by the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM). The University is a partner with the Ecole Polytechnique Fédérale de Lausanne (Switzerland) for the Innovative Governance of Large Urban System programme. In March 2020, both institutions initiated an action-research project to document DistritoTec's implementation, as it has the particularity of being led by a university, which sets, in the vision for the regenerated neighbourhood, not only economic profitability and competitiveness goals, but also objectives in terms of social inclusivity. This aspect lies at the core of DistritoTec team's action, who was working on the update of the regeneration programme when the action-research started. At that time, the intertwined topics of promoting redensification in the neighbourhood and increasing the affordable housing offer were requiring deeper investigation to understand what solutions could be implemented to prevent, or at least mitigate, gentrification in the area.

The action-research project began in March 2020 and was co-hosted by the C+LAB, in the School of Architecture, Art, and Design, and DistritoTec, both entities located on ITESM's Monterrey. However, because of the COVID-19 crisis, the project has been carried out remotely from April, which made field work and exchanges with local stakeholders more difficult. The research has thus been reoriented towards the analysis of case studies from the United States and Latin American countries, where either the form of the urban fabric or the regulatory framework would be similar to Monterrey's. Working hypotheses have been discussed with local developers and urbanists before elaborating recommendations, presented at the end of the document, on financing solutions for affordable housing.

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About the author



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Executive Summary

“The Tec District is a pedestrian priority area, with accessibility to commerce, equipment and services, vibrant and quality public space, and a diversity of efficient means of mobility. It has a combination of land uses from single-family, multi-family housing, commerce and services, in accordance with the citizens’ proposals. Its infrastructure is oriented towards environmental, economic and social sustainability, and its operation involved citizen participation, to form a resilient and socially inclusive community. It generates a shared value through a city model based on urban regeneration and the co-responsibility of its inhabitants. It offers a dynamic, safe and inspiring community that attracts and retains talent and drives the development and positioning of Monterrey as a city of innovation, entrepreneurship and sustainability.” DistritoTec, Comprehensive Urban Plan

DistritoTec’s regeneration is an ambitious project initiated by Tecnológico de Monterrey that invites to explore Mexico’s historical and regulatory background on urbanization to understand the current context and issues faced by municipalities in terms of providing inclusive and accessible urban spaces to residents. Housing therefore appears as a pivotal element of the urban fabric: it indeed offers more than a shelter to its inhabitants, rather it structures their everyday lives and establishes socio-spatial contexts in which they are either integrated in the urban system or isolated. Housing therefore crystallises social, economic and environmental inequalities between urban dwellers. By acting at spatial, environmental, economic and social levels, urban regeneration transforms existing local configurations and determines new access conditions to infrastructure, housing, spaces and services.

Promoting values of inclusivity, accessibility and equity, DistritoTec shaped its redevelopment programme to find a balance between providing an incentivized investment climate for the private sector while protecting the social diversity constitutive of the neighbourhood’s identity. This research aimed at contributing to preserve this fragile equilibrium by analysing ways to bolster the production of affordable housing. Case studies have been documented to examine operating conditions of financing solutions implemented in North and Latin American cities as well as evaluate their respective impact, these elements being crucial to anticipate a potential implementation in DistritoTec and adapt the mechanism to local realities. Interviews conducted with local field actors from the real-estate development and urbanism sectors also contributed to give a broader perspective to Monterrey’s urban challenges and highlighted additional solutions.

The recommendations established for the project illustrate the research’s key takeaways:

- Clear regulatory framework, strong institutional capacities at local level combined with transparent urban guidelines and processes are vital components to structure urban regeneration projects which simultaneously benefit local communities and ensure a fair contribution of all stakeholders involved. Capacity building at institutional level is therefore essential to apply the land-value capture’s core principle, i.e “enable communities to

recover and reinvest land value increases resulting from public investment and other government actions”.

- Housing production must be envisioned in an integrated planning approach to ensure the development and/or upgrade of urban infrastructure to create conditions enabling intra-urban redensification.
- Housing forms and occupancy types are heavily dependent on local socio-economic and spatial configurations, which make the application of general housing development models therefore inefficient. A design approach, based on the “build, measure, learn” tryptich, that value collective intelligence and experimentation, would represent a constructive alternative to develop affordable housing solutions taking into account existing contexts and overcoming issues and challenges.
- Local housing strategies reflect the shortcomings of top-down approaches to urban development. A reinvented approach to urban policy-making, relying on a platform strategy-based organization could reshape the involvement of local stakeholders in the definition of a shared vision for urban development.

Introduction

In 2014, Tecnológico de Monterrey (ITESM), the largest private university in Mexico, launched DistritoTec, a regeneration programme targeting its historical campus in Monterrey and the surrounding 24 neighbourhoods. The project, led by the University through an agreement reached with the municipality aims at “boosting the local knowledge economy and creating an innovative and dynamic community, that would attract and retain talents”. An ambitious vision for a district, which, at the beginning of the project, was facing the challenges of a decaying area with a population loss of around 20% in over the 2000-2010 period, rising insecurity, degraded public spaces and a consequent house abandonment of 23% of the neighbourhood stock in 2010¹.

This deteriorated situation resulted from the evolution of Monterrey’s urban form, which has been characterized by an uncontrolled expansion to the peripheries since the late 1970s. Over the past thirty years, the city’s footprint has indeed increased almost eight-fold to reach 679,396 hectares² (6,793 km²), while its population only increased two-fold, to reach 4,689,601³. Local industrial economy’s dynamics have shaped the urbanization around the industrial facilities and attracted a large population of workers, positioning the city as first producer of housing and social housing in Mexico, built for the most part in peripheral locations, as encouraged, from the early 2000’s, by credit allocation policies of INFONAVIT, the country’s financing institution for social housing. Monterrey’s urban sprawl has been accompanied by the depopulation of its inner core, resulting in significant negative economic and social externalities.

A tipping point was reached in 2010 when two students lost their lives in a cross-fire right outside ITESM campus, an event that led the university to redefine its vision and anchoring in the community. The Strategic Vision 2020 marked the launch of both the campus and neighbourhood’s revitalization in an effort to remove physical and psychological barriers between them and encourage “urban, economic, social and cultural regeneration”⁴.

The principle of inclusive development has been at the heart of DistritoTec’s approach to urban regeneration, to achieve the neighbourhood’s revitalisation while avoiding gentrification. Coined by Ruth Glass when she was documenting the relation between housing and class struggle in the Islington area of London in the 60’s, this concept has been since highlighted as an inherent result of urban regeneration and social mix initiatives in major European and North American cities, especially when undertaken in urban areas suffering from prior disinvestment in primary infrastructure.

DistritoTec is willing to reverse the trend by simultaneously acting on preventing residents’ displacement due to local land-value increases and providing affordable housing options to welcome new low- and middle-income households in the area, achievable by the redefinition of existing densities and the capture of upgraded land values. Emphasis was thus placed on identifying financing mechanisms allowing to develop additional infrastructure and housing in a way that would not only resist real-estate speculative pressures but also stimulate cooperation between local stakeholders (university, public institution, private actors and residents) to reshape the neighbourhood in a fair and equal way.

¹ Data from DistritoTec’s *programa parcial*

² Data from *Rethinking Social Housing in Mexico Project*, Harvard Graduate School of Design, 2016

³ INEGI 2015

⁴ Strategic Vision 2020: <http://sitios.itesm.mx/webtools/planestrategico2020/publico/EN/index.html>

This report therefore aims at investigating the following question: *What financing solutions could be implemented by DistritoTec to provide an adequate affordable housing offer?*

Concrete solutions already enforced in diverse geographies will be explored, to identify operational conditions, benefits and potential risks and highlight critical factors for a successful implementation. Zooming out of the results, policy recommendations will then be suggested to design DistritoTec's financing models for affordable housing production and by extension, to propose a transformative approach to the definition of the urban project.

Urban development and housing financing in Mexico: historical and legal frameworks

This section aims at providing an historical perspective to the urban development trends in Mexico, while understanding the mechanisms to finance housing, from their creation to their current operating conditions.

1) Urban policies and housing provision – an historical perspective A. since the 1960s

From the 1940's, the Mexican government focused its action on accelerating the country's industrialization and modernisation, which resulted into urban-industrial developments mostly concentrated in Mexico City and to a certain extent, in Monterrey. Such a movement encouraged an increasing urbanization process, and thus, an increasing housing demand, however without a proper regulation framework. In the 1960's, the country was therefore already confronted with two challenges regarding urban development: first, a lack of policy and instruments to generate formal housing and second, a lack of affordable housing in growing cities. Housing construction was led by the private sector, which was buying the land, often unserviced, to formal landowners. Informal settlements started to be built on federal lands and risk areas or hills began at the same time, due to the lack of formal options. At this time, only 2% of the population had a loan and 93% of the housing produced was informal.

To address these issues, the federal government started a policy of Progressive Social Housing (*Vivienda Social Progresiva*), acquired land, subdivided and serviced it to ensure the production of housing. Such initiative has been partly financed by using improvement contribution (*contribuciones por mejores*)⁵. State Housing Organisations have been progressively created to support the initiative, such as AURIS (at federal level) and FOMERREY in Nuevo Leon⁶. Such policy has undeniably improved the overall quality of life for residents, through the provision of basic infrastructure (water, electricity, sewage). As the implementation was also based on the involvement of residents, the initiative contributed to reduce informal housing development and strengthen social ties amongst communities. On the long-run however, the strategy has yielded mixed results, especially regarding its overall contribution to the provision of housing in the country: if in Monterrey, 22% of the existing houses in 2010 were built on land developed by FOMERREY, in other

⁵ Improvement contribution is a tool to recover economic gains (*plusvalias*). It is based on the principle stating that economic actors benefitting from public works resulting in land-value increase should contribute to the public with a proportional amount of this benefit. This instrument of land-value capture has been widely used in Latin American cities since the 50's.

⁶ Both organizations are labelled as Institute for Urban Action and Social Integration. Among their action, they regularized informal settlements but also developed innovative housing programmes with serviced homes for instance.

regions it contributed from 4% to 12%. The quality of infrastructure, especially water distribution, is also increasingly deteriorating⁷.

Mortgage credit, which emerged in the 1950s, soon became a tool to finance housing. Several programmes were initiated and resulted into the financing of large housing projects such as the complexes of Benito Juárez or Miguel Alemán, in Mexico City. The disparities between housing needs and access to mortgage credit remained however so important that it encouraged the government to seek foreign support to initiate a Financial Housing Programme. With an IDB financing, the government established the Housing Fund (*Fondo de Operación y Descuento Bancario a la Vivienda*, FOVI) in 1963, as a trust fund of the central bank. It aimed at providing funds for building housing with social interest, issuing loans for newly-built, used housing and housing refurbishment, as well as providing partial guarantees on loans issued by other financial agencies. FOVI financed 7,617 mortgage loans from 1965 to 1972, and more generally, provided funds through banks until 1989. Since this date, an auction system is being used to allocate resources to developers.

In 1970, the arrival to power of a left-oriented President, Luis Echevarría Álvarez, changed the paradigm. Under his mandate have been established two financing organisations dedicated to housing, still operating today. The first one, the National Workers Housing Fund (INFONAVIT), created in 1972, is a tripartite organization managed by representatives of workers, business and government. Its resources are based on a mandatory 5% payroll tax paid on wages from all employees in the country. The second one, called the Housing Fund of Institute of Social Security of State Workers (FOVISSTE) was established at the same time for government' employees.

From its creation to the early 1990's, INFONAVIT operated as a contractor, a mortgage lender and was also building housing. The units were allocated through a lottery system, divided first between the different unions with positions on the fund's governing board and then among their members (Monkkonen, 2009). This new policy was partly a success as it resulted into the construction of more than 500,000 housing units during the period, but it faced challenges related to opacity and corruption, lack of land reserves and excessive costs which couldn't be covered by the workers' mortgages.

From the late 1970s, a series of reforms, such as the revision of some constitutional articles and the promulgation of the General Law of Human Settlements (first one in 1976) were initiated to start implementing a comprehensive urban policy. Such move was necessary to regulate rural migrations to urban areas and improve the population's living conditions. It led to the progressive establishment of a National Planning System with a new repartition of powers, regarding urban policies, between the federal, state and municipal authorities. Urban planning powers have been transferred to municipalities during the 1980s, and the first masterplans were issued during that decade. In Monterrey for instance, the first one was promulgated in 1988. Metropolitan areas were established, with the Greater Monterrey metropolitan areas decreed in 1991. Reforms also targeted housing, with the promulgation of the Federal Housing Law in 1984, creating the National Housing System, composed of several institutional components responsible for coordinating housing policies and goals.

The housing financing system underwent a series of change in the 1990s, in the context of the Mexican peso crisis and the signing of the North American Free Trade Agreement in 1994. INFONAVIT and FOVISSTE transformed their activities from the construction

⁷ Data from *Marco Legal de La Ciudad*, Arq. Juan Ignacio Barragán Villarreal, Monterrey, 2019

of housing units to the financing of mortgage credits exclusively. Such change led to the expansion of the private construction industry in the country, notably encouraged by the Commitment to Housing initiative, which consisted of a series of agreements between INFONAVIT and private developers, to support them throughout the process of housing development, from permission and land acquisition to grant of loans for the construction. This decade was characterized by a great need to increase the housing financing system capacities as well as expanding the involvement of private entities to address the volume of financing demand. In 1994, the Limited Object Financial Companies (SOFOMES) were established as part of the NAFTA agreement, with funds from the Central Bank of Mexico, the World Bank, and the United States, with the goal of enabling US non-bank financial institutions and Canadian investment societies to participate in the Mexico mortgage market⁸. It allowed to stimulate the granting of credits to non-right holders of INFONAVIT and FOVISSTE.

The year 2000 saw the creation of the National Commission of Housing (CONAVI) as a federal entity in charge of coordinating all the efforts of social mortgage companies. In 2001, FOVI was transferred to the Federal Mortgage Company (*Sociedad Hipotecaria Federal*, SHF) with the mission of strengthening the housing market by generating financial services and mechanisms that facilitate the entry of new market participants and to expand access to housing finance to underserved segments of the market. It acts as a second-tier bank which channels funds through financial intermediaries such as commercial banks⁹. INFONAVIT's management changed the same year and was passed to a group of professionals from the finance sector, who embarked the institution on a modernization programme to strengthen its financial position, increase lending activities and reform the loan allocation system, notably by allowing workers to combine INFONAVIT funds with loans from other institutions.

These reforms were aligned with changes in the country's economic development strategy, which was oriented to export led-industrialization since the 1980s. It also corresponded to a reduction of the role of the State and decentralization of powers, which is notably characterized by the restructuring of INFONAVIT and the transfer of urban planning powers. It also emphasizes the fundamental role played by mortgage credit in the development of housing in the country, which is linked to the strengthening of a powerful construction & development industry. Through this paradigm shift, Mexico experienced, during the last decade, substantial increases in overall housing loan volumes, with important contributions from a range of sources. In 2000, the number of loans was around 400, 000, with INFONAVIT and FOVISSTE accounting for 60% of the total. In 2008, granted loans had reached 1.4 million, with an increase of both private financing sources and federal subsidy programmes. Loans were also made accessible to low- and moderate-income households and the lent amount substantially increased from 20,000 MXN to 90, 0000 MXN. As a result, the decade 2000-2010 saw a boom in housing units construction, which increased from 110,000 units in 1999 to 540,000 in 2010.

B. The housing sector in Mexico since 2010

The housing boom resulted in massive urbanization of the Mexican population, with 78% of Mexican living in urban areas, which led to an unprecedented expansion of urban areas. Housing programmes indeed kept directing potential homebuyers to large, peripheral housing developments, impacting cities' footprint over the years. It increased around

⁸ Ibid.

⁹ https://www.jchs.harvard.edu/sites/default/files/w12-8_mexico.pdf

seven times between 1980 and 2010, while the population only grew from 25% to 30%. Housing developments have been characterized by low-density construction located at the periphery of major urban centres, notably due to both the large offer of rural land that could be transformed into urban areas and the lack of adequate planning and coordination capacities at municipal and metropolitan levels. Such a disproportionate growth presents several challenges and negative effects, at social, environmental and economic level.

Housing location is first an issue, since significant deficiencies, in terms of proximity to employment centers are identified. Between 2014 and 2017, the National Housing Organisations financed the construction of more than 2.2 million units but only 8% was in fully consolidated urban areas. In addition, of the homes built in 2017 for the economic segment (cost below 311,450 MXN), 73% was located in peri-urban areas, disconnected from sources of employment, urban services and transport networks. Implemented in 2013, the *Perímetros de Concencion Urbana* (urban containment perimeter), which divided urban areas into 3 main perimeters, from U1 to U3, aimed at shifting this trend by channelling the housing credit allocations towards programmes developed in consolidated urban areas, with access to infrastructure and amenities. If this initiative managed to decrease the provision of housing units in remote areas, the overall development pattern remained consistent, with most of the social housing built in the U3 perimeter, i.e. in suburban areas with low access to infrastructure. In the city of Monterrey, 51% of units were built in this perimeter in 2016, compared to 28% in U2 and 8% in U1¹⁰. Consequently, in Mexico, transfers from home to workplace of 15.7% of the workforce takes more than 60 minutes¹¹. Transportation is the second budget spending of Mexican families, with 19.3% of the total expenditures.

Access to infrastructure and services, regarding energy and water supplies for instance, have been deficient, with one out of 5 homes lacking access to basic services. 49.1% of them do not benefit from public lighting in their immediate environment, while 51.1% have poor access to paving. The limited financial capacity of local governments is often invoked to explain this situation, which is notably due to the low rate of property tax in Mexico. The country has indeed the lowest tax-to-GDP ratio of the OECD, with 16.1% in 2018 (compared to 34.3% on average)¹². This missing income diminishes municipalities' ability to increase quality and coverage of their infrastructure network. Deteriorating living conditions led to house abandonment, with around 14% of the housing stock being unoccupied in 2010¹³.

Housing affordability also remains a challenge: by definition, an affordable home does not compromise people's ability to access other basic needs (food, health, clothing...). It is therefore considered that housing-related expenses should not exceed 30% of the household income. In Mexico, it is estimated that the poorest decile of households allocates around 61% of income to housing and its related services. For the next two deciles, it decreases to 34%. Such situation can be explained by the relation between the population income level and housing market prices: in 2018, the average annual household income was 198,440 MXN (2018) while the average price of a new home is 800,982 MXN, meaning that a family would have to allocate about 4 times its total annual income to acquire an average housing unit, paid in cash. In addition, and despite the strong financing policies described above,

10 U1: consolidated urban zones with access to employment, infrastructure and urban services; U2: zones in process of consolidation, with infrastructure and levels of access to services greater than 75%; U3: zones contiguous to the urban area, representing a peripheral ring defined based on the size of the city, but functionally undeveloped. Data from: https://research.gsd.harvard.edu/mci/files/2018/06/bettercities_final_121616.pdf

11 Data from the National Housing Programme 2019-2024

12 <https://www.oecd.org/tax/revenue-statistics-mexico.pdf>

13 Ibid.

there is still a low penetration of housing credit: in 2015, only 20.8% of private homes purchased or built by their owners were financed through INFONAVIT, FOVISSTE or other available funds, while 4.9% had been financed using a loan from banks, limited-purpose financial companies or savings banks. Furthermore, the available financing instruments are mainly focused on housing acquisition by the population entitled, which is only 44% of the workforce in Mexico¹⁴. It generates a dynamic excluding people working in the formal sector but with limited income, those working for the informal sector, those who access housing through leasing and those who built their home on a family plot.

Overall, the housing and urban development policies initiated for the past 40 years have generated mixed results, even though it must be underlined that Mexico, along with Chile, was the only country in Latin America that developed the capacity to build such a tremendous number of housing units in a short period of time. It managed to address an increasing demand, despite causing significant issues regarding long-term sustainability of urban areas.

Since 2010 however, the normative framework on urban development and housing production has reoriented towards the regeneration and redensification of inner cities. Such trend presents however numerous challenges as well, in terms of access to affordable housing, adequate mobility solutions or the capacity of existing urban infrastructure to absorb the population increase that would be induced by a density increase. It also requires crucial planning capacities to ensure the social and economic integration of redeveloped intra-urban neighbourhoods with its surroundings, while avoiding the potential displacement of residents who couldn't afford the living conditions in regenerated areas anymore. Balancing territorial attractiveness with maintaining equal access to decent living conditions is a challenge for local institutions and necessitates to involve a large panel of stakeholders, including the private sector, to co-construct and co-finance liveable cities. Such vision, which is promoted by the Mexican current regulation, is aligned with the international debate on these matters, notably highlighted by the right to adequate housing formulated by the United Nations and the New Urban Agenda, published in 2016.

2) Current normative framework on urban development and housing provision

This section analyses the regulatory framework implemented in Mexico to regulate the provision of housing as well as urban development. Both matters are closely linked, as proven at international level, with the promotion of the New Urban Agenda and the Sustainable Development Goals. The UN guidelines to urban development have been translated into Mexican laws and programmes to renew the instruments dedicated to the urban fabric. They however lack operational guidelines for implementation and coordination between the different administrative levels, which, as explained in the following sections of this report, impacts the operational implementation of DistritoTec.

A. International level

- The right to adequate housing

If the right to adequate living conditions has been recognized in the 1948 Universal Declaration of Human Rights and in the International Covenant on Economic, Social and Cultural rights in 1966, it regained an increasing international attention in the 2000s, with the establishment of the mandate of "Special Rapporteur on adequate housing as a

¹⁴ Ibid.

ponent of the right to an adequate standard of living”¹⁵. Such initiative has resulted into a clearer definition of the concept of adequate housing, which must meet at least seven criteria: security of tenure, availability of services, materials, facilities & infrastructure, affordability, habitability, accessibility, location and cultural adequacy.

- **Articulation with the New Urban Agenda**

The right to adequate housing was incorporated to the New Urban Agenda, which was published in 2016 during the United Nations Conference on Housing and Sustainable Urban Development, also called Habitat III. The New Urban Agenda aims at rethinking urban development policies with a view of 2030 and operates through the 17 Sustainable Development Goals. “Sustainable Cities and Communities”, which the 11th SDG, relates to maximizing the potential of cities and includes adequate housing as its first goal: *By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums*¹⁶. It also highlights the need for appropriate urban planning capacities, which is one of the key NUA goal: *By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries*¹⁷.

Overall, the New Urban Agenda encourages urban development in a way which shifts the vision of territorial development from a technical and data-driven approach to the inclusion of social and environmental components. Such an approach has been translated into Mexico’s national planning system through a reform of its regulatory framework.

B. Current regulatory framework in Mexico

1. At federal level

- **Constitution of the United Mexican States**

The Constitution of the United Mexican States already refers to key components outlined by the Sustainable Development Goals. According to article 4, “any family has the right to enjoy a decent and respectable house. The law will set the instruments and supports necessary to achieve such objective.”¹⁸ Support and instruments are provided by the Housing Law, which was updated and promulgated in 2019.

Article 27¹⁹ regulates private property and gives mandates to Federal, State and Municipal laws for the provision of public services through land acquisition. Authority on urbanization and urban development are transferred to municipalities at article 115²⁰, which also stipulates that municipal councils are responsible for the provision of all basic infrastructure.

Coordination between these three governance levels is thus crucial to ensure appropriate territorial management as well as provision of adequate infrastructure. The power repartition between federal, state and municipal authorities is reaffirmed in 2016, with the General Law of Human Settlements, Territorial Planning and Urban Development.

¹⁵ *The Right to Adequate Housing*, fact sheet n°21, Office of the United Nations – High Commissioner for Human Rights, UN Habitat, 2014

¹⁶ <https://sustainabledevelopment.un.org/sdg11>

¹⁷ Ibid.

¹⁸ <https://www2.juridicas.unam.mx/constitucion-reordenada-consolidada/en/vigente>

¹⁹ Ibid.

²⁰ Ibid.

- General Law of Human Settlements, Territorial Planning and Urban Development

This law represents the legislative instrument linked to the SDG 11, promulgated by the federal government in 2016. It modifies the previous general law of Human Settlement published in 1984, notably by adding land-use planning and urban development as structuring notions linked to human settlements.

The law recognizes in its second chapter the “right to the city” for the Mexican population, as a condition to access housing and basic infrastructure. The text defines the attribution of federal and municipal entities, in its article 10 and 11 and recognizes metropolitan areas and their attributions in the articles 31 to 34. This administrative level is however not defined in the Constitution, which attributes urban development powers directly to municipalities. Such difference might affect the effective coordination on urban development policies between these three governance levels, notably since the law does not effectively define coordination principles between them. For instance, according to article 59, municipalities are responsible for formulating, approving and administering zoning in their respective areas of authority. The same article allows densification of buildings if appropriate infrastructure and services are provided, while urban densification – or consolidation – is attributed to both municipalities and metropolitan areas in the articles 34 and 53. Incremental costs related to such provision should be assumed by promoters or developers.

Additional mechanisms for financing urban development through the involvement of the private sector is however not being further detailed in the law, except while mentioning the development priority in certain areas (polygons), which can be developed through public & private schemes (article 85). Article 88, which relates to the chapter on instruments for financing urban development recognizes the possibility of charging beneficiaries from the provision of primary infrastructure and basic services, through the evaluation of land value increase subject to taxation. It corresponds to the provision of the article 115 of the Constitution²¹, which mentions the tax system, especially the property tax, as an unique mechanism to collect revenues for value increases. As such, the law does not explicitly mention other mechanisms, based on land-value capture for instance, as additional sources to finance urban development, which were, through the improvement contribution, however used in the 1960’s as resources to provide access to basic infrastructure and housing.

- Housing Law

The Housing Law²², published in 2019, defines the general framework of the national housing policy, the national housing programme (detailed in the following paragraph). Both chapters refer to the participation of the private sector to finance housing but without clear indications of the mechanisms. The law also describes the constitutive bodies of the national housing system and creates the national housing commission as a decentralized body responsible for ensuring access to housing for the low-income population.

Chapter VII refers to the agreements with the social and private sectors to “promote the creation of funds and instruments for the timely and competitive generation of housing and land” (art. 42). The article 47 relates to the financing of housing and mentions credit –

21 <https://www2.juridicas.unam.mx/constitucion-reordenada-consolidada/en/vigente>

22 <https://www.gob.mx/conavi/documentos/ley-de-vivienda>

from public and private entities – and private savings as the main mechanisms to provide access to housing. The seventh part of the law, dedicated to the production of social housing indicates the federal support to “the production of social housing in its various types and modalities, through the development of legal, programmatic, financial, administrative and development instruments”. The following articles mention the required coordination between federal, state and local entities to initiate social housing programmes. Housing cooperatives are also mentioned as contributing bodies to finance, build, develop, acquire, lease and maintain social housing.

Overall, if the law exposes general principles relating to access to housing and considers the various components of the national housing systems, clear financing guidelines, outside of credit and private savings use, are lacking, especially when referring to the private sector’s participation. On the other hand, such a framework gives the opportunity to State governments to include more specific elements while translating the federal text into State law.

- National Housing Programme 2019- 2024

In its current five-year plan, the Ministry of Agrarian, Territorial and Urban Development (SEDATU) underlines the current challenges faced by the housing sector through the seven criteria of adequate housing²³. The document emphasizes the need to both an improved coordination between the various governance levels and an increased involvement of the private sector in the financing of housing. The goals are mentioned as follows:²⁴

1. Guarantee the exercise of the right to adequate housing to all people, especially to groups in greater conditions of discrimination and vulnerability, through financial, technical and social solutions according to the specific needs of each group of population;
 - The authorities in charge will seek to diversify the type of housing programs and projects (including leases, assisted social housing production, individual and collective microcredits, promoting the creation of housing cooperatives...), to address the challenges of housing costs and access to financing sources.
2. Ensure coordination between national housing organizations and the different levels of government for the efficient use of public resources;
 - There are currently around 12 different agencies at the federal level, including national housing agencies, that are participating in at least one dimension related to housing and urban development in the country. Coordinating their action is key to guarantee the adequate allocation of public resources and avoid increasing the system’s complexity.
3. Promote, together with the social and private sector, conditions that favour the exercise of the right to housing;
 - Of the GDP generated by the housing sector between 2010-2017, 64.3% is attributable to building, which is then subdivided between 23.7% to builders, 40.6% to self-construction, 28.3% to use, 6.9% to acquisition and 0.6% to regulation.
 - This goal aims at stimulating the private sector’s contributions, through both

²³ The most relevant are mentioned in the part referring to the “housing sector in Mexico since 2010”.

²⁴ <https://www.gob.mx/sedatu/documentos/programa-nacional-de-vivienda-2019-2024>. The goals as mentioned in this document are translated from the Spanish version of the National Housing Programme 2019-2024.

technical and financial strategies and programmes. Extended collaboration with banks is emphasized as well as “incentives for the private sector to increase their participation in the production of social housing”, without however clearly defining the type of incentives that could be developed.

4. Ensure the right to information and accountability of all actors in the adequate housing system;
5. Establish a model of land use and land management that considers adequate housing as a central element of land planning;
 - Intra-urban land is used inefficiently, since it is calculated that in the main cities of the country, there are 85,000 hectares of under-utilized intra-urban land that could house up to 3.3 million new homes, which represents 46% of necessary units between 2017 and 2030 to meet the demand for new homes.
 - Promoting the consolidation of compact, connected, integrated and inclusive cities to prevent socio-spatial fragmentation is thus one of the key development priorities. It can be achieved through regulatory mechanisms and instruments that promote housing redensification within the city.

The National Housing Programme includes clear incentives to address several challenges related to the population’s access to adequate housing. If it encourages common actions between the public and private sector, it does not however refer to innovative urban financing mechanisms which are developed in other Latin American countries, such as using land-value capture tools to finance intra-urban infrastructure and the provision of housing units. Inclusionary zoning, which sets affordable housing units production goals in defined urban zones, isn’t mentioned either, even though it has been proven efficient in many American cities to maintain affordability in regenerated neighbourhoods.

2. At the State of Nuevo Leon level

- General Law of Human Settlements, Territorial Planning and Urban Development for the State of Nuevo Leon

Published in 2017, this law translates the federal text of the same name into State regulation. It keeps the general framework used in the federal law and also recognizes the right to the city and to private property. It confirms municipal authority on urban matters and, in its article 11, sets clear attributions to municipalities on zoning, planning, developing and executing urban development programmes.

Urban development financing tools, such as funds established at municipal level, are identified at the article 42 to finance development projects. Private organizations, both corporate and financial, national and foreign private investors are seen as potential partners to multiply investment resources to metropolitan development.

Housing programmes initiated at local levels are mentioned in articles 70 to 72 and are considered as part of urban improvement plans that will create “self-sufficient housing complexes”, that would tend to link housing with mobility, work centers and healthcare amenities, while allocating spaces for recreation, educational and commercial uses. Local housing policies will thus incorporate guidelines to develop mixed-use neighbourhoods and promote public and private financing. The law details the different types of urban development plans to be produced, such as comprehensive urban plans²⁵ (*programa*

²⁵ This planning tool is used by DistritoTec for the redevelopment of the neighbourhood.

parciales), and their various components, including financial aspects. In this regard, article 91 exposes the principle, for financial and fiscal mechanisms, allowing to charge primarily those who directly benefit from modifications of land uses, density coefficients or introduction of primary infrastructure and basic services. Such mechanisms must be established in accordance with the Finance Law for Municipalities in the State of Nuevo Leon (see next paragraph).

Article 115 defines the conditions allowing densification of specific zones and buildings, while density thresholds are established at article 140, with a maximum, for residential areas, of 250 homes per hectare.

The tenth chapter of the law relates to instruments aiming at promoting urban development and includes a section on strategic urban projects (*poligonos de actuacion*). Such projects allow public and private partnerships as well as setting up private trusts to finance the related projects. These mechanisms must however also be established in accordance with the Finance Law for Municipalities in the State of Nuevo Leon.

- Finance Law for Municipalities in the State of Nuevo Leon

This Law establishes the general framework of the municipal financing system for the State of Nuevo Leon and specifies the rules regarding tax collection, rights, products and uses for which the residents shall contribute in an equitable and proportional way to cover public expenses.

Its fourth chapter title relates to the “contributions for new divisions, buildings, relocation and subdivisions considered in the Urban Development Law of the State of Nuevo León”. Article 65 bis-2 indeed mentions payment and land retrocessions to the municipal authorities in case of change of zoning and urban uses. However, the law is not giving any precisions regarding the financial and fiscal mechanisms evoked both in article 91 of the Urban Development Law (*programa parciales*) and in article 338 (*Polígonos De Actuación*).

Key takeaways

- Since the 1960's, housing development policies have led to massive urbanization: 78% of Mexico's population lives in urban areas
- Housing, and affordable housing have been mostly financed through credit. INFONAVIT and FOVISSTE are the two main credit allocators for Mexican workers. The housing development model has led to a housing boom (with a production of 500,000 units in the 2010's) in urban peripheries, creating environmental, socio-economic and spatial negative externalities.
- The current Mexican normative framework regarding housing and urban development has been recently reframed to match international expectations on the right to adequate housing, it nevertheless remains very general about its financing scheme. Since the 1960s, as previously explained, housing has been mostly financed by credit and the current housing law confirms the central role of this mechanism.
- Financing both housing and the urban environment require innovative tools as well as the contribution to all the stakeholders involved and benefitting from improvements obtained by public investment in the urban area. If they are partially mentioned in the urban development laws, both at federal and State level, their operational implementation is not described in any of the legal texts analysed for this research.
- Public-private collaboration, which is encouraged by the texts, nevertheless requires a regulatory framework capable of governing the interactions between the various urban development actors, to ensure the public interest and create innovative development and financing models.

Regenerating affordable housing issues DistritoTec: addressing

This chapter introduces the case study that initiated the present research on mitigating gentrification risks inherent to urban redevelopment through the financing of affordable housing. It is structured into two sections. First, an overview of urbanization trends in Monterrey, allowing to understand the context in which the DistritoTec project is being implemented. Second, an analysis of the case study, its origins, its goals and the current developments and related issues on housing.

1) Introduction to the Metropolitan Area of Monterrey

Capital city of the State of Nuevo Leon, Monterrey is the main industrial center of northern Mexico and the third largest city in the country. Composed by 13 municipalities, of which the most central are Monterrey, San Pedro Garza Garcia, Guadalupe, San Nicolas de los Garza, Santa Catarina, Apodaca and General Escobedo, the Metropolitan... This key location has impacted both the development of its strong industrial economy and its urbanization pattern. The former has indeed been following the similar low-density suburbanisation trend that has characterized the American urban development since the 1950's. Over the past thirty years, Monterrey's footprint has increased almost eight-fold to reach 679,396 hectares²⁶ (6,793 km²), while its population only increased two-fold, to reach 4,689,601²⁷. The local industrial economy's dynamics have shaped the urbanization around the industrial facilities and attracted a large population of workers. Consequently, Monterrey is also the first producer of housing and social housing in the country, with around 30,000 units per year²⁸ since 2010. This section will review the factors impacting Monterrey's urbanization trends (A) to analyse the current challenges faced by the metropolitan area (B).

A. Key drivers of Monterrey's urbanization

Monterrey's industrial economy started its development in the late 19th century. Its large industries, specialized in the production of iron and steel (Compañía Fundidora de Fierro y Acero de Monterrey), cement (Cemex), glass (Vitro) and beer (Cuauhtémoc Moctezuma), have largely contributed to shape the development of the local urban area. First, by acquiring large plots of land to host their manufacturing activities. The city is thus marked by its industrial parks developed across its territory, with some of them now being reused for recreational activities, such as the *Parque Fundidora*. During the XX^e century, the industrial groups also contributed to create local social infrastructure, such as hospitals and universities, Tecnológico de Monterrey being one of them, to provide their growing business with skilled labour force. In addition, until the creation of Infonavit and FOVISSTE in the 1970's, these groups were playing an important role in providing housing to the workers. Working-class neighbourhoods thus emerged in the city at that time, often holding the name of the industry it was related to, such as Colonia Cuauhtémoc or Colonia Acero. Providing social services to the workers was also a way to encourage loyalty and minimize risks of strikes among the workforce.

Since the 1970's, industrial activities have been expanding in Monterrey's peripheral locations, and with them, housing and commercial activities, contributing to increase

²⁶ Data from *Rethinking Social Housing in Mexico Project*, Harvard Graduate School of Design, 2016

²⁷ INEGI 2015

²⁸ <http://portal.ruv.org.mx/index.php/cifras-basicas-ruv/>

the city footprint which has not stopped expanding since. The strong local construction industry is also impacting the urbanization trend: its expansion increases the demand in infrastructure and housing, fuelling the demand of construction materials, and by extend the growth of the metropolitan area. Such growth is however unevenly distributed across the metropolis, notably due to the local topography, characterized by steep mountains and deep valleys. It has thus favoured vertical developments in central Monterrey and San Pedro Garza Garcia, both cities with scarce land resources. On the other hand, industrial activities, requiring large land plots, combined with high construction costs on Monterrey's steep hills have encouraged the horizontal growth in the peripheral areas. It also allows to provide housing to the local low-income industrial workforce, who couldn't access housing without subsidies and credits provided by the federal organizations such as CONAVI and Infonavit.

The combination of economic, social and physical conditions has thus profoundly influenced Monterrey's urban development, which has been however unevenly distributed across the area. As the region is shifting towards a tertiary economy, new factors are impacting its expansion.

B. Current challenges

Though thirteen municipalities are forming the Metropolitan Zone of Monterrey, these cities are nevertheless characterized by important disparities in terms of population, socio-economic conditions, financial resources and land planning capacities, resulting into a lack of coordination at the metropolitan level, on planning and housing policies for instance.

The population of the metropolitan area has been growing at an annual average rate of 1.9% during the last decade. This growth was however uneven among the municipalities: San Pedro Garza Garcia, for instance, is experiencing depopulation, with a negative growth rate of 0.3%. By contrast, peripheral municipalities such as Garcia or Juarez have continued to attract new residents with growth rates of 16.8% and 14% respectively²⁹. Fragmented population distribution at metropolitan level thus presents opposite challenges for municipalities, that must adjust their approaches to urban development, housing and densification. This is reinforced by the distribution of financial resources, which vary from one municipality to another, the central ones (Monterrey, San Pedro Garza Garcia) being able to collect more revenues from local taxes than peripheral ones, that however have more land resources.

These opposite situations are resulting into peripheral municipalities engaged in mass-production of low-density housing units, contributing to increase their revenues. The new developments are often located in disconnected areas, underserved by transportation and other basic infrastructure. By contrast, San Pedro Garza Garcia, has experienced a vertical development boom in early 2010's, supported by a thriving real estate sector, with market-rate housing, offices and commercial projects. The different strategies adopted with the metropolitan area have led to the development of a massive road system, which combined with a lack of public transportation, is characterized by its congestion. Infrastructure, such as water and sewage are inefficient and public spaces inadequate.

The city of Monterrey stands at the intersection of these challenges. If its downtown area has been recently regenerated and verticalized, the rest of the city remains horizontal and

²⁹ Data from *Rethinking Social Housing in Mexico Project*, Harvard Graduate School of Design, 2016

fragmented. Local authorities have initiated strategies to promote density, which reflect in the city's urban development programme 2013-2025³⁰. The plan incorporates incentives to promote density, such as fiscal incentives, streamlined permitting and changes in land uses. Densification goals are nevertheless undermined by several provisions, such as minimum parking requirements. At least one parking spot per housing is required in the city, which several districts even requiring up to 2.3, which impact the financial viability of housing projects and make residential infill development impossible.

Monterrey's densification strategy also includes the mechanisms of poligonos de actuacion, which encourage public-private investment programmes in infrastructure upgrade. The city has gone one step further by development a framework name "Autonomia Compartida" or shared autonomy, and signed agreements with universities and industries to participate in urban regeneration projects. These projects, which aims at creating innovative and entrepreneurial districts, encourage experimentation of new approaches to urban development. Among them, the DistritoTec project, with targets Tecnologico de Monterrey's neighbouring districts, include economic and social development goals, with among them, the provision of affordable housing.

2) DistritoTec: rethinking urban development



Distrito Tec's area ©Distrito Tec

The DistritoTec project targets a zone of 452 hectares, located around the Instituto Tecnológico y de Estudios Superiores de Monterrey's (ITESM) campus, founded in 1943, in the south of the city.

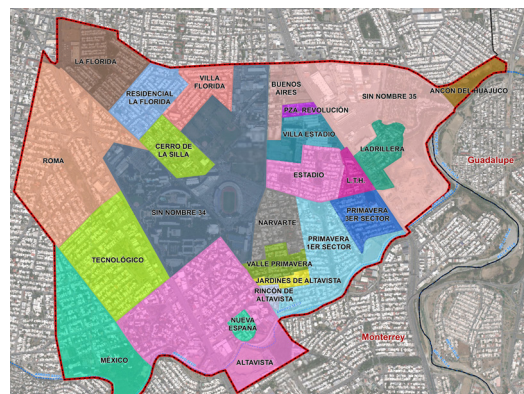
Preliminary studies to regenerate the area started in 2013, following an agreement between the university and the municipality to initiate the DistritoTec initiative, aiming at boosting the local knowledge economy and creating an innovative and dynamic community, that would attract and retain talents.

The project consists of three components:

- Upgrading of the 50 hectares campus itself, which was half underutilized.

In this regard, the Campus Master Plan was presented in February 2014, under a comprehensive vision favouring the connection and of the different campus areas, as well as a better integration with its urban environment.

- Integrating an ecosystem of entrepreneurship, research, and innovation capacities.



Distrito Tec's neighbourhoods

³⁰ <http://www.implancomty.org/plan-de-desarrollo-urbano-del-municipio-de-monterrey/>

- Improving the surrounding area, composed of 24 neighbourhoods, identified as strategic area by the municipality, and thus requiring a specific development programme (programa parcial).

The Monterrey Campus Master Plan was presented in February 2014, under a comprehensive vision favouring the connection and of the different campus areas, as well as a better integration with its urban environment.

A. Establishing a new vision for the neighbourhood

At the beginning of the project, the district was facing the challenges of a decaying area. In 2013, its population was decreasing, with a diminution of 22% in ten years, and ageing, with people over 65 accounting for 13% of the population, compared to 5% in 2003. The proportion of children raised in the area (6-14 years) was decreasing, from 10% (2000) to 7% (2010)³¹. 23% of the houses were abandoned (2010) and infrastructure was ageing. Public spaces were deteriorated, with almost no pedestrian nor cycling infrastructure. The district had indeed been developed around the use of car, and the poor condition of public transportation generated important traffic flows around the university, consequently deteriorating the area's air quality. The growing number of students on the campus was orienting economic, social and real estate services almost exclusively towards students, while security issues in the city resulted into locking the campus with barriers and fences, disconnecting it from the rest of the area with visible frontiers. The combination of these issues led to a growing mistrust feeling from the local population towards the university, which was also suffering from the increasing insecurity in Monterrey in the early 2010's, due to the conflicts between drug cartels and the federal government. In 2010, two students were caught in a cross-fire right outside the campus and lost their lives. This trigger event led the University board to decide between two options, i.e. closing the existing campus and relocating it in a safer area or contributing to improve the conditions in the campus' nearby environment. The decision was made in favour of a close cooperation between the municipality, the neighbours to regenerate the area, as part of the 2020 strategic plan of the University³². The project included both a renovation of campus and its connection to the surrounding area, that would be subject to economic, social and spatial improvements as well. ITESM chose to internalize the project's leadership within the institution and created a dedicated program called "DistritoTec", in the Direction of Infrastructure and Urbanism. Its Director, Mr. José Antonio Torre, reports to the DistritoTec board – specifically created for the project –, to the Rector of ITESM' Monterrey Campus and to the President of Tecnológico de Monterrey. \$500 million have been allocated by ITSEM for the project, which started, by the definition of a masterplan. The US-based architecture and planning practice Sasaki Associates was chosen to design a masterplan which was released in 2014. A public participatory diagnosis with the district's residents was organized in parallel, allowing them to express their concerns about the neighbourhood's situation as well as their needs. The masterplan and the results of this process were then incorporated to the programa parcial³³ which was adopted on November 18, 2015 by ITESM and the Municipality of Monterrey. The overall vision established for the district is quoted below:

"The Tec District is a pedestrian priority area, with accessibility to commerce, equipment and services, vibrant and quality public space, and a diversity of efficient means of mobility. It has a combination of land uses from single-family, multi-family housing, commerce and services, in accordance with the citizens' proposals. Its infrastructure is oriented towards environmental,

31 Data from Distriotec's *programa parcial*

32 <http://sitios.itesm.mx/webtools/planestrategico2020/publico/EN/document/2020StrategicPlan.pdf>

33 <http://implancmty.org/programa-parcial-de-desarrollo-urbano-distrito-tec-2/>

economic and social sustainability, and its operation involved citizen participation, to form a resilient and socially inclusive community. It generates a shared value through a city model based on urban regeneration and the co-responsibility of its inhabitants. It offers a dynamic, safe and inspiring community that attracts and retains talent and drives the development and positioning of Monterrey as a city of innovation, entrepreneurship and sustainability.³⁴

This narrative translates the underlying representation of ITESM as an anchor institution (Maurrasse, 2001) in the district and its will to transform the area into an interconnected space that would act as an economic and social development engine not only for the neighbourhood itself but also for the city. At the core of this vision lies the concept of inclusivity which would be materialized by the vast offer of services and products (amenities, housing, employment, etc.) to the residents and by the institutionalization of the co-construction process developed with the local population. Efforts have therefore been concentrated to develop the neighbourhood councils, that have been associated to the decision-making process throughout both the design and implementation phases. The district is composed of 24 communities, of which 9 are organized in legal community-based organizations and actively participate in the monthly meetings organized by DistritoTec, during which solutions to be implemented are discussed³⁵.

B. Introducing new urban guidelines

Seven strategic lines are identified in the development programme (*programa parcial*), each of them defining a series of actions to be undertaken to contribute to the neighbourhood's regeneration: urban development, public space and image, mobility, infrastructure and equipment, urban control and citizen participation, environment, economic development and innovation. Three principles for the regeneration of the area are also presented:

- Maintain single-family residential areas that have little impact on land uses and seek their regeneration through public space improvements, the permanence of its current inhabitants and the attraction of new families looking for a single-family home.
- In the areas with aptitudes to receive greater density, promote and locate large mixed-uses property developments
- Design, propose and develop management instruments for urban regeneration, public space and citizen participation that allow for long-term sustainability.

These principles highlight the DistritoTec's approach to the main concerns raised by the regeneration initiative among the residents, i.e the risk of gentrifying the area, the growing "studentification" of Tec's surrounding as well as a general increase of building density to would destabilize the neighbourhood. A specific attention is thus paid by the DistritoTec team to avoid population displacements due to increased local land and property values. The district's densification, if needed to attract new residents and offer affordable housing, has also been limited to the minimum requirements as enshrined in the law at the time of the development programme's adoption³⁶.

These elements have been translated into new urban guidelines, that introduce the use of land-value capture tools to encourage a fair redensification of the district. The mechanism of density bonus has been chosen as an option for developers, through which they obtain the possibility to increase the height of their new developments in exchange of the payment

³⁴ Translated from the programa parcial

³⁵ Interview with DistritoTec's representatives

³⁶ Interview with DistritoTec's representatives

of a fee³⁷. Called in the *programa parcial* “optional urban uses”, they target specific areas identified as strategic for redevelopment: the “complete streets” (*calles completas*) and the “urban subcenters” (*subcentro urbano*). In these areas, on a voluntary basis, developers could apply for the density bonus and increase the density potential up to 150 homes per hectare (compared to 95 in 2014)³⁸ as well as the land-use coefficient up to 3.5 (compared to 2.5 currently).

The contribution would be paid by the developers to a trust (*fideicomiso*) established locally in 2019 and administered by representatives of the municipality, ITESM and the neighbour councils. Funds received would be then reallocated to the financing of infrastructure in the district and thus mitigate negative externalities for the residents, generated by the modification of local land uses. During an interview with a local developer, it was mentioned that this mechanism would allow to increase the construction up to 40% and build up to 60% more houses compared to the guidelines applied prior to the *programa parcial*, in exchange of a fee representing 5% of the total project budget that the developer was enthusiastic to pay to the trust, as this mechanism was ensuring an overall improvement of the area³⁹. By involving urban stakeholders benefiting from changes in urban guidelines, these resources would indeed encourage a collective effort towards a more efficient and sustainable use of the public spaces, equipment and infrastructure, while ensuring their refurbishment and/or maintenance. Implementing this mechanism is however not legal yet and requires a change in the Finance Law for Municipalities of the State of Nuevo Leon, described in the previous section of this report. This modification would legalize the use of land-value capture tools by municipal authorities and clarify the formula used to calculate the contribution from developers. It would be the following⁴⁰:

$$PA = SDO * VM^2 * PCT$$

Where:

PA Payment for use

SDO Optional surface and/or density

VM² Cadastral value of the square meter of land

PCT percentage of the land costs

Until its integration in the law, the mechanism of optional urban uses is not applicable, causing delays in the programme implementation, which will undermine the attractiveness of the regeneration project and disincentivize both developers and investors and ultimately impact the opportunity to address local housing needs.

3) Addressing the housing issue: densification and affordability

In 2010, the Tec District had 10,032 houses, of which 6,706 (67%) were inhabited. During the previous decade, the district’s population decreased, and the number of

37 Section III of this report details land-value capture mechanisms and their consequences on urban development.

38 In the 2020 update of the *programa parcial*, the density potential will be increased up to 250 homes per hectare, to comply with the current Mexican regulation.

39 Estimations mentioned in an interview conducted with a development company involved in DistritoTec.

40 Acronyms are not translated from Spanish, only their related definition

inhabited houses followed this trend, going from 7,472 units to 6,706, a reduction of 10.15%. 3,326 homes were identified as uninhabited according to the 2010 Census. In 2014, the district had a density of 22.19 houses per hectare, below national and international standards of 150 houses per hectare⁴¹. Repopulating the area is thus one of the inherent goals of the redevelopment programme, achievable through redensification of the main urban corridors and former industrial areas according to the new urban guidelines presented in the previous subsection. If applied, housing units would increase from 3,814 to 6,022 units along the urban corridors that could absorb additional infrastructure, as mentioned in the following table⁴²:

Cuadro 19. Vialidades sujetas a la estrategia de regeneración urbana.

CALLE COMPLETA	ÁREA	DENSIDAD DE VIVIENDA			NÚMERO DE VIVIENDAS			
		DENSIFICABLE	ACTUAL	PROGRAMA VIGENTE	PROGRAMA PARCIAL (condicionado)	ACTUAL	PROGRAMA VIGENTE	PROGRAMA PARCIAL (condicionado)
2 DE ABRIL	17,779.51		15	95	150	27	169	267
AVENIDA DEL ESTADO	43,924.39		15	95	150	66	417	659
RICARDO COVARRUBIAS	44,157.29		15	95	150	66	419	662
RÍO PÁNUCO	44,973.18		20	95	150	90	427	675
JUNCO DE LA VEGA	73,264.83		15	95	150	110	696	1,099
RÍO PÁNUCO - RÍO AGUANAVAL	75,095.06		15	95	150	113	713	1,126
FERNANDO GARCÍA ROEL	16,173.90		15	95	150	24	154	243
LUIS ELIZONDO	86,089.89		15	95	150	129	818	1,291
TOTAL GENERAL: VIVIENDAS	401,458.05					625	3,814	6,022
POBLACIÓN (3 HABITANTES/ VIVIENDA)						1,874	11,442	18,066

Fuente: Urbis Internacional 2015, con base en zonificación actual y propuesta.

In each former industrial area (*subcentro urbano*) targeted by the redevelopment programme, the construction of new housing units could reach up to 6,399 units, as presented in the table below⁴³

Cuadro 21. Densidad de vivienda estimada aplicando la estrategia de regeneración. SÍNTESIS DEL PRONÓSTICO

USOS DE SUELO	Habitacional		Habitacional mixto ligero	Habitacional mixto medio	Habitacional multifamiliar	Habitacional unifamiliar	Mediano (Impacto)	Servicios y comercio	Subcentro urbano	Total general	Porcentaje
	Alto Impacto	mixto intenso									
DENSIDAD	150	150	67	83	67	30	105	150	150		
ALTAVISTA	945	2,167	209	-	225	375	-	-	-	3,922	12.66%
ANCÓN DEL HUAYUCO	-	-	-	-	258	-	-	-	-	258	0.83%
BUENOS AIRES	-	-	-	139	-	-	-	-	578	717	2.32%
CERRO DE LA SILLA	-	525	-	-	-	88	-	-	-	613	1.98%
ESTADIO	-	254	409	11	-	-	-	-	-	675	2.18%
JARDÍN DE ALTAVISTA	-	41	95	-	-	-	-	-	-	135	0.44%
I.T.H.	105	37	38	-	-	-	-	-	121	300	0.97%
LA PRIMAVERA	98	195	4	-	-	512	-	-	-	808	2.61%
LADRILLERA	-	-	-	505	-	-	-	-	180	686	2.21%
MÉXICO	-	2,196	-	-	-	197	-	-	-	2,393	7.73%
NARVARTE	-	213	361	-	-	-	-	-	-	573	1.85%
PLAZA REVOLUCIÓN	-	-	-	-	115	-	-	-	-	115	0.37%
RESIDENCIAL FLORIDA	409	164	-	-	-	208	118	-	-	899	2.90%
RINCÓN DE ALTAVISTA	-	44	-	-	-	12	-	-	-	56	0.18%
ROVA	373	854	-	-	-	495	-	735	-	2,456	7.93%
SIN NOMBRE DE COLONIA 34	331	67	-	-	-	15	-	338	6,106	6,857	22.14%
SIN NOMBRE DE COLONIA 35	-	-	-	25	234	-	38	-	4,730	5,028	16.23%
TECNOLÓGICO	400	1,532	-	-	281	61	-	-	-	2,274	7.34%
VALLE DE LA PRIMAVERA	-	39	112	-	86	-	-	-	-	238	0.77%
VILLA ESTADIO	-	-	-	-	105	-	-	-	1,182	1,286	4.15%
VILLA FLORIDA	-	209	-	-	-	291	180	-	-	680	2.20%
TOTAL GENERAL	2,662	8,535	1,228	681	1,305	2,252	337	1,073	12,897	30,970	
PORCENTAJE	8.59%	27.56%	3.96%	2.20%	4.21%	7.27%	1.09%	3.47%	41.64%	100.00%	
POBLACIÓN (3 HAB/ VIV.)	7,986	25,606	3,684	2,042	3,916	6,757	1,010	3,220	38,692	92,911	

Fuente: Urbis Internacional 2015, cálculos propios con base en zonificación actual y propuesta.

According to the redensification goals, the district would have a housing capacity of 30,970 units, and an estimated population of 92,911 (calculation based on an average of three residents per housing unit). Considering the district's surface of 452 hectares, such process would result into a density of 68.46 homes and 205 inhabitants per hectare⁴⁴.

41 Data from Distriotec's *programa parcial*

42 Extract from the *programa parcial*

43 Extract from the *programa parcial*

44 Estimation presented in the *programa parcial*

Attracting new residents requires however to diversify the offer of housing units for potential families and ensure their affordability in the long term. A real estate survey was carried out in 2014 targeting the south of Monterrey, and within the Tec district, to ensure the programa parcial's adaptation to local needs. Results showed that the cheapest housing offered in the area had a value of \$ 1,346,000 pesos, but most of the offer is located between \$ 1,943,000 and \$ 5,080,000 pesos. At that time, prices range in the Tec district was going from \$ 2,620,000 MXN to \$ 4,900,000 MXN, except for vertical developments offering housing units at a price of \$ 2,000,000 MXN⁴⁵. According to the programa parcial, in 2013, 95% of the city's population had a monthly income of less than \$ 11,000 MXN, which had a great impact on the local purchasing power and the housing demand. The latter had also been analysed, showing a potential market for Monterrey South of 3,079 units per year, of which, due to the lack of adequate supply, only 1,499 units would effectively remain locally. The Tec district could only capture a small share of this potential demand: 323 homes as indicated in the following table⁴⁶:

Cuadro 14. Análisis de mercado potencial de vivienda para el Distrito Tec.

NIVELES DE INGRESOS PROMEDIO/CLASIFICACIÓN		DEMANDA ANUAL POTENCIAL Y EFECTIVA		CRECIMIENTO					
NIVEL SALARIAL	ITEMS	ZONA SUR	TOTAL	DEMANDA POTENCIAL	EFECTIVIDAD DE LA DEMANDA	DEMANDA EFECTIVA TOTAL	PORCENTAJE DE CAPTACIÓN	DEMANDA EFECTIVA	DISTRITO TEC
Menos de \$10,000	INTERES SOCIAL	224	1,257	1,481	0.3	444.3	0%	-	-
\$10,000 a \$20,000	MEDIA ECONÓMICA	153	805	958	0.5	479.0	30%	144	144
\$20,000 a \$30,000	MEDIA	10	141	151	0.9	135.9	30%	41	41
\$30,000 a \$40,000	MEDIA ALTA	-	329	329	0.9	296.1	30%	89	89
\$40,000 a \$50,000	MEDIA RESIDENCIAL	41	37	78	0.9	70.2	40%	28	28
\$50,000 a \$60,000	MEDIA RESIDENCIAL ALTA	10	50	60	0.9	54.0	40%	22	22
mas de \$60,000	RESIDENCIAL	10	12	22	0.9	19.8	0%	-	-
TOTAL		448	2,631	3,079		1,499.3		323	

Fuente: Urbis Internacional, 2014 con base en información del ITESM, INEGI y URBIDATA.

Such analysis showed an asymmetry between the local housing offer and demand, which requires cheaper for-sale housing units, especially while trying to attract young families or young professionals.

A rental offer had simultaneously been developed within the district, targeting notably ITESM students. It would consist of large apartments (3 to 4 rooms) subdivided and shared between several students, ensuring them the possibility to live within a short distance from the university at an affordable price. 2014 prices are summarized in the following chart⁴⁷:

Cuadro 13. Análisis de la oferta en arrendamiento.

COSTO MENSUAL	\$ POR PERSONA	\$ POR RECÁMARA	RECÁMARAS PROMEDIO	MAX PERSONAS PROMEDIO	\$ CASA	OFERTA	PORCENTAJE DE LA OFERTA
< 3,000	\$ 2,229	\$ 2,772	2.34	2.90	\$ 5,680	119	54%
3,001-5,000	\$ 4,087	\$ 4,115	2.03	2.15	\$ 8,812	75	34%
5,001-7,000	\$ 6,698	\$ 6,815	1.63	1.70	\$ 11,061	27	12%
7,001 >	\$ 9,147	\$ 9,147	1.29	1.29	\$ 11,789	7	3%
TOTAL	\$ 3,406	\$ 3,722	2.14	2.50	\$ 7,401	221	100%

Fuente: URBIDATA 2014.

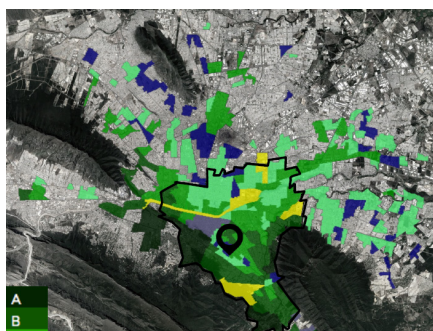
⁴⁵ Data from the *programa parcial*

⁴⁶ Ibid.

⁴⁷ Ibid.

To understand current local trends and the potential local demand, a market analysis has been carried out in 2019-2020. This section will comment on the results (A) which are not considering the potential effect of the COVID-19 crisis on the economic situation on Monterrey's households. Current development on housing in the district will then be presented (B).

A. Understanding the current market potential



Household distribution according to socioeconomic level ©Prospéria

3 market segments have been analysed to understand the potential housing demand in DistritoTec, according to a socioeconomic classification establishing seven households categories, based on their revenues. Categories are the following:

- A: household income of more than 200,000 MXN
- B: household income from 90,000 to 200,000 MXN
- C+: household income from 40,000 to 90,000 MXN
- C: household income from 17,000 to 40,000 MXN
- D+: household income from 10,000 to 17,000 MXN
- D: household income from 4,000 to 10,000 MXN
- E: household income of less than 4,000 MXN.

The following chart summarizes the composition of each market segment⁴⁸:

Market type	Zone	Socioeconomic composition	Population represented	Market size (sale & lease)	Market size (sale & lease) - threshold of 2 million MXN as unit value
Influence area 132,318 households	20 min from ITESM	B:122,615 income/H: 22% C+/66,478 income/H: 27.8% C/30,284 income/H: 29.6%	25-49: 33% 50-59: 15% +60: 15%	844 households	463 households
Catchable market 187,894 households	+ 20 min from ITESM Include ITESM employees	C+/64,705 income/H: 19.1% C/24,509 income/H: 52.2% D+/14,773 income/H: 20.7%	18-24: 13% 25-49: 35% 50-59: 13%	843 households	692 households
ITESM employees 6,266 employees	4,931 full-time employees	C/25-29,999 income/H: 30.1% D+/10-14,999 income/H: 20.3% D/5-9,999 income/H: 32.0%	31-40: 30.4% 41-50: 33.9% 51-60: 25.7%	4,931 employees	3,417 employees

The “influence area” market represents the households living within a twenty-minute ride from the district, while the “catchable market” represents the households living further than a twenty-minute ride of the district and includes ITESM employees (who may live further away from the university). Both groups have an annual growth rate of 0.9%, represented by new families, according to the survey, while the ITESM employees market doesn't grow annually. Depending on household sizes, the following recommendation on unit sizes are established⁴⁹:

⁴⁸ Combination of data from the market analysis

⁴⁹ Extract from the market analysis

MERCADO ÁREA DE INFLUENCIA		
HOGARES FAMILIARES	HOGARES	
Nucleares	65%	74,846
Ampliados	31%	35,241
Compuestos	4.2%	4,778
Total	87%	114,865
HOGARES NO FAMILIARES		
Unipersonal	83%	14,451
Corresidentes	17%	3,002
Total	13.2%	17,453
NO. RECAMARAS	HOGARES	
1 rec	14,451	11%
2 rec	77,848	59%
3 rec	40,019	30%
4 rec	-	0%
Total	132,318	100%

MERCADO CAPTABLE		
HOGARES FAMILIARES	HOGARES	
Nucleares	65%	106,283
Ampliados	31%	50,042
Compuestos	4%	6,785
Total	87%	163,111
HOGARES NO FAMILIARES		
Unipersonal	83%	20,570
Corresidentes	17%	4,213
Total	13%	24,783
NO. RECAMARAS	HOGARES	
1 rec	20,570	11%
2 rec	110,496	59%
3 rec	56,828	30%
4 rec	-	0%
Total	187,894	100%

MERCADO COLABORADORES ITESM		
HOGARES FAMILIARES	HOGARES	
Nucleares	65%	2,789
Ampliados	31%	1,313
Compuestos	4.2%	178
Total	87%	4,281
HOGARES NO FAMILIARES		
Unipersonal	83%	539
Corresidentes	17%	112
Total	13.2%	650
NO. RECAMARAS	HOGARES	
1 rec	394	8%
2 rec	937	19%
3 rec	2,712	55%
4 rec	888	18%
Total	4,931	100%

For the first two markets, the most important demand targets 2-bedrooms apartments, of which the size is estimated between 80 to 100 m². 30% of each respective market would require 3-bedrooms apartments, with a size from 110 to 130 m². According to these estimations, recommendations are established on the distribution of units within potential new buildings, depending on the estimated sizes. Prices are also given, for both for-sales units and rental. The following table gives an overview of the overall recommendation⁵⁰:

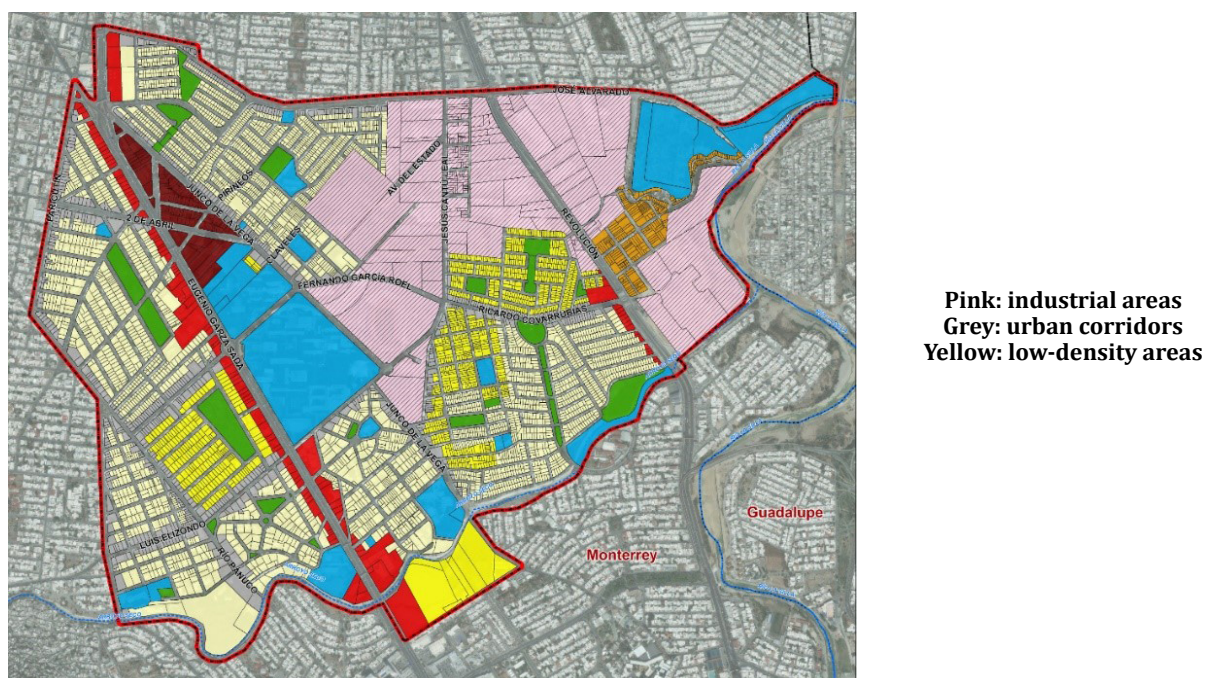
Apartment size	Distribution in the building	Market conditions	Influence area market	Catchable market
60	38% (influence) 43% (catchable)	For-sale price	2,280,000	1,920,000
		Rental price	11,400	9,600
		Household income	67,364	56,728
80	37% (influence) 33% (catchable)	For-sale price	3,000,000	2,520,000
		Rental price	15,000	12,600
		Household income	88,637	74,455
110	19% (influence) 9% (catchable)	For-sale price	4,070,000	3,300,000
		Rental price	20,350	16,500
		Household income	120,251	97,501
140	5% (influence) 8% (catchable)	For-sale price	5,110,000	4,130,000
		Rental price	25,550	20,650
		Household income	150,979	122,024
160	1% (influence) 8% (catchable)	For-sale price	5,760,000	4,640,000
		Rental price	28,800	23,200
		Household income	170,184	137,093

The apartment mix presented by the market analysis reflects both the demand from the market and the ability to pay for each product from socioeconomic groups represented in each market segment. Small size units – from 60 to 100 m² – represent most of the

⁵⁰ Combination of data from the market analysis.

Household incomes mentioned in the table are however related to the higher part of the socioeconomic categories of each market segment, which questions the affordability of the recommended units. For instance, the most represented socio-economic level in the catchable is category C, with an income per household of 24,509 MXN. If housing affordability shouldn't exceed 30% of the household income⁵², the rental price of the 60m² apartment (9,600) still represents 39.1% of budget. Small size units are thus not equivalent to more affordable units for low-income households and might not fit their needs: the most demanded units of the catchable market segments have two bedrooms (minimum size of 80m²), while the 60m² only offers one. Affordable prices will thus require a dedicated strategy to ensure adequate prices while maintaining a reasonable size per unit, to address the needs of the targeted population.

B. Current housing development in DistritoTec



In the update of the redevelopment programme, DistritoTec is considering three different kinds of areas that could be subject to regeneration and housing units production, with an overall goal of diversifying the housing unit offer and including affordable products. Targeted areas, namely the former industrial zones (*subcentro urbano*), main roads or urban corridors and low-density neighbourhoods are identified on the following map⁵³:

The following chart indicates the current land prices (areas' names in bold) close to the targeted areas:

51 To be further explained in the next subsection.

52 As mentioned in the National Housing Programme 2019-2024.

53 Map from the *programa parcial*

Neighborhoods	Lot size in sqm	Minimum value in MXN pesos per sqm	Maximum value in MXN pesos per sqm
Altavista	300	\$ 6,600.00	\$ 7,100.00
Ancón del Huajuco	80	\$ 5,830.00	\$ 6,030.00
Buenos Aires	200	\$ 5,390.00	\$ 5,890.00
Buenos Aires El realito	220	\$ 4,180.00	\$ 4,480.00
Cerro de la Silla	200	\$ 4,730.00	\$ 5,230.00
Estadio	160	\$ 5,830.00	\$ 6,430.00
Fraccionamiento Florida (Florida)	200	\$ 6,710.00	\$ 7,110.00
Jardines de Altavista	180	\$ 5,500.00	\$ 6,000.00
Ladrillera	112	\$ 4,620.00	\$ 5,020.00
LTH	ND	ND	ND
México	500	\$ 4,840.00	\$ 5,640.00
Narvarte	200	\$ 4,620.00	\$ 5,220.00
Nueva España	160	\$ 5,280.00	\$ 5,780.00
Plaza Revolución	ND	ND	ND
Primavera	250	\$ 6,600.00	\$ 8,300.00
Residencial Florida (Residencial La Florida)	250	\$ 6,050.00	\$ 7,050.00
Rincón de Altavista	ND	ND	ND
Roma	420	\$ 7,150.00	\$ 7,650.00
Tecnológico	200	\$ 7,150.00	\$ 8,450.00
Valle Primavera	200	\$ 6,930.00	\$ 8,230.00
Villa Estadio	110	\$ 5,500.00	\$ 6,100.00
Villa Florida	180	\$ 6,050.00	\$ 7,050.00

Current land prices are challenging the opportunity to provide affordable housing units in the district, as their value is on average twice, even three times for zones like Roma or Tecnológico the value of land plots in Monterrey's peripheral areas where most of the social housing is being built⁵⁴. Addressing this issue and ensuring affordability in the redeveloped areas therefore requires a combination of incentivizing economic opportunities for investors and developers while maintaining a diversity of housing offer for all budget. Three types of projects are being considered:

- Large condominiums to be built on former large industrial areas identified as *subcentro urbano*, which would be conditioned to the submission of a dedicated masterplan. These large mixed-use redevelopment projects could include commercial areas, combined with housing, offices and even hotels.
- Redevelopment projects on main urban corridors (main roads), which could be targeted for mixed-use redevelopment projects including commercial spaces on the ground floor and offices and/or housing units on the floors above.

These projects are targeted by the new urban guidelines and the conditional density increase, requiring developers to pay the density bonus fee to trust. Funds received from those projects would then be allocated to refurbish infrastructure that would be needed to absorb the potential population increase in the neighbourhood. Potential negative externalities should also be analysed, such as an increase in traffic congestion combined with a deteriorated air quality, the improvement of green infrastructure, the integration within the current district's landscape or the land-value increase in the area

⁵⁴ Data obtained during an interview conducted for this research

that would threaten the living conditions of low-/middle-income households living in the surroundings.

The capacity of these new development projects to offer affordable housing units is also questioned, in regard with the perspective given by the market analysis presented previously. One of the first new project to developed in DistritoTec, is named La Fabrica⁵⁵. It is a mixed-use development, including 18 apartments, 6 townhouses, 7 commercial spaces and more than 1,200 m² of offices. Apartment sizes vary from approximately 100 to 120 m² (3-bedrooms), with a price range from 3,934,455 to 4,589,760 MXN. These prices are corresponding to those recommended from 110 to 160m² apartments and could be afforded by only 26% of households from the influence area market and 25% of the households from the catchable market. These units might nevertheless represent a good option for groups of students who could rent rooms and obtain a well-located living place of a large size. Such operation would necessitate a prior investment to acquire the flat and subdivide it to create rental offers, as the project's developer is not keeping any shares in the building after the development completion. This option might however affect the local acceptance of these projects, since students are staying temporarily in the neighbourhood and do not necessarily contribute to build a community feeling on the long term, which was one of the concerns raised during the participatory diagnosis of the district in 2014. On the other hand, such project is applying the conditional density, resulting into a fee of approximately 5,000,000 MXN to be paid to the trust (5% of the project's budget), which would contribute to improve the district's infrastructure⁵⁶. As the project is currently on hold due to regulatory reason, it is not possible yet to analyse the allocation of the funds and thus the overall impact of such project on the neighbourhood's general affordability.

- Small-size redevelopment project within low-density neighbourhoods, in the form of residential infill which would allow local households to rent an additional space on their property.

This option would provide additional income to local households, avoid potential displacement of low-income families throughout the regeneration process and potentially provide an alternative and affordable option to single-person households. It requires however to analyse the requirements and effects of this policy and to clarify the regulation on this matter, especially regarding rental offers. Infrastructure capacity (water, sewage) would need to be evaluated to ensure its ability to absorb additional residents. Mobility solutions, especially parking spaces, would require to be analysed.

⁵⁵ <https://www.wiseandgrow.com/lafabrica>

⁵⁶ Amount mentioned during the interview with the project's developer.

Key takeaways

- Shaped by its strong industrial activities, Monterrey's urban form is characterized by a massive urban footprint (679,396 hectares) compared to its population (4,689,601). The city is also Mexico's first producer of social housing, mostly located in peripheral locations.
- In 2012, ITESM initiated the regeneration of its campus and the surrounding 24 neighbourhoods under the name of "DistritoTec". The project aims to reconnect the campus to the area by encouraging its economic, social, cultural and spatial regeneration. The principle of inclusivity is central to ITESM's approach, with a focus on providing affordable housing to mitigate gentrification and avoid population's displacement.
- There is an asymmetry between the local housing offer and demand, which requires cheaper for-sale housing units, especially while trying to attract young families or young professionals. Market analysis also shows that small size units (from 60 to 100 m²) represent most of the demand for units for the Tec district, contrasting with the current offer, which tends to start from 100m² units.
- DistritoTec is considering three different kinds of areas that could be subject to regeneration and housing units production, with an overall goal of diversifying the housing unit offer and include affordable products: former industrial areas, major urban corridors and low-density residential areas.
- The mechanism of density bonus has been included in the development programme aims at ensuring a fair contribution from all stakeholders involved in the project and benefitting from the general improvement of the area. A trust has been created to gather the resources. The neighbourhood's redensification could thus finance infrastructure and housing locally.

Providing affordable housing – Comparative analysis of solutions implemented worldwide

The research presented in this chapter addresses the double challenge faced by DistritoTec in terms of promoting redensification while increasing the affordable housing offer through innovative financing solutions. The former refers to a broader strategy of urban consolidation, also called “compact city”, which promotes containment of the urban area through the revitalisation of inner cities where would be relocated job opportunities, commercial activities and housing. Achieving redensification must thus be accompanied by an increase of housing production within the urbanized area and policies to ensure its affordability.

The following sections thus aim at exploring financing mechanisms to support affordable housing development in the framework of urban regeneration projects. First, case studies addressing financial incentives for developers, namely density bonuses and charges for additional building rights, through two case studies in Toronto, Canada, and Sao Paulo, Brazil. Will be presented. Both tools relate to the introduction of “the collection of rights linked to additional urban uses/developments” mentioned in DistritoTec’s proposal to reform the Law of Finance for the municipalities in the State of Nuevo Leon. Second, broader affordable housing policies such as inclusionary housing programmes are being considered before focusing on mechanisms aiming at transforming the development of residential housing. Solutions developed at building scale combined with alternative tenure options will be examined.

A comparative analysis between the different proposed solutions will identify the required regulatory environment, the benefits, issues and consequences on the urban fabric inherent to their implementation.

1) Land-value capture-based solutions

A. Definitions

Land-value capture can be defined as “an array of public finance instruments and initiatives that enable communities to recover and reinvest land value increases resulting from public investment and other government actions” (Germán and Bernstein 2018).

Land-value capture tools can also be used as a direct urban planning instrument to promote density, improve public spaces that increase property values, and mandate social housing in new development areas. These benefits can stimulate a city’s economic competitiveness, mitigate environmental problems, and promote social justice by distributing benefits of land value increases in an equitable manner.

Among the 6 main land-value capture mechanisms, this section will consider the following:

- **Density bonuses:** an incentive-based tool that permits a developer to increase the maximum allowable development on a site in exchange for either funds or in-kind support for specified public policy goals. This tool works best in cities in which market demand is strong and land availability limited, or for projects or sites in which the developer’s financial incentives outweigh alternative development options. Density bonuses have been used to promote, among other policy goals, environmental conservation, public spaces, and production of additional units of low-income (or “social”) housing⁵⁷.

⁵⁷ Definition by the World Bank, available here: <https://urban-regeneration.worldbank.org/node/20>

- **Charges for additional building rights:** fees paid to the municipality by developers, to fund infrastructure or other public improvements in return for the right to develop land above a basic Floor Area Ratio (FAR), up to the maximum the area can support. The mechanism is based on the idea that to support additional building rights, the public sector must invest in urban infrastructure and cannot favour one property over another when granting such rights, allowing all landowners to share the benefits resulting from public interventions (Mahendra and al., 2020). A derivative of this tool has been implemented in Sao Paulo, Brazil, as Certificates of Additional Construction Potential, or CEPACs.

B. Case studies⁵⁸

1. Toronto

- Context and regulatory environment

Density bonusing was introduced into planning policies in the early 1990's. The province of Ontario reviewed its Planning Act and referred to this land-value tool in its "section 37". It allows developers to exceed height and density restrictions in exchange for *facilities, services or matters*, through cash contribution or amenities. If the Planning Act does not specify the type of facilities that can be requested through Section 37 agreements, it is nevertheless specified that each city must establish an official plan including bonusing provisions as well as a list of community benefits.

The City of Toronto introduced this mechanism in its 1993 Official Plan under the same designation (Section 37). In its 2015 edition, the Plan specifies the conditions of application: "Section 37 may be used for development, excepting non-profit developments, with more than 10,000 square metres of gross floor area where the zoning by-law amendment increases the permitted density by at least 1,500 square metres and/or significantly increases the permitted height".

The community benefits related to Section 37 – capital facilities or cash contributions – are also listed in the Policy n°6⁵⁹. Few of them relate to the financing of housing facilities within the city:

- Heritage Conservation according to the City of Toronto Inventory of Heritage Properties
- Fully furnished and equipped non-profit child care facilities
- Public art
- Other non-profit arts, cultural, community or institutional facilities
- Parkland, and/or park improvements
- Public access to ravines and valleys
- Streetscape improvements on the public boulevard not abutting the site
- Rental housing to replace demolished rental housing, or preservation of existing rental housing
- Purpose built rental housing with mid-range or affordable rents, land for affordable housing, affordable ownership housing, or, at the discretion of the owner, cash-in-lieu of affordable rental or ownership units or land
- Rented residential condominium unit or units, provided the units:
 - o Are contributed by a share capital corporation;

⁵⁸ Key source: *Land Value Capture and Social Benefits: Toronto and Sao Paulo compared*, Abigail Friendly, IMFG Papers on Finance and Governance, n°33, 2017

⁵⁹ Listed in the Toronto 2015 Official Plan, Chapter 5.1

<https://www.toronto.ca/wp-content/uploads/2017/11/99b3-cp-official-plan-volume-1-consolidation.pdf>

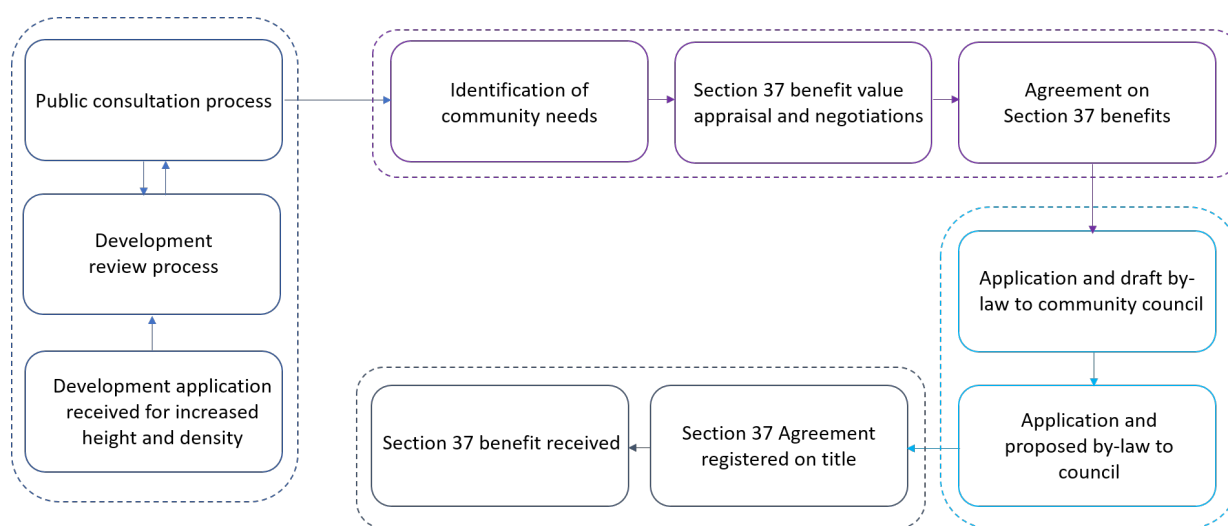
- Are owned and operated, in accordance with City guidelines, by a not-for-profit housing corporation satisfactory to the City

No specific formula is given by the Planning Act to estimate the contribution; it is rather determined through a project-based negotiation between the municipality and the developer. It seems that this option was chosen to avoid both developer's opposition to the mechanisms and potential legal issues if the formal would have been considered as an illegal tax in court.

- Implementation

Although the Planning Act does not specify where benefits should be located, the Ontario Municipal Board has determined that there must be a “nexus” or “an appropriate geographic relationship between the secured community benefits and the increase in height and/or density in the contributing development”.

The following diagram⁶⁰ explains the section 37's process, which is initiated when a developer submits an application requesting more height and density than the zoning limits allow.



Section 37 – implementation process

4 major steps are identified:

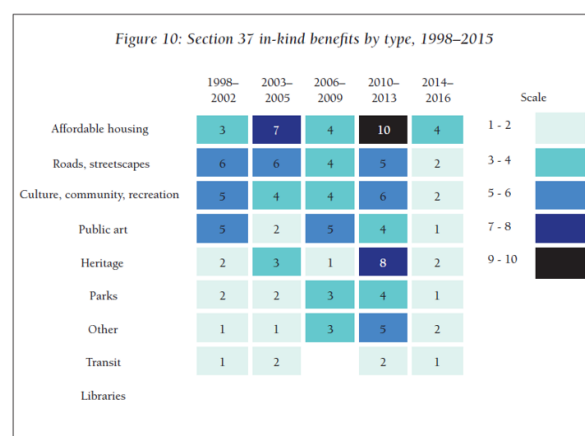
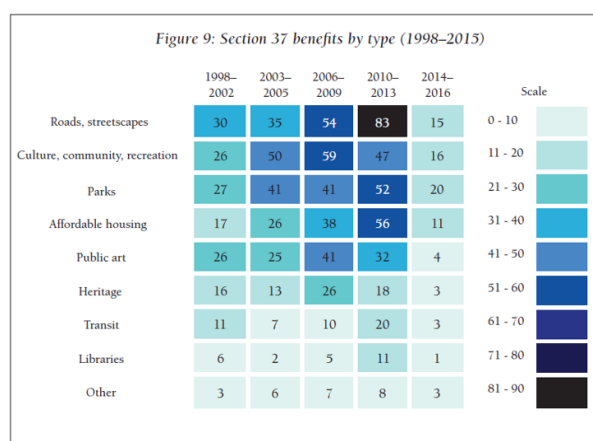
- Following the developer's application requesting an increase in height and density, the City planning department initiates a review process. As part of this process, public consultations with residents and the Ward Councillor are conducted, allowing to discuss potential benefits from the new developments for the community. If the increased height and density meet the thresholds/policies specified in the Official Plan, Section 37 conditions will apply to the project.
- Section 37 benefits are negotiated on a case-by-case basis between City planning and developers. The Ward Councillor, the community and other relevant city departments are part of the negotiation, during which the City aims at capturing part of the estimated value of the density increase. If an agreement on section 37 conditions is reached, a general agreement is finalized as a condition of the

⁶⁰ Based on the implementation process explained in the city brochure: https://www.toronto.ca/wp-content/uploads/2017/09/8e38-SECTION37_Final_JK.pdf

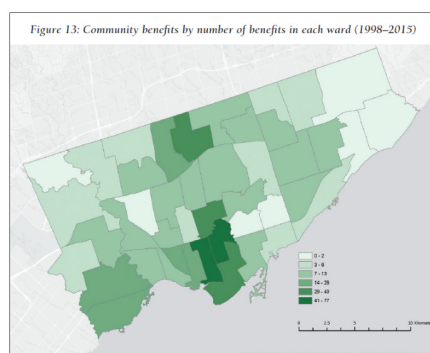
development application's approval.

- The local Community Council must then express its opinion on the development application and the related section 37 benefits. If it is approved, it is sent back to the City Council for the final approval.
- After approval by City Council, the proposed Section 37 benefits are considered “secured” and City staff prepare an agreement for the applicant and the City to enter into. Under such an agreement, the developer is legally bound to provide the benefits at a future date. They are considered received once the developer has paid its cash-in-lieu or has delivered the benefits to the community.
- **Benefits raised and allocation**

Between 1998 and 2015, the Section 37 mechanism helped to raise over CAD\$400 million, without including in-kind benefits, which cannot be quantified. Section 37 began to steadily increase from 2006, due to a surge experienced in residential development from 2005. Regarding its allocation, analysis points out that the major part of the cash benefits was allocated to roads, streetscape, public arts and parks. Regarding in-kind benefits, it seems that affordable housing provision was the recipient of most agreements. The two following diagrams (Friendly, 2017) provide a clear overview of both in-cash and in-kind benefits allocation through Section 37 agreements:



Between 1998 and 2015, the City of Toronto entered into 926 Section 37 agreements across 43 city wards. The following map (Friendly, 2017) points out the location of the community benefits over the same period:



Looking at the map, it is clear that most of the section 37 benefits have been allocated to Downtown Toronto, as well as in Yonge Street in the North and some wards in the south-west of the city. The fact that benefits must be geographically allocated close to redevelopments, according to the Planning Act, these results are not surprising.

2. Sao Paulo

- Context and regulatory environment

In Brazil, the 1988 Federal Constitution introduced the principles of land-value capture, which was later regulated by the 2001 City Statute (Estatuto da Cidade). The City of Sao Paulo has been using land-value capture since 2004, following the introduction, in its 2002 Strategic Master Plan and its 2004 Land Use Law, of the *Outorga Onerosa do Direito de Construir* (OODC) or charges for additional building rights. Thanks to this tool, city authorities can generate revenue by charging developers for new building rights.

In its 2014 masterplan, the City of Sao Paulo instituted a basic Floor Area Ratio (FAR) of 1 throughout the city, under the assumption that any increase in density belongs to society and gains related to this increase should thus be reversed to the community. To address two major issues related to housing deficit and urban sprawl, the city established a maximum FAR of 4 in some areas of the city, mostly alongside transit corridors and special zones in informal settlements, to encourage development in these areas (Friendly, 2017).

- Implementation

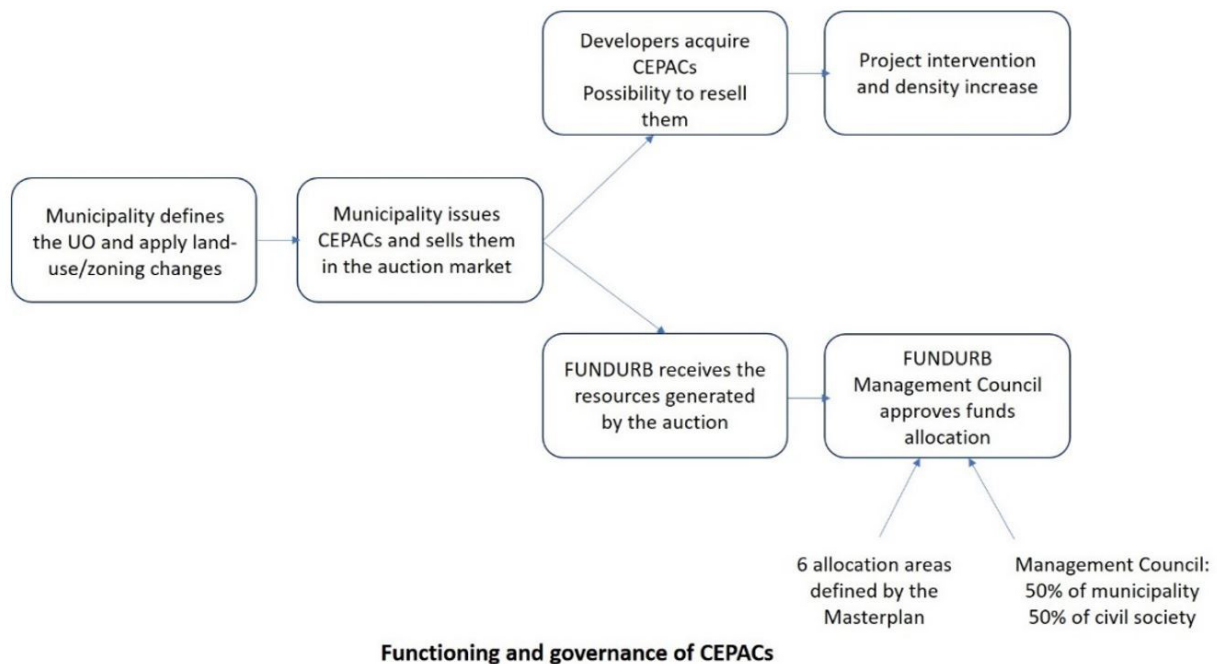
Sao Paulo has been using a derivative of OODC, called Certificate of Additional Construction Potential (CEPACs), which are “charges” or bonds (even though it is not a debt instrument) issued by the municipality and auctioned in the stock market. CEPACs have been developed to support large-scale urban redevelopment projects implemented in the framework of “Urban Operations” (UO). UOs are designated redevelopment zones within a city, where local governments are given the authority to undertake major transformations with the goal of attracting private investments. To attract and incentivize private investments, UOs enable local governments to modify land uses and zoning in areas offering additional private development potentials (Kim, 2018).

A CEPAC is equivalent to a unit of developable space tied to a specific UO. Each CEPAC grants the buyer a development right for the designated unit space, which can be exercised only within the UO for which the CEPAC was issued. The total number of certificates is limited and relates to the total additional developable space that the UO can support in accordance with the Master Plan. The CEPAC owner can either convert the charge into additional building rights or can resell it in the stock market. CEPACs are subject to regulation and monitoring by the Brazilian Securities and Exchange Commission.

Resources generated through the CEPACs sale are deposited into an urban development fund called FUNDURB – or escrow account – according to the City Statute. The funds are managed by the FUNDURB’s management council, which is composed of representatives of the public administration and civil society. Sao Paulo’s 2014 Masterplan defines 6 types of benefits for which FUNDURB’s resources can be allocated: social housing, urban

mobility, urban infrastructure, community equipment & public space, historical heritage and environmental heritage.

The following diagram summarizes the functioning and the governance of CEPACs:



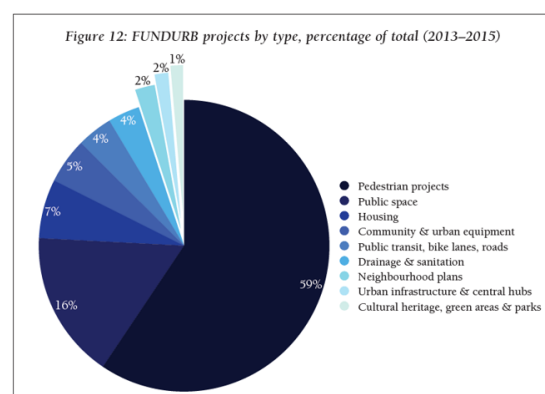
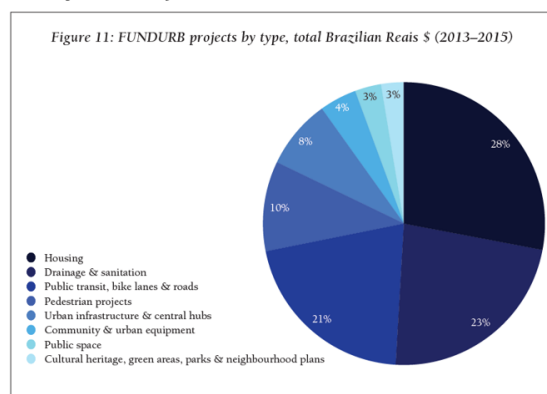
- Benefits raised and allocation

In Sao Paulo, between 2004 and 2015, OODC – and CEPACs – generated R\$1.9 billion (about CAD\$ 712 million). In addition to the six priorities mentioned in the Masterplan, several additional criteria of eligibility apply to FUNDURB’s funds allocation:

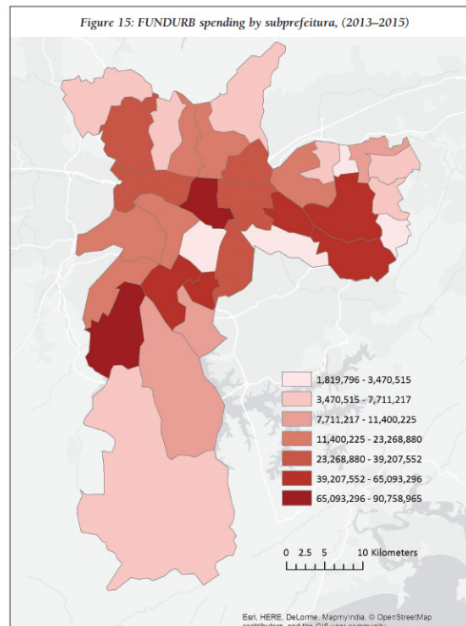
- Projects resulting in local impacts for neighbourhoods’ development
- Reference projects (can serve as model) inducing urban and social development
- Projects linked to program goals

Additionally, 30% of funds must be allocated to social housing in dedicated areas and 30% must fund mobility projects (bus, bicycle lanes or sidewalks improvements).

The following diagrams represents the FUNDURB’s funds allocation over the period (Friendly, 2017):



As the OODCs are included in a city-wide redistributive policy implemented by the City, FUNDURB resources were geographically allocated in a relatively homogenous way within the area, as shown in the map below (Friendly, 2017):



2) Affordable housing policies

A. Definitions

Inclusionary housing programmes refer to local policies tapping the economic gains from rising real-estates prices to create affordable housing. Such programmes tie the production of homes for low- and moderate-income households to the construction of market-rate residential and/or commercial development projects. These policies require developers to sell or rent from 10 to 30% of the newly-built units to lower income residents. In compensation, local authorities can offer incentives to developers helping to partially offset the construction costs of affordable units, such as density bonus. They might also pay an in-lieu fee or provide affordable units on another development site within the same urban area.

Infill refers to the (re)development of vacant parcels within previously built areas. These areas are already served by public infrastructure, such as transportation, water, wastewater, and other utilities. The strategy is to fill in “gaps” in communities and develop parcels left available by low density developments. According to the American Planning Association⁶¹ in its policy guide on smart growth, infill (re)development can result in:

- Efficient utilization of land resources
- More compact patterns of land use and development
- Reinvestment in areas that are targeted for growth and have existing infrastructure
- More efficient delivery of quality public services

In the case study developed below, Infill is addressed through the legalisation of additional dwelling units on single-house parcels.

By addressing critical housing needs stock for low- and moderate-income residents, both

⁶¹ <https://www.planning.org/policy/guides/adopted/smartgrowth.htm>

policies aim at promoting the economic vitality of the targeted neighbourhoods, create racial and economic diversity, increase opportunities for families to have great access to community amenities and live closer to employment centers, and contribute to the overall quality of life of the entire community.

B. Case studies

1. Montgomery County, Maryland, U.S.

Montgomery County is located in Maryland, adjacent to Washington D.C. With a population of 971,000 according to the 2010 census, the suburb is the most populated jurisdiction in the State and the second most densely developed after the city of Baltimore. Recent statistics estimate an 8.1% increase of the population, reaching 1,050,688. Several federal agencies and technology companies have established their headquarters in the county, employing many residents. Montgomery County has established its first inclusionary housing program in the 1970s, called the Moderate Price Dwelling Unit (MPDU). It is thus one of the oldest inclusionary housing programs of the United States and has been used as model for many others implemented throughout the country.

- Context and regulatory environment

The creation of the Moderate Price Dwelling Unit (MPDU) program took place in a specific context: in 1972, the Washington Suburban Sanitary Commission declared a moratorium on sewer connections, resulting in escalation in land and housing prices. Developers reacted to this law by building high-end housing, which affected housing access for low- and moderate-income. Local advocacy groups took action to push the Montgomery County Council to require developers to build affordable housing units. In 1973, the County Council adopted a new Inclusionary Zoning ordinance, namely the MPDU⁶².

While this bill benefited from large support, it also generated strong opposition from private developers, arguing that it represented an “unconstitutional taking of property”. The text has thus been amended to introduce incentives in the form of density bonuses and to create the Housing Opportunity Commission (HOC), which was given the right to purchase or lease up to one third of units built under MPDU programme. Despite these evolutions, the bill was vetoed by the County executive James Gleason. His decision was overridden by the City Council and the program began its implementation in 1974⁶³.

Since that date, the MPDU program has been subject to nine reviews to address changing circumstances and shifts in the political landscape. Its current features are the following:

- The size of real-estate development projects requiring MPDUs has a minimum threshold of 20 units;
- MPDUs must constitute 12.5 to 15% of the total units approved;
- MPDUs can be detached or semi-detached homes, townhouses, garden or high-rise condominiums and apartments;
- MPDUs include rental and for-sale units, with eligibility criteria;
- 40% of the built MPDU must be offered for sale to the HOC or other non-profit housing agencies to be included in their respective support programmes for low-income families;

⁶² Key source: *Expanding Housing Opportunities Through Inclusionary Zoning: Lessons From Two Counties*, The Urban Institute, December 2012. Report prepared for the U.S. Department of Housing and Urban Development, Office of Policy Development and Research

⁶³ Ibid.

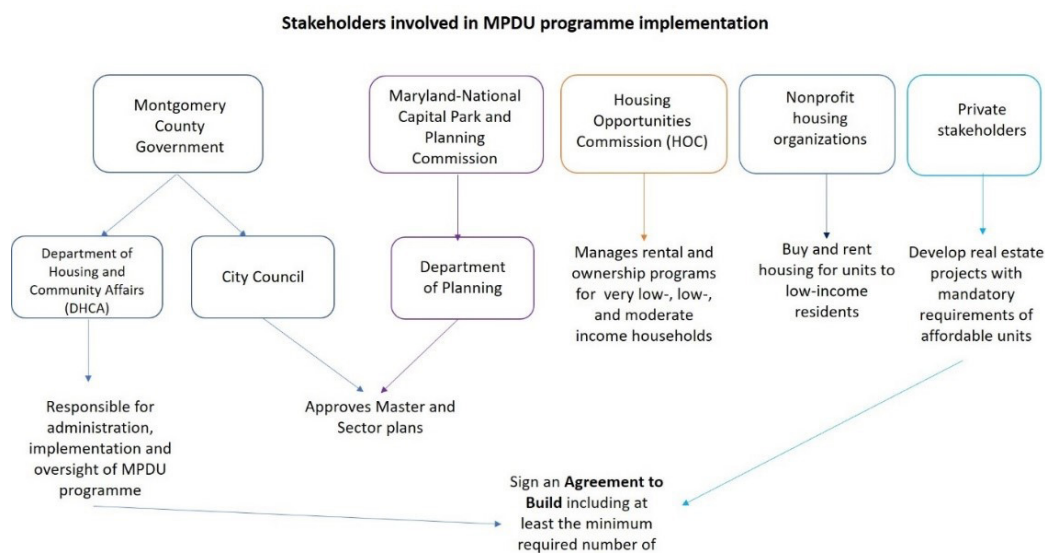
- Density bonuses, as incentive to offset part of the development costs, are granted if the development includes more than the percentage of MPDUs required. In this case, the maximum density bonus is a 22% increase of the current FAR.
- Regarding affordability preservation, rental MPDUs built after 2005 have affordability terms of 99 years, while for-sales units have a 30-year term.

The MPDU programme aims at offering a full range of housing options conveniently located for all incomes, ages and household sizes. The units are sought to be developed within the county, in accordance with the General Plan and Area Masterplans.

- Implementation

Administering and implementing the MPDU programmes is rather complex, due to the involvement of several stakeholders, at different stages of the process.

The following diagram⁶⁴ aims at giving an overview of the actors playing a role in such process. Interactions will be then described.



Within the executive branch of Montgomery's County Government, the Department of Housing and Community Affairs (DHCA) oversees the MPDU Programme's administration and implementation, once planning requirements, including MPDUs', are approved by the legislative branch – the City Council – and the "Planning Board", from Maryland-National Capital Park and Planning Commission.

The DHCA signs an Agreement to Build MPDUs with private developers. Such document must provide a relevant description of the project, including a masterplan highlighting the location of each affordable housing unit as well as their anticipated pace of production, in regards with market-rate units' development. Developers must specify whether they will use the Optional Development Standards established by the county zoning ordinance to build their MPDUs. They also have to decide the percentage of affordable units which will be built, be it the minimum requirements, an additional number of units to benefit from density bonuses or a request for alternative options. Those could be:

- Transfer of land or completed lots to the county to fulfil the MDPU requirements;
- Off-site provision of MPDUs, at a location within the same planning policy area;

⁶⁴ Created by the author, based on the data provided by the above-mentioned report

- In-lieu fees: alternative payment to the county or to its Housing Initiative Fund.

Alternatives may be approved if the project becomes economically infeasible due to environmental costs or those related to mandatory resident services, or if benefits to the community at the alternative location would be greater than those in the initial project. However, no opt-out options have been approved since 2005.

Before MPDUs are made available for sales or rent, the developer must submit an Offering Agreement (OA) to the DHCA. In addition to providing details on each unit – addresses, floor plans, pricing, delivery date – the OA specifies the starting date of a priority period of 90 days, during which the units are made available only for local households with eligibility certificates. During the first three weeks, the HOC and other non-profit organizations must clarify whether they will purchase MPDUs.

- Housing units allocation

Since the 1970's, the MPDU programme has produced more approximately 14,000 affordable housing units, both rental and for-sale units. The former account for more than 4,000 and the latter for more than 9,300. The HOC is the county's largest purchaser of units, since in 2012, it had acquired around 1,500 units.

Since the construction of these units is tied to market-rate residential development, MPDUs spatial distribution has followed the county's development patterns. Due to the relatively short period of affordability preservation in the initial bill, it is estimated that only 2,361 units remain under price control in 2010.

The allocation of units is based on financial eligibility criteria that differ whether a household is applying for MPDUs rental or sales. Regarding income limits, they are based on the annual median income and vary by household size and unit type. To be eligible for for-sale units, the household must earn a minimum annual income of \$40,000. The following chart presents the maximum annual income per household size⁶⁵:

Household size	Maximum income
1	\$61,500
2	\$70,500
3	\$79,500
4	\$88,000
5	\$95,500
6	\$102,500

Once households are identified as eligible, the DHCA provides them with certificates and they enter into a lottery, which is conducted at the beginning of the priority offering set by the County government to determine purchasing priority. Selling prices are calculated by a formula set by the DHCA, which takes into account the building costs of the unit and its size.

Eligibility to the rental MPDU programme requires a minimum household income of \$30,000 year (2012 figure). Maximum income per household size must not exceed the following figures⁶⁶:

⁶⁵ <https://www.montgomerycountymd.gov/DHCA/housing/singlefamily/mpdu/programsales.html#MPDU%20Home%20Ownership%20Program%20-%20Description>

⁶⁶ Source: Update on Maximum Income Limits for 2020, letter to leasing managers, Department of Housing and Community Affairs, Montgomery County, Maryland, April 14, 2020

Household Size	Garden Apartments		High Rise Apartments (5 story or more, elevator)	
	New Tenants	Renewing Tenants	New Tenants	Renewing Tenants
	Maximum Household Income*	130% of Maximum Household Income**	Maximum Household Income*	130% of Maximum Household Income**
1	\$ 57,500	\$ 74,750	\$ 61,500	\$ 79,950
2	\$ 65,500	\$ 85,150	\$ 70,500	\$ 91,650
3	\$ 73,500	\$ 95,550	\$ 79,500	\$ 103,350
4	\$ 82,000	\$ 106,600	\$ 88,000	\$114,400
5	\$ 88,500	\$115,050	\$ 95,500	\$124,150
6	\$95,000	\$123,500	\$ 102,500	\$133,250

* Gross annual income from all current sources for all wage earners in the household

** For existing, previously income qualified tenants whose incomes have increased

Prices for rental units are set according to a formula including utilities at 30% of the maximum permissible income divided by 12. The current prices are given by the DHCA and shown in the following table⁶⁷:

MPDU Maximum Rents for New Developments*:		
Bedroom Size	Garden Apartments (rounded)	High Rise Apartments (rounded)
0	\$1,045	\$1,125
1	\$1,120	\$1,210
1+den	\$1,200	\$1,295
2	\$1,345	\$1,450
2+den or 2+2nd bath	\$1,420	\$1,530
3	\$1,555	\$1,675
*if the tenant pays for utilities. If the landlord pays for utilities, please contact DHCA.		

Overall, demand for MPDUs varies depending on the local economic situation. In a strong and growing economy, demand for homeownership rises whereas demand for rental fall. The opposite happens during economic crisis. Both demands are anyway sensitive to price and location: it will be strong in desirable locations where the relative price of an affordable housing unit is low, while it will be weak in a less desirable location, where the relative price of a unit is high and access to jobs is low.

2. Portland, Oregon, U.S.

Portland is the largest city of the State of Oregon, with an estimated population of 654,741⁶⁸ in 2019. The city has been facing housing affordability issues for years, especially due to the traditional low-density developments which have been the key characteristics of urban development patterns in the U.S. following WWII. Such policies are resulting into a combination of high prices and offer shortages. The local government is expected to host 100,000 additional households by 2035 and thus, a few years ago, undertook a revision of the zoning code and house building rules.

⁶⁷ https://www.montgomerycountymd.gov/DHCA/Resources/Files/rents_MPDU.pdf

⁶⁸ <https://www.census.gov/quickfacts/portlandcityoregon>

- Context and regulatory environment

Portland's zoning is based on three layers, namely base zones, overlay zones and plan district⁶⁹. Bases zones are then divided into five zones⁷⁰:

- Single-dwelling zones (RF, R20, R10, R7, R5, R2.5), typically developed with detached single-family residence and some attached single-family residences and duplexes. These zones are specifically targeted by the residential infill project⁷¹;
- Multi-dwelling zones ((R3, R2, R1, RH, RX, RMP), developed with apartments and targeted by the Better Housing by Design project⁷²;
- Commercial/Mixed-use zones, with some of them encouraging commercial areas that serves the surrounding neighbourhood while others may serve a broader area;
- Employment and Industrial zones, which have a mix of uses with strong industrial orientation;
- Campus Institutional zones that include institutions such as medical centers and colleges' campuses.

In 2016, 53% of Portland's land was zoned for residential purposes, of which 82% was used for single-family houses. There are six categories of them, as mentioned above, but the main ones are R7 (22%), R5 (41%) and R2.5 (7%) (Dong, Hansz, 2019).

The three categories are now subject to change in the zoning and development rules to allow additional dwelling units (ADU) in the framework of the residential infill project launched by the city in 2016. This project includes permitting a density increase from the current FAR as shown in the table below⁷³:

# of Units	Allowed Housing Type	Zone								
		R7			R5			R2.5		
		Min. lot size	FAR		Min. lot size	FAR		Min. lot size	FAR	
			Base	With bonus		Base	With bonus		Base	With bonus
1	House	4,200	.4	n/a	3,000	.5	n/a	1,600	.7	n/a
2	Duplex <i>or</i> house + ADU	sq ft	.5	.6	sq ft	.6	.7	sq ft	.8	.9
3	Triplex <i>or</i> duplex + ADU <i>or</i> house + 2 ADUs	5,000	.6	.7	4,500	.7	.8	3,200	.9	1.0
4	Fourplex	sq ft			sq ft			sq ft		
Current allowed FAR (based on setbacks, height, building coverage)		1.1 FAR			1.35 FAR			1.75 FAR		

The City's proposal aims at adding more housing options to address households' changing needs. The recommendations address various housing options and scales, with few of them listed below:

- Allow for more housing types, such as duplexes, triplexes and fourplexes, or to have accessory dwelling units.
- Limit the overall size of buildings
- Set a total maximum building size and scale the FAR to increase as the number of units increase on the site

69 <https://www.portlandmaps.com/bps/zoning/#/map/>

70 <https://www.portlandoregon.gov/bds/article/411748>

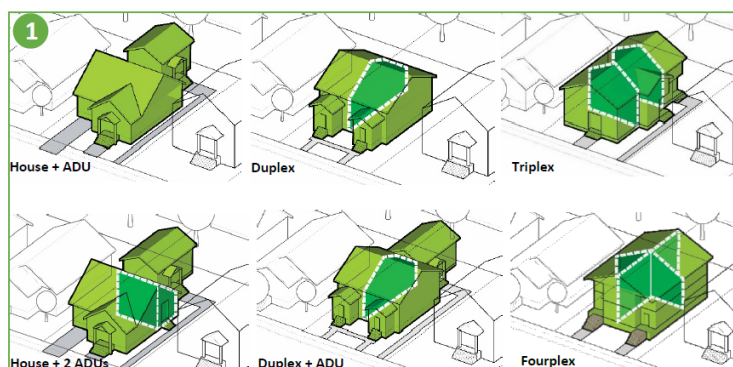
71 <https://beta.portland.gov/bps/rip/about-residential-infill-project>

72 <https://beta.portland.gov/bps/better-housing/about-better-housing-design-project>

73 Source: Residential Infill Project Summary produced by the Bureau of Planning and Sustainability, City of Portland, Oregon

- Allow a bonus increase in the FAR if at least one of the units is affordable (80% of median income) or if units are added to an existing house without altering the façade.

The following diagram represents the different offered by the residential infill project⁷⁴. Additional ADU design rules, complemented the current ones⁷⁵, will allow basement ADU conversion to exceed 75%-size cap in an existing house. Front doors of an internal ADU will be allowed to face the street. The residential infill projects also intend to eliminate



parking requirements for residential uses in single-family zones.

- Adoption process and potential impacts

The City of Portland initiated the residential infill project in 2015. It launched an online questionnaire which received around 7,000 answers. The project's phase 2 fine-tuned proposed draft. Two public hearings took place in May 2018 with 130 participants and more than 1,200 written contributions. The revision requests were incorporated into a revised proposed draft, which was then adopted by the city council as recommended draft on March 12, 2019. On January 15 and 16, 2020, City Council held public hearings and heard from over 100 people in addition to receiving over 500 written pieces of testimony. The process has been since stopped due to the COVID-19 crisis, but a new digital hearing is now scheduled for June 2020⁷⁶.

Infill residential development represents a form of “hidden density” and can thus be part of a set of solutions aiming at mitigating urban sprawl. Implementing such policy would imply to not only address housing, but also public transportation. Concentrating a larger population in a neighbourhood may result into traffic congestion increase and/or a surge in parking spaces requirements. Transit-oriented solutions, such as creating bike lanes, strengthening public transit (BRT, buses...) and perhaps partly subsidizing mobility passes, would facilitate people’s movement within the neighbourhood, but also ensure its connection to the rest of the city, with an overall aim at disincentivizing car use. On the other hand, residential infill can also contribute creating mixed-income communities by offering affordable housing, either rental or for-sale, close to dynamic employment areas. Such mechanism would ensure low- or moderate-income households access to housing close to their job, reducing both commuting time and transportation expenses. Other positive externalities would be improving the air quality, road safety and residents’ health. Offering alternative integrated mobility solutions is thus a key success factor in a

⁷⁴ Source: Residential Infill Project Summary produced by the Bureau of Planning and Sustainability, City of Portland, Oregon

⁷⁵ Available here : <https://www.portlandoregon.gov/bds/index.cfm?a=68689>

⁷⁶ Source: Residential Infill Project Summary produced by the Bureau of Planning and Sustainability, City of Portland, Oregon

(re)densification project⁷⁷.

Residential infill will also increase property tax revenue, one of the main financial resources for the public to invest in urban infrastructure. Smaller lots would also decrease households' utility expenses and potentially housing construction costs, even though such assumptions must be locally analysed considering design & build rules and specific local requirements (parking space provision for instance). Refurbishing existing single-family houses into multi-family ones require up-front investments and thus financial supporting solutions such as grants or subsidies. If existing, local affordable housing funds could contribute to up-front costs as micro-loans, reimbursed by homeowners after the sale of their ADU or by paying a fee on the rent. Home insurance would also need to be adapted to this new form of housing.

3) Comparative analysis

The mechanisms previously described have been (or will be) implemented according to a strong rationale of trading development rights for community benefits. The case studies however highlight important differences in their functioning, governance and ultimately, outcomes.

A. Implementation challenges and governance

1. External factors

The local economic robustness is clearly impacting the implementation of affordable housing policies. Linking the production of affordable housing units to market-rate construction can be dramatically impacted during economic recession. Such condition has to be taken into account, especially in the current economic turmoil created by the COVID-19 crisis. In this context, relying (exclusively) on the private sector for the provision of affordable housing comes with the risk of having only a small number of units to be developed each year.

Land supply capacities are also an important factor while designing the policy. For instance, the Montgomery County is already densely developed and there is only 4% of its land available for construction. The fact that the area is close to reach its full built capacity result from the award, in the past, of large land parcels to low-density development. Such development patterns make it harder to build units at affordable prices and costs and to integrate them in the local landscape. In this context, future development might rely on high rise building and infill development to produce MPDUs.

Such context echoes Monterrey's, and more specifically Distrito Tec's current situation. Low-density housing has been given the priority for many years, thus making it costlier, both financially and symbolically, to develop affordable units at higher density. A combination of different mechanisms to supply affordable housing seem to be the most realistic way to adapt to the area's existing built area.

2. Political environment and policy parameters

The approach adopted in Sao Paulo is rather standardized and depoliticized, since the implementation of the land-value capture tool is tied to the Masterplan's objectives of social and territorial equity, thus defining benefits allocation. The decision-making process regarding fund allocation is based on a consensus to be found by the FUNDURB

⁷⁷ *Right type, right place: assessing the environmental and economic impacts of infill residential development through 2030*, Elkind, Ethan N. Galante, Carol Decker, Nathaniel Chapple, Karen Martin, Amy Hanson, Marilee, UC Berkeley, 2017

management committee, which equally represents communities and local government staff. On the other hand, Toronto's section 37 process is more politicized and aims at addressing potential negative externalities generated by a specific redevelopment project. It is thus disconnected from long-term city planning objectives. The absence of a formula defining benefits type to encourage negotiation between City Councillors and developers might result in a lack of transparency and can favour politically-oriented benefit allocations, in the perspective of elections.

Political inclinations of local governments will also have an impact on the inclusionary housing programme's structure itself by the decision of making it mandatory or voluntary. Then, the different revisions of the ordinance indicate the evolution of the local governance. In Montgomery, the minimum threshold of units in a project to be developed, the affordability preservation conditions tend to indicate that the priority is given to the consumers benefit. Two policy parameters are also important to consider while analysing the implementation process:

- Density bonus: in Montgomery County, the density bonus allows developers to increase density by 22% from the current FAR if the developer increases the MPDU shares to 15% of the units to be developed. However, it seems there are other possible ways to receive density bonuses, such as providing green space within the development which costs less for a developer than providing more housing units. In its current form, the density bonus does not function as an incentive to increase the affordable housing stock.
- Price policy: the local price policy is traditionally linked to two factors, namely development costs and new residents' ability to pay. It seems there is a shift with the DHCA focusing more on the second one, which thus has an impact for developers.

The analysis of the MPDU programme highlights its relative complexity and the various stakeholders involved at different stages of the process. In Montgomery County, the research showed that in 2012, the Department of Housing and Community Affairs had 6.5 full time equivalents to administer the programme. Strong capacities seem thus necessary to ensure the everyday implementation of the ordinance and interact with the external stakeholders such as developers, non-profit organisations and eligible citizens. Due to this complex procedure, it is also difficult to evaluate the cost inherent to the implementation of such a programme. It also stresses the need of powerful parastatal organizations, such as the HOC, and non-profit associations specialized in social programmes, to support the policy implementation. On their budget depends their capacity to acquire and redistribute housing units to the beneficiaries, which therefore conditions the programme's success to maintain affordability on the long run.

3. Incentives and alternatives to on-site development

Besides density bonus, local governments can use several incentives to help developers offset the costs of inclusionary housing programmes. The most common are:

- Parking or design waiver
- Zoning variances
- Tax abatement
- Fee waivers
- Expedited permitting

Implementing these mechanisms might however raise criticisms as they can be seen as

giveaways to developers and often come at real cost to the public sector. Density bonuses, for instance, generate needs for greater infrastructure to absorb the increased number of residents in the implementation area. Fee waivers diminishes the resources available for local institutions to finance other services.

Incentives' costs and benefits must thus be carefully calculated before their implementation, especially compared to the costs linked to the development of affordable housing units.

The most common alternative available for developers is to pay a fee in lieu of an on-site production, generally to a housing trust. The collected funds are generally allocated to finance off-site development of affordable housing. Such option can be requested in Montgomery county, but hasn't been accepted by the local government since 2005. In its document, the Urban Institute⁷⁸ reports that county officials declared not being able to finance an equal number of units with the resources deposited in the Housing Initiative Fund. If managing fees might require less capacities at institutional level, the positive impact might be limited on the field, due to the lack of resources or land available to develop off-site units. It might also lead to the concentration of the affordable housing stock in distanced areas, which would require additional investment in infrastructure and create social and economic segregation.

4. Effects on developers

The Montgomery example shows that introducing mandatory requirements on affordable units production did not affect the overall housing development in the area. The MPDU programme is rather considered as another factor that has to be considered by developers while calculating the project's profitability. Developers interviewed by the Urban Institute⁷⁹ for the research seemed to value the predictability of such calculation, stressing the importance of clear formulas and methodologies while setting up the policy and reviewing it.

Inclusionary housing ordinances affect developments costs which might be partially offset by incentives introduced by municipalities. Density bonus is one of them, but other forms could be considered, such as permits expediting or fast-track administrative procedures, relaxation of regulatory constraints and exactions or direct subsidies. However, the example of Montgomery doesn't prove the effectiveness of incentives, especially since density bonuses might anyway induce additional costs. What matters for developers is that the inclusionary housing programme is mandatory, and they thus have to comply with the requirements to submit their development projects.

Tidying the development of affordable housing to market-rate developments might lead to concern on the fairness to require from private developers to contribute solving a social issue. However, developing real-estate projects generate both positive and negative externalities for the public, and it seems fair to ask for a compensation of these economic impacts. The potential development cost increase does not seem to pass on to new residents, since new unit prices must remain competitive on the market. Inclusionary housing related costs rather seem either absorbed by a reduction of the developer's profits or by a decrease in the land prices, or a combination of both.⁸⁰

⁷⁸ *Expanding Housing Opportunities Through Inclusionary Zoning: Lessons From Two Counties*, The Urban Institute, December 2012. Report prepared for the U.S. Department of Housing and Urban Development, Office of Policy Development and Research

⁷⁹ *Expanding Housing Opportunities Through Inclusionary Zoning: Lessons From Two Counties*, The Urban Institute, December 2012. Report prepared for the U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

⁸⁰ Ibid.

B. Economic and social integration

Affordable housing programmes aim at reducing poverty while creating mixed communities. In a study published in 2009, P. Sharkey highlighted the importance of the economic level of neighbourhood in which children were being raised in their ability to move up the socio-economic ladder during adulthood (Sharkey, 2009).

1. Just compensation vs. redistributive justice

The section 37 process may be seen as inducing a transformation of the city planning process itself, since it distances itself from long-term and city-wide urban development objectives to encourage project-based planning. Such approach allows land-use and zoning changes in specific areas, often already developed and well located, where a developer would see profitability. Potential negative outcomes that can affect the community such as traffic increase, commoditization of public space (etc.) is compensated either in cash or by providing specific amenities in the project's area. This mechanism – similar to Community Benefits Agreements in the US – favours a local “just compensation” perspective rather than a “redistributive justice” approach that would ensure benefits allocation to more deprived areas within the city. In Toronto, section 37 agreements have been mostly concentrated in well-developed areas, where benefits, such as green infrastructure or art & culture facilities contribute to increasing even more the local property value. By doing so, land-value capture tools are not contributing to social equity within the city but rather contribute to reiterating intra-urban differences.

In contrast, Sao Paulo has adopted a more redistributive approach by channelling benefits across the whole city. The OODC mechanism is based on the idea that increases in the value of land should benefit the common interest, even though it did not allow to avoid gentrification. The analysis of concrete cases, such as the Agua Espraiada Urban Operation Project, an heterogeneous low-density neighbourhood including informal settlements and localized next to a high-value commercial area, nevertheless shows that, despite 21% of the revenue raised invested in social housing in the redeveloped area, the execution of the project led to displacement and expulsions of many low-income families from the area (Mahendra and al., 2020).

Inclusionary housing programmes, if planned at city/county level, are implemented at neighbourhood scale. They seem to obtain mitigated success in terms of social and economic integration. Lower-income residents appear to improve their physical and mental health by being integrated in mixed-income communities and are in better conditions to find a job. However, there is no evidence that such integration created meaningful interaction between high- and low- income residents within the same neighbourhood⁸¹. In addition to housing, infrastructure and amenities available in the surroundings of the neighbourhood contribute to strengthen social integration, such as the performance of schools⁸², transportation and healthcare facilities. Such observation has also been highlighted while analysing the potential impacts of implementing residential impacts of residential infill. Overall, if affordable housing policies play a pivotal role in ensuring better living conditions for low-income populations, they must be envisioned as a part of set of social incentives aiming at providing a better level of services in targeted neighbourhoods.

81 *Inclusionary housing: creating and maintaining equitable communities*, Policy Focus Report, The Lincoln Institute of Land Policy, 2015

82 Ibid.

Key takeaways: summary of the key features

The following table summarizes the key aspects of the mechanisms detailed in the case studies (see the following table).

	Toronto, Canada	Sao Paulo, Brazil	Montgomery County, U.S.	Portland, U.S.
Mechanism	Density bonus	Certificate of Additional Construction Potential	Inclusionary Housing Programme	Infill
Regulatory framework	Ontario Planning Act City of Toronto Official Plan	City Statute Masterplan 2014	Moderate Price Dwelling Unit Programme (Since 1972)	Residential infill development project
Rationale implementation	Mitigate negative externalities	Social equity and redistribution	Access to affordable housing	Access to affordable housing Redensification of low-density neighbourhoods
Equity objectives	No	Yes	Yes	Yes
Decision-making process	Negotiation process Politically oriented	FUNDURB management committee Standardized process	Regulatory process at County Government level	City Government
Acquisition process by the developer	Project-based application submitted to the municipality	Auctioned in the stock market	Project-based application fulfilling affordable housing unit requirements	N/A
Forms of benefits	Cash or in-kind	Funds deposited into FUNDURB	Provision of units on-site Alternatives in-lieu fees/off-site development	Additional Dwelling Units
Benefits location	Geographically located next to the project	City-wide benefits	On-site	On-site
Scope of benefits	Neighbourhood-based	Pooled	Neighbourhood-based	Neighbourhood-based
Benefit delivery	Date established in the agreement	Upfront	Delivery schedule to be provided by the developer while submitting the project application	N/A
Operating conditions	-Strong local housing market -Well-developed public participatory process -Trust between municipality and communities -Ability to set goals during the negotiation process -Infrastructure and amenities required to absorb an increased population	-Strong local housing market - Staff capacity at municipal level and budget - Expertise in stock exchange at municipal level to make the link with national stock exchange and regulating commission - Strong regulation and monitoring - At municipal level, fund to receive and allocate the resources generated -Infrastructure and amenities required to absorb an increased population -Setting low FAR on neighbourhood to be redeveloped	-Strong local housing market - Mid-/Long-term policy with mandatory objectives and clarified operating conditions, incentives and eligibility criteria - Staff capacity and budget to operate and coordinate the programme -external organisations with available financial resources to purchase affordable housing units upfront -Infrastructure and amenities required to absorb an increased population	- Revision of planning and zoning regulation - Low-density housing areas under pressure - Clarity of legal status (rental, for-sale units), refurbishment requirements -Public acceptance -for residents: capacity to access grants or subsidies to refurbish their houses -Infrastructure and amenities required to absorb an increased population -Implementation must be linked to an overall change in land-use strategies within the neighbourhood as well as "last-mile" mobility solutions
Potential risks	-Potential decrease of unit provision in case of economic recession -Politicized, negotiation-based process potentially resulting in lack of transparency -No strict formula to calculate affordable housing provision, which can favour the developer and lead to the production of off-site units -Favour "just compensation" instead of redistributive justice within the city -Potential increase of segregation between highly gentrified neighbourhoods and concentrated low-income areas	-Potential decrease of unit provision in case of economic recession - Administrative process necessitating a powerful infrastructure to implement - the Fund's executive board must be representative (50% municipality, 50% civil society)	-Potential decrease of unit provision in case of economic recession -Administrative process requiring dedicated staff -Capacity to mobilize budget -If alternatives are less "costly", there is a risk to obtain off-site units provision or in-lieu fees, affecting the overall goal of mixed-income real-estate developments	-Capacity to mobilize budget for residents -Might generate gentrification if developers are allowed to step-in and redevelop houses for-sale -Insurance policy to review in case of implementation
Risk mitigation	-Clarify the implementation process by applying a strict formula to calculate affordable housing units provision and provide regulated alternatives (fees) -Require a masterplan from developer including provision of relevant infrastructure and location of affordable housing units -Use a Fund to receive the fees and allocate them to create new units	-Simplify the process to avoid selling charges through auction. Keeping low FAR and use a strict formula to calculate the sale of building rights at planning stage	-Partner with the existing affordable housing provider (ex: INFONAVIT) to establish clear housing provision goals, train staff and get access to financial resources -Limit the use of alternatives to development of on-site units to avoid further socio-economic segregation	-Establish a regulatory status allowing rental-only infill to avoid profit-seeking approaches -Limit residential infill to ADU to generate property tax -Provide clear regulation on land subdivision between residents -Start discussion with the existing affordable housing provider (ex: INFONAVIT) to develop eligibility criteria for grants to "build your own house" -The local Fund can contribute to up-front costs with micro-loans, reimbursed by homeowner after the sale of their ADU or by paying a fee on the rent

Conclusion and recommendations

The research undertaken with DistritoTec aimed at establishing recommendations addressing three identified issues related to the neighbourhood's redevelopment:

- Increase density to repopulate the area;
- Provide affordable housing options to avoid population's displacement and create a diverse community;
- Prevent gentrification

The case study analysis, combined with interviews of relevant stakeholders and empirical research, highlighted relevant mechanisms which could be experimented in DistritoTec but also raised broader questions about the policy-making process in the urban context. The following recommendations are therefore structured into two parts:

- The first one presents concrete and operational actions to take up the challenges inherent to DistritoTec regeneration;
- The second one suggests a transformative approach to the definition of the urban project through the establishment of a collaborative governance framework.

1. Recommendations for DistritoTec project

Recommendations for public institutions:

- ð **Providing adequate housing requires the development of an enabling framework, aiming at clarifying actions and responsibilities of stakeholders involved in urban development and regeneration projects.**

The following actions could thus be considered:

1. State of Nuevo Leon

In accordance with article 88 of the General Law of Settlements Human, Territorial Planning and Urban Development and article 91, section XI, of the Law of Human Settlements, Territorial Planning and Urban Development for the State of Nuevo León, **modify the Finance Law for Municipalities of the State of Nuevo Leon to include financial and fiscal mechanisms allowing municipalities to collect contributions from beneficiaries of the modifications of urban guidelines, to finance infrastructure required by such modifications and mitigate their inherent impacts.**

Define and adopt a general formula calculating the contribution to be paid to the municipality by beneficiaries of the density and/or square meters increase allowed by the urban guidelines.

2. Local Government of Monterrey Metropolitan Area

1) Urban planning

Define and include land-value capture tools and other real-estate development incentives in the city/neighbourhood masterplan

- Adopting a formula calculating benefits vs. density increase, defined in the city masterplan, would connect urban redevelopment projects to long(er) term planning policies. It would also contribute to avoid clientelism

Establish new land-use regulations to:

- **Adopt zoning ordinances legalizing a mix of residential types within a single neighbourhood**
 - o It would aim at changing zoning from single- to multi-family uses
- **Implement form-based codes⁸³ in specific areas**
 - o Such regulations would contribute to increase densification by permitting different uses of properties within a neighbourhood while restricting designs rules
 - o It would give more flexibility to redevelopment within neighbourhoods compared to conventional zoning
- **Implement urban growth boundaries at Metropolitan level to limit urban sprawl and protect open spaces from further development and environmental degradation**

2) Housing policies

Establish housing policies at city level which set goals on providing affordable units to low- and moderate-income households:

- **Determine mandatory affordable housing requirements in new developments requiring a dedicated masterplan**
- **Identify incentives or alternative solutions** for private developers (in-lieu fees, off-site production, density bonus, charges for additional building rights...)
- **Incentivize developers to meet on-site housing requirements** (streamlined procedures, modifications of zoning, architectural rules...)
- **Launch economic feasibility studies** to identify inclusionary housing potentialities vs. project profitability
- **Implement anti-displacement policies**

Strengthen the rental market through clear regulations:

- Create design and construction guidelines for infill projects
- Simplify access to information on regulations, zoning, building permits (etc.) through a **one-stop-shop at municipal level**

Strengthen stakeholder's capacities and share responsibilities throughout the process

- **Improve institutional capacities**
 - o Regarding planning, project administration and execution, cadastral updates

⁸³ <https://formbasedcodes.org/definition/>

and financing mechanisms to ensure the implementation of regulations and avoid land value speculation.

- **Educate the public** about affordable housing policy, its implementation and its benefits
 - o It is necessary to implement a transparent and inclusive decision-making process and prevent communities from resisting affordable housing policies
- **Require developers** to provide increased public benefits when they choose to provide affordable housing units off-site.

3) Urban infrastructure

Improve social amenities in (re)densified areas:

- **Develop schools, childcare facilities, community centers and medical centers** able to absorb an increased population
- **Invest in utilities and basic infrastructure to ensure their capacities in a densified neighbourhood**
- **Give priority to public transit and improve connections** between the neighbourhood and the rest of the city
- At public transport stations, **create mobility hubs** with light solutions especially for the “last-mile” mobility
- **Develop bike lanes and refurbish sidewalks**
- **Reduce parking spaces requirements** if possible

Recommendations for DistritoTec:

- o **Position DistritoTec as an open laboratory to test alternative solutions supporting the provision of adequate housing, with the overall objective of preventing gentrification of the neighbourhood. To achieve this goal, the following options could be considered:**

1) Adapt and test land-value capture mechanisms to DistritoTec's housing redevelopment zones

At Subcentro Urbano level (large condominiums to be built on former large industrial areas which would be conditioned to the submission of a dedicated masterplan):

- o **Adapt Inclusionary Housing Programmes and require mandatory affordable housing requirements in these zones:**
- Partner with the Municipality and/or INFONAVIT to:
 - o Launch economic feasibility studies to calculate inclusionary housing potentialities vs. project profitability
 - o Establish clear housing provision goals, train administrative staff and get access to financial resources
- Develop an incentive framework for developers (ex: streamlined administrative process)

At urban corridors level (mixed-use redevelopment projects including commercial spaces on the ground floor and offices and/or housing units on the floors above):

ð Implement density bonus fee

- Partner with the Municipality to establish clear regulations:
 - o On the fee to be paid by developers: a clear and transparent formula
 - o On potential compensations in lieu of the fee: production of off-site housing units within DistritoTec boundaries, social amenities...
- Use the *fideicomiso* to collect the resources and reallocate them to DistritoTec

2) Test alternative development & contract models

ð Rental housing

Option 1: Experimentation of residential infill projects in low-density neighbourhoods with lease contracts

This option would target small-size redevelopments in DistritoTec's residential neighbourhoods, which concentrate an ageing population. It would give the residents living in large single-family houses and/or in housing on large land parcels an opportunity to resize their house and create an additional dwelling unit that could be leased. Such initiative would have several objectives:

- For current residents, maintain their living conditions in an increasingly expensive neighbourhood, by obtaining an additional income while reducing their household expenses;
- For new residents, benefit from an affordable housing option with the flexibility of leasing contracts.

As part of the experimentation, DistritoTec would team-up with the Municipality to:

- Test the regulation (if already adopted at municipal level) or adapt existing best practices to DistritoTec
- Promote the mechanism through the neighbourhood council to identify potential candidates to residential infill
- Develop with ITESM School of Architecture a network of facilitators to help residents access the required information, design their project and apply to permits
- Find innovative financing solutions:
 - o Start discussions with INFONAVIT to develop eligibility criteria for grants as part as the "built your own house" programme
 - o Through the *fideicomiso*, use the resources collected with land-value capture to create micro-loans for residents
- Develop mid- to long-term leasing contracts
- Identify and mitigate the potential risks
 - o Monitoring and evaluation of rental calculation (with threshold limit)
 - o Utility access and expenses
 - o Housing insurance
 - o Parking spaces and mobility solutions

Option 2: Experimentation of all-inclusive leasing contracts of new apartments

This experimentation would target newly-built, mid-rise housing buildings, offering

fully furnished flats through leasing contracts. The model has been developed by the Monterrey-based company Urvita and is already operating in three locations in Monterrey Metropolitan Area⁸⁴.

Urvita offers serviced, fully furnished rental-only flats, from studio to 3-bedroom apartments, as well as co-living opportunities. The rent includes utilities and internet services. Rental duration might be short- (per night, month) or long-term (annual). Bookings are made through Urvita's platform or Airbnb.

As part of the experimentation, DistritoTec would partner with Urvita to:

- Set objectives regarding long-term and short-term leases in Urvita's developments within DistritoTec.

In its existing residences, Urvita has a current balance between 70% of long-term residents and 30% short-term, with an average building occupancy of 85%. Such a mix of rental offers allow to ensure income stability while offering flexibility to tenants. It would be recommended to obtain such a repartition within DistritoTec to ensure stability within the community.

- Monitor and evaluate the rent calculation and establish a threshold limit to prevent gentrification effect
- Anticipate parking requirements and mobility solutions

ð Access to real-estate property

Option 1: Investment in rental housing buildings

This option is based of Urvita's investment offer which consists of selling shares of its residential buildings. Each building is fractioned into 1m2 shares called tokens, which can be acquired by individuals. In Urvita's existing residences, tokens have a sale value of 35,000 MXN and can be individually acquired through a platform. Investment can start with a minimum of one token. Once the sales contract is signed, the new owner receives a notarized share certificate.

Pre-sale tokens of buildings under construction can be acquired, at lower price. Profit generation will start once the flats are rented out.

As Urvita is planning to build a residence in Rio Panuco, the following could be experimented:

- Examine the feasibility of a presales phase of tokens for DistritoTec's residents with a preferential price
- Examine the feasibility of tokens sales (once the building is rented out) with a preferential price for DistritoTec's residents
- Examine the feasibility of tokens acquisition by DistritoTec's *fideicomiso*
-

The *fideicomiso* could invest resources in Urvita's building and condition this investment to cap rents on a percentage of units to ensure their affordability.

84 <https://urvita.mx/>

Option 2: Property acquisition in middle-density building

This option would explore the development of 4-storey buildings offering affordable flats for sale, without the need of a property manager nor the payment of maintenance fees, which would be included in the purchase agreement.

DistritoTec could oversee the implementation of such a development and partner with both the municipality and the developer to:

- Establish technical requirements leading to the rationalisation of maintenance costs
 - o Construction costs and materials
 - o Parking requirements
- Develop purchase agreements describing owner's responsibilities regarding building maintenance
- Liaise with insurance companies

3) Develop the *fideicomiso* as a non-profit organisation

ð To provide social housing

The *fideicomiso* could act as a non-profit organization able to acquire affordable housing units upfront if mandatory requirements are implemented in developments targeting former industrial areas.

DistritoTec could team up with ITESM, the municipality, INFONAVIT and even private banks to analyse the financing options (credit, subsidies, social bonds, impact investing) and obtain them.

Acquired housing units would be rented by the *fideicomiso* to low-income families. An eligibility procedure could be set up with the municipality to identify potential beneficiaries or with ITESM to allocate these units to employees.

ð To finance infill redevelopment

As explained above, use the resources collected with land-value capture to create micro-loans for residents.

ð To invest in apartment buildings offering rental-only affordable housing offers

As explained above, as part of the experimentation of rental housing.

2 . Connecting the housing issue to the urban development agenda: Implementing a collaborative governance framework to transform urban policy-making processes

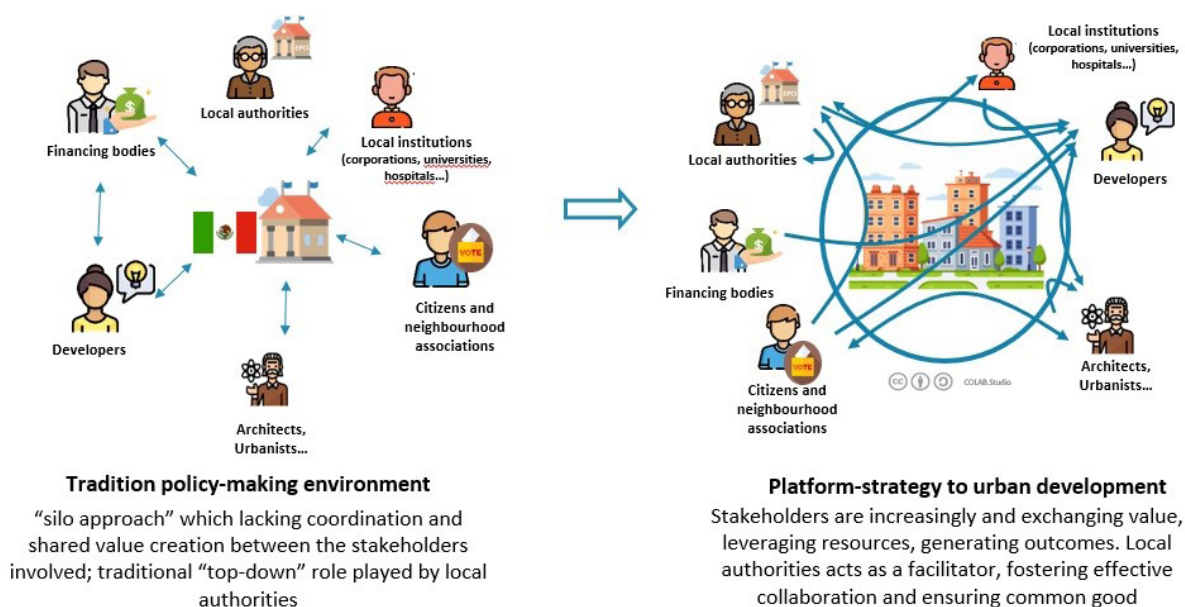
Adopt a platform-based urban development strategy to involve relevant stakeholders in creating shared urban value

The research for this report has highlighted the difficulties in establishing operational housing development policies, be it on setting adequate number of housing units produced, coordinating their production and adapting incentives for stakeholders involved, clarifying project implementation processes, integrating of those units in an existing neighbourhood, providing adequate infrastructure, or even on ensuring acceptance of local communities.

Zooming out from the sole housing issue to incorporate it in broader urban planning and development issues, this recommendation aims at **implementing a platform-strategy to reconfigure urban development policymaking processes and mobilize the urban stakeholder's ecosystem to create common value at the city level.**

The term platform refers to a specific organizational mode that wants to “*mobilize and help an ecosystem in creating value, with the aim of capturing part of this value*”. A platform-strategy is “*made of a combination of different elements: narrative, technologies, rules, channels, contexts, enabling services, protocols and more*”⁸⁵.

At urban level, the platform strategy would transform existing practices and interactions between the stakeholders working in the urban ecosystem, as illustrated below:



The concept of platform is envisioned as a horizontal organizational structure that engages a large variety of stakeholders (public institutions, citizens, developers, urbanists, universities, etc.) to co-produce urban policies. This new mode of coordination, which values cross-sector and interdisciplinary approaches, empowers local actors and give them an equal weight in the definition of a common urban agenda. The complexity of local

⁸⁵ As defined in the platform design toolkit, available here: <https://platformdesigntoolkit.com/toolkit/>

and interrelated urban issues can thus be addressed through a truly integrated approach⁸⁶. The platform strategy emphasizes on empirical approaches through experimentations and small-scale pilot projects. Such an approach contributes to build trust among actors who wouldn't collaborate otherwise and facilitate the emergence of innovative and context-adapted solutions. An experimentation is also given the "right to failure" and its operating conditions can thus be more closely monitored, evaluated and fine-tuned without impacting negatively at large scale. It also represents a way to build collective intelligence and learning processes in a community of actors. Experimentations on housing suggested for DistritoTec could be structured according to this approach and even represent a pilot project of the adaptation of the platform strategy to the urban environment.

Collaborative governance is another key feature of the transformative approach suggested by the platform strategy. Based on experimentations, decision-making processes could be investigated and potentially adapted to facilitate the transmission of relevant information, ensuring greater transparency the policy-making environment. In this framework, local authorities' role evolves towards a position of facilitator whose actions aims at improving cooperation between urban stakeholders while ensuring the common good. A platform strategy is indeed enshrined in an overall vision of territorial development which is framed and conveyed by local governments.

⁸⁶ In the report entitled "Building Better Cities with Strategic Investments in Social Housing", published by the Harvard School of Design, the investigating team led by Diane Davis suggested to create an "Urban Value Creation Platform", embodied in INFONAVIT's local delegation. The platform would gather together relevant stakeholders addressing housing issues. It is argued here that the platform strategy should be extended to the entire urban project, which includes housing as a key sector to address.

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