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Housing Experimentation and Design Guides: Affordable Housing in Guangzhou since 2006

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Abstract: This paper examines the recent growth of government-led affordable housing in Guangzhou, addressing a paucity of global housing studies that explore experimental and contextual policy approaches in China. It also addresses the lack of Chinese housing studies recognizing the impact of housing design governance, including regulatory controls and design standards, on housing preferences, supply and lifestyles. Since 1995, the supply of affordable housing has surged, now surpassing that of market housing for the first time. This response to failures in the private housing market and a lack of equitable access to housing signifies a significant shift, acknowledging the need to re-establish a state-led and long-term public housing supply after decades of housing marketization. Employing an architectural design research perspective, this paper investigates the interplay between affordable housing supply and the emergence of housing standards, examining resulting housing design outcomes. It poses the question: What changes in housing policy and interventions in housing markets are necessary to increase public rental housing supply, and how do these changes affect housing outcomes? The paper explores these questions through a discussion of the key moments in affordable housing policy and housing estate development in Guangzhou that facilitated the creation of widely accessible public housing and long-term housing assets. This provides new insights into China's unique approach to translating central government social welfare and housing policy through contextual design experimentation and pilot housing projects, departing from the conventional top-down policy implementation found in most other countries.

Keywords: affordable housing; public rental housing; design instruction; housing policy; Guangzhou

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1. Introduction: Affordable Housing Challenges

In 1995, the Chinese government first began providing affordable housing (baozhangxing zhufang) following the announcement of the National Housing Project Implementation Plan. The primary objective of this policy was to tackle the housing shortage for urban, low-income families and to mitigate the rising costs of market housing. Additionally, the government aimed to improve the minimum living standards of the population by providing better housing access and addressing the failure of the private housing market to supply an adequate amount of affordable housing.

In China, housing deemed affordable is officially termed "indemnificatory housing", with the term "affordable housing" specifically used to refer to subsidized housing for ownership. However, in the following, the term "affordable housing" is used in a more general sense in line with common English usage.

Affordable housing categories in China include cheap rental housing (lian zu fang), low-cost housing (jingji shiyong zhufang), capped price housing (xianjia fang), public rental housing (gonggong zuling zhufang), shared ownership housing (gongyou chanquan zhufang), housing for "talent workers" (rencai gongyu)—for highly educated and

skilled professionals in economically important sectors such as STEM disciplines or finance who form part of a new floating population that growing cities are trying to attract—and government-subsidized rental housing (baozhangxing zulin zhufang).

China's affordable housing policies have undergone three significant changes. First, in 2007, the target group for affordable housing was expanded from low-income families to include mid-income families and those residing in shantytowns [1]. Second, in 2013, a significant shift occurred as the responsibility for supplying affordable housing was transferred from the central government to local governments [2]. Third, starting in 2019, there has been a noticeable change in housing tenure policies with a move away from an initial focus on affordable homeownership to the current promotion of affordable rental homes [3–5].

Affordable housing policies were first introduced by the central government in 1998 with A Notification from the State Council on Further Deepening the Reform of the Urban Housing System and Accelerating Housing Construction [6] in support of securing a basic living standard for the population. However, a large number of urban migrant workers were excluded from this policy, as they are not officially registered in cities and, therefore, have no administrative status or social welfare rights there. The policy also largely focused on supply, with greater attention paid to the quantity than the quality and location of housing, resulting in housing being built outside urban centers in areas with poor infrastructure [7]. In a subsequent attempt to rectify these policy shortcomings, the State Council (2003) issued A Notification from the State Council to Promote Sustainable Development of the Real Estate Industry in 2003 [8].

With the Twelfth Five-Year Plan for National Economic and Social Development (2011–2015), a large-scale government-led affordable housing program was launched in 2011 with the aim of providing 36 million affordable housing units in urban areas within five years. This immediately attracted great interest from researchers, with post-occupation evaluations quickly revealing that the maintenance of residential communities and the supply of public facilities were widespread problems, despite being seen by residents as vital to their satisfaction [7,9]. Researchers also contended that small-scale residential communities located in urban centers were more suitable than the commonly built large-scale suburban communities, which were perceived as carrying the risk of ghettoizing poor and giving rise to new social problems [10].

However, when the central government removed affordable housing as a local government target assessment criterion in 2014, housing supply slowed [11]. During the Thirteenth Five-Year Plan (2016–2020), the supply of new affordable housing was limited to completing already developments that had already started. In addition, variations in affordable housing demand emerged, leading to the recognition of a need for localized housing supply tailored to each city's specific demands [12,13].

The local characteristics of affordable housing in Guangzhou have been extensively studied. For instance, Deng and Guo conducted a series of comparative studies on affordable housing in South China, with a particular focus on Guangzhou, in 2014 and 2017 [14,15]. In 2015, Li examined affordable housing in the Lingnan region and explored different design approaches [16]. He's 2015 research [17] investigated the transferability of the concept of livability from traditional residential houses to the design of new affordable housing. Li's work in the same year explored the potential of façade design for passive energy-savings. Wang's 2018 study [18] conducted a comparative analysis of urban villages and affordable housing, aiming to develop a design strategy for external public spaces in Guangzhou.

Current housing research predominantly centers on behavioral characteristics and environmental quality. Gong's 2021 study [19] explores the relationship between online and physical consumer behavior, along with the influencing factors. This investigation is based on a survey of six affordable housing estates in Guangzhou. Mo's comprehensive 2021 study [20] compares and evaluates the effectiveness of planning implementation and

the impact of public participation on the design quality of living environments in affordable housing communities in Guangzhou.

However, one often overlooked yet important area of design research relates to the regulatory control of housing design and how evolving design instructions (2013, 2017, and 2022) [21–23] have influenced the design, size, and layout of flats and buildings over time. Furthermore, there is a growing challenge in finding the right balance between meeting housing needs and improving housing quality.

Guangzhou, a Tier 1 city in China, has seen its population increase by 47% to 18.68 million since the sixth census ten years ago [24]. It now faces a significant growth and housing problem, including a growing number of new citizens, employees, and talent workers in its future planning and housing provision.

Affordable housing has prompted a fundamental re-evaluation of the social, economic, and political role of housing. Increasing the minimum space standards in design guidelines has improved minimum living standards and the quality of life. At the same time, changes in housing layouts are reflective of evolving lifestyles and housing expectations. The various locations of new developments for affordable housing communities highlight the growing importance given to questions of social equity, as they are no longer confined to the urban periphery. Their placements now take into account fairer access to both housing and the city.

The aim of this paper is to demonstrate that in China, the translation of central government social welfare and housing policy by local governments, such as Guangzhou, does not follow a simple top-down implementation. Instead, it involves contextual design experimentation, resulting in pilot housing projects that spatialize and interpret policies in unique ways. The promotion of residential communities designed to incorporate all the necessary social services and public facilities for an autonomous neighborhood represents a deliberate effort to experiment with the functional size and organization of a community. This experimentation has been subtly guided by design guidelines and their incremental changes.

This approach is atypical for most other countries, where central housing policy is often rigid and explicit, accompanied by clearly defined design and planning controls. Although China is increasingly adopting a formal system of housing design standards, it also uniquely assumes increased responsibility for and supply of affordable public rental housing. This shift not only re-establishes the social role of housing, but also redefines its economic role. By transitioning from a model of ownership to one of rent, China is at the forefront of recognizing the global need for a more regulated and long-term rental housing supply.

Using the case of Guangzhou in China, this paper explores the question: What changes in housing policy and interventions in housing markets are necessary to increase the public rental housing supply? It further examines how these changes result in different housing outcomes by investigating the utilization of housing design standards to define new housing types and create new housing preferences.

There is a research gap concerning the understanding of how technical design regulations and housing design standards influence and shape the types of homes constructed and the way people live within them. Housing design standards are a critical aspect of design, and this paper examines affordable housing in Guangzhou in relation to housing standards and design guidelines.

Methodology

This paper employs an architectural design research perspective to investigate the interplay between increased public rental housing supply in Guangzhou and the emergence of housing standards, leading to new housing outcomes and designs. Architectural design research is understood as practice-led research centered on architectural design practice and design thinking [25]. The focus of this study is on the utilization of housing

design and planning in China to interpret, realize, and contextualize central government housing policy.

The methodology involves a comprehensive review of housing studies centered on and around Guangzhou, coupled with a grey literature review of recent affordable housing policies and housing design standards. Special attention is given to the evolution of public rental housing supply and the need to establish the first housing standards in 2013, and subsequent revisions in 2017 and 2022 aimed at extending and refining regulatory control over housing design outcomes. These revisions acknowledge the necessity of formally defining housing design quality and use.

The study introduces five developmental stages in China's affordable housing landscape: the embryonic period (1997–2003), the stagnation period (2003–2006), the exploration phase (2007–2010), the large-scale construction period (2011–2017), and the transfer period (since 2018). Within this framework, the paper examines specific relationships between national five-year plans, regional housing supply targets in Guangzhou, and relevant metropolitan or regional policies and documents.

To bridge the gap between policy discourse and practical design, the analysis employs housing case studies, illustrating a dynamic system of iterative housing experimentation and pilot projects. This approach provides insights into the development and implementation of housing policy in China. Case study selection is based on established pilot schemes or those representative of standard housing and estate design solutions, while considering the availability of planning drawings and development data for analysis.

2. Affordable Housing in Guangzhou

As elsewhere in China, affordable housing targets in Guangzhou are closely linked to changes in central government policy. In the Eleventh Five-Year Plan (2006–2010) period, a total of 80,700 affordable housing units were planned [26]. An equivalent number of units were planned and constructed during the Twelfth Five-Year Plan (2011–2015) period, effectively doubling the total supply to 166,800. The current Fourteenth Five-Year Plan (2021–2025) marks a significant increase in affordable housing supply, nearly quadrupling the total to 660,000 units [27]. This shift indicates a step change in affordable housing supply in Guangzhou (Figure 1).

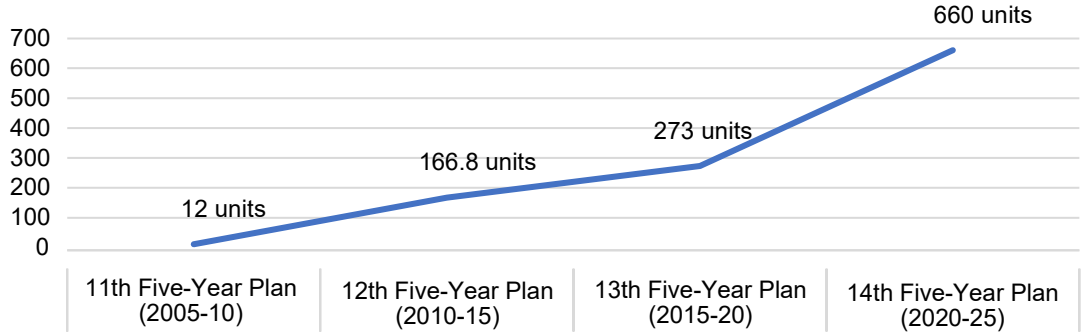


Figure 1. Affordable housing supply per Five-Year Plan period in Guangzhou.

The development of affordable housing in Guangzhou can be divided into five stages (Table 1): an embryonic period (1997–2003) when the first residential communities were planned and built, a stagnation period (2003–2006) when the initial growth of supply slowed, an exploration stage (2007–2010) when new approaches to affordable housing were encouraged [28], a large-scale construction period (2011–2017) that focused on increasing the housing supply, and the current transfer period (2018–) with the procurement and management of affordable housing becoming professionalized.

Table 1. Timeline of affordable housing in Guangzhou.

Period	Policy Documents	Supplier	Housing Type	Design Standard
Embryonic Period (1997–2003) Stagnation Period (2003–2006)	• Implementation Plan for Housing Projects in Guangzhou (1997) • Low-rent Housing Allocation Plan in Guangzhou (1998) • Guangzhou Housing Construction Planning (2006–2010)	Guangzhou Housing Security Office	Welfare housing (fuli fang): 1994–1998 Cheap rental housing (lian zu fang): 1999–2007	No design standards
Exploration Period (2007–2010)	• Trial Implementation Measures for the Affordable Housing System in Guangzhou (2007) • Guangzhou Housing Construction Planning (2010–2015)		Cheap rental housing (lian zu fang) Low-cost housing (jingji shiyong zhufang)	
Large-scale Construction Period (2011–2017)	• Innovative Plan for Housing Security System Reform (2012) • Guangzhou Municipal Public Rental Housing Implementation Measures (2013)		Cheap rental housing (lian zu fang) Housing with shared ownership (gongyou chanquan zhufang) Low-cost housing (jingji shiyong zhufang) Capped-price housing (xianjia fang)	• Guangzhou Instruction for the Design of Indemnificatory Housing (2013) • Guangzhou Instruction for the Design of Indemnificatory Housing (2017)
Transfer Period (2018–present)	• Notice of the General Office of the People's Government of Guangzhou Municipality on the Issuance of the Measures for the Security of Public Rental Housing in Guangzhou (2019) • Measures for Guaranteeing Public Rental Housing for Newly Employed and Houseless Employees in Guangzhou (2022)	Guangzhou City Construction Investment Group Company Limited	Government-subsidized rental housing (baozhangxing zulin zhufang) Housing with shared ownership (gongyou chanquan zhufang) Public rental housing (gonggong zuling zhufang) Housing for talent workers (rencai gongyu)	• Indemnificatory Housing Building Specification (2022) • Guangzhou Instruction for Architectural Design of Indemnificatory Housing and Talent Workers' Apartments (2022)

During these stages, policies regarding the supply of affordable housing have undergone significant changes. First, dwelling types have transitioned from a single type employed in the early stages to a diverse range of dwelling types since 2007. Second, the responsibility for supply has shifted from government departments to state-owned companies since 2018. Third, after initially establishing housing design standards in 2013, they were subsequently updated in 2017 and 2022 to improve housing quality. While Guangzhou's government-led affordable housing supply has largely achieved the targets outlined in the Five-year Plans, it has encountered several substantial challenges.

There are the socio-spatial consequences of the early affordable housing projects, such as the widely discussed suburbanization of housing estates [29,30]. In response to the failures of single-tenure residential communities in the suburbs and their tendency to lead to ghettoization, mixed-tenure communities were promoted to encourage greater demographic and social diversity [31,32]. In 2011, the government introduced a requirement for developers purchasing low-priced state-owned land to allocate 10% of their developments to affordable housing [33]. However, instead of fostering greater equity in developments, this policy led to an increased social, spatial, and economic divide within

residential communities. Private and subsidized homeowners became segregated into different buildings, and private owners often sought to limit access to public facilities and spaces for affordable housing residents due to their lack of service charge contributions. In some communities, extreme measures were taken, such as the installation of barbed-wire fences between affordable and private housing areas within the same residential community to prevent the latter from using service facilities, including children's playgrounds [33].

The large-scale provision of affordable housing has also exposed problems in the way it is supplied and commodified. In China, the land use system designates all land as government owned, allowing local governments to rely on land sales for profit as a fiscal policy. Providing free land for affordable housing consequently diminishes the resources available to local governments, affecting their capacity to invest in public infrastructure and services. This necessitates a rebalancing of fiscal income and expenditure [2,34]. This raises questions about how to incentivize or promote private sector involvement in affordable housing supply and, more importantly, the extent to which the state should intervene in the housing market to ensure affordable housing delivery and regulate housing prices. Tied to this critical question of equitable housing access is the challenge of improving site locations, construction quality, long-term building operations and maintenance, as well as the scale of affordable housing developments and the provision of public facilities and amenities within them. This paper discusses, in the following, how these questions have driven the design, supply, and regulation of affordable housing in Guangzhou.

Completed in 1999, the Tangde Community was the first affordable housing community built in Guangzhou. In 2005, the government introduced a new policy stating that residents, on obtaining their real estate license, can sell their affordable houses after two years of occupancy and retain all proceeds from the sale [35]. This effectively turned affordable housing into a market commodity, with properties in the Tangde Community becoming frequently sold. As a result, the economic and social demographic of residents living in the community changed, leading to greater heterogeneity and new socio-economic tensions within the estate [36].

Another case is the Jinshazhou Community, where the Guangzhou government allocated 3148 affordable housing units to very low-income groups (shuang tekun zhuhu). This included families who received a living allowance from the state due to disability, illness, or income below the local minimum living standard. Subsidized affordable housing played a crucial role in implementing the urban minimum living security policy, which aimed to guarantee a basic standard of living. It provided assistance to the unemployed, especially former workers from state-owned enterprises. However, a few years after its establishment, the Jinshazhou Community came under criticism for being very remotely located from urban centers and its lack of facilities and maintenance, eventually earning it a reputation as the "slum of Guangzhou" [7].

2.1. Housing Supply Management

An important strategic change in affordable housing in Guangzhou occurred when the responsibility for its supply was transferred from the central government to local governments.

Established in 2009 under the Guangzhou Housing and Urban-Rural Development Bureau, the Guangzhou Housing Security Office is responsible for affordable housing, which includes strategic planning, financing, construction and supply management, development of design standards, maintenance of housing stock, and setting housing eligibility criteria. While the Housing Security Office formulates and implements affordable housing policies in principle, it receives support from the Land Bureau and the Finance Bureau. However, decisions made by the Housing Security Office are significantly influenced by central government housing supply targets and hindered by its inability to make independent decisions regarding land use or funding.

Due to the strict hierarchical organization of the government, only the Guangzhou Housing and Urban-Rural Development Bureau, and not the lower-level Guangzhou Housing Security Office, can directly negotiate with the Land Bureau for the supply of development land, even though the Housing Security Office is officially solely responsible for managing affordable housing procurement. These administrative contradictions have led to low efficiency in the housing procurement and delivery process [2], resulting in major challenges related to financing, effective policymaking, construction quality, and long-term maintenance for the local government.

In 2018, the Guangzhou Housing Security Office announced the transfer of management, service, and long-term maintenance responsibilities for affordable housing to two wholly state-owned housing leasing companies: Guangzhou City Construction Investment Group Company Limited and Guangzhou Pearl River Industrial Development Company Limited Group. This shift allowed the local government to concentrate on policymaking and on supervising the fair and transparent allocation of housing applications, access, and permits [37]. It also represented an effort to promote market forces and business participation within a government-led framework, aiming to improve the long-term management and maintenance of affordable housing.

2.2. Housing Access

Another significant strategic change was the expansion of access to affordable housing in Guangzhou. Initially, this expansion targeted low-income and mid-income families, as well as residents of shantytowns. However, it has evolved into a public housing model that increasingly benefits not only those in economic need.

After more than two decades of providing affordable housing, its definition, purpose, and target groups have significantly evolved. In a city with a floating population of over 9 million [38], there is immense pressure to increase housing supply, not only to improve the living conditions of migrant workers, but also to attract skilled talent workers and new employees.

In 2018, the Guangzhou Housing and Urban-Rural Construction Committee issued a Notice on Further Strengthening the Housing Security Work of Registered Families, which categorized housing applicants based on their disposable income and household assets [37]. This approach takes into account a broader range of housing needs, expanding access beyond low-income groups. This becomes evident when comparing the income thresholds for housing eligibility to the mean annual income in Guangzhou, which is 135,138 yuan [38]. For a four-person family with only one income earner, the maximum allowable annual income to qualify for affordable housing is 142,640 yuan, surpassing the mean income (Table 2).

Table 2. Maximum disposable income and net assets (yuan) for households applying for public rental housing in Guangzhou [39].

Household (No. of Persons)	Disposable Income (per Person/Year)	Max. Gross Household Income (Yuan)		Assets per Household (Net Value)
		Max. Annual Disposable Income	Max Monthly Disposable Income	
1	42,792	42,792	3566	220,000
2	39,226	78,452	6538	400,000
3	35,660	106,980	8915	560,000
≥4	35,660	142,640	11,887	810,000

The Measures of Guangzhou on the Guarantee of Public Rental Housing for New Employees without Housing, issued by the Guangzhou Housing and Urban-Rural Construction Bureau in 2020 [39], permits new employees to apply for affordable housing, aiming to make Guangzhou more attractive to skilled workers, provided they meet certain requirements. These requirements include being between the ages of 18 and 35, holding

at least a bachelor's degree, possessing a professional qualification, not owning any other property, and having worked in a job with social insurance in Guangzhou for at least six months. While there is no maximum income limit, new employees can only live in affordable housing for up to five years.

This shows how much the purpose and tenure of affordable housing have changed. According to the Guangzhou Instruction for Architectural Design of Affordable Housing and Talent Workers' Apartments issued by the Guangzhou Housing Security Office in 2022 [23], there are now four categories of affordable housing: public rental housing, government-subsidized rental housing, shared ownership, and housing for skilled workers. This affordable housing is accessible not only to lower-income families but also to new employees, migrant workers, new citizens, young people, and skilled workers. Thus, it no longer merely serves as a social safety net, but has become an integral part of a broader social and economic development strategy.

The "rent standard" for public rental housing essentially comprises a list of housing costs in various districts and buildings in Guangzhou. However, it is limited to a maximum of 15% of the monthly disposable income for families within each income bracket [40]. Except for families exempt from paying rent or enjoying preferential rent, the rent within each income bracket varies, ranging from as low as 10% to the full rent standard (Table 3). The formula for calculating public rental housing rent is as follows: monthly rent = gross floor area × rent standard × payment coefficient for each family income bracket. Compared to market housing, rents are therefore considerably lower and highly subsidized.

Table 3. Grouping of rent for public rental housing by income brackets (yuan) that determine a "rent standard" at a maximum 15% of disposable income [40].

Disposable Income per Person and Year	Coefficient	Rental Price
≤minimum living standard in Guangzhou (1120 × 12 = 13,440)	0.1	0.1 × rent standard
≤low-income standard in Guangzhou (1680 × 12 = 20,160)	0.2	0.2 × rent standard
≤20,663	0.3	0.3 × rent standard
24,795–20,663	0.4	0.4 × rent standard
29,434–24,795	0.5	0.5 × rent standard
35,660–29,434	0.6	0.6 × rent standard
42,792–35,660	0.7	0.7 × rent standard
New employees (no income limits)	1	1 × rent standard

2.3. Public Rental Housing Supply

An important strategic shift in Guangzhou's affordable housing policy has been the transition from providing social welfare and low-cost housing to offering public rental housing, marking a significant change in tenure and a departure from the emphasis on home ownership.

Mid- and low-income families, along with new employees who do not qualify for low-rent housing or cannot afford to buy affordable or market housing, have come to be known as the "sandwich class" [1,41]. To partially address their housing needs, the Guangzhou Public Rental Housing System Implementation Measures of 2010 made talent workers and migrant workers eligible for affordable housing for the first time and no longer required a Guangzhou household registration (hukou), which previously prevented them from accessing public and administrative services in the city [42].To expedite the necessary housing supply, the Ministry of Finance established a special fund for public rental housing, providing the first 10 billion yuan in subsidies to local governments in 2011 [43]. These funds supported the development of the first public rental housing

projects in cities like Beijing, Guangzhou, Shenzhen, Chongqing, and Shanghai. An additional 5 billion yuan was allocated in 2012 to support infrastructural development related to public rental housing. By the end of 2012, the central government spent a total of 98.7 billion yuan on subsidies for public rental housing construction and urban shantytown renovation.

In 2013, the State Council promoted the merger of public rental housing and low-rent housing to address the housing needs of low-income groups and the "sandwich class", allocating an additional 58 billion yuan in special funds. Following the merger, low-rent housing became a part of the public rental housing system. In 2017, the Ministry of Housing and Urban-Rural Development proposed accelerating the supply of public rental housing, setting a national target of 2 million new public rental housing units for the year.

A significant outcome of this new housing supply policy is that during the 14th Five-Year Plan period, the supply of affordable housing in Guangzhou will, for the first time, exceed that of market housing. In 2021, the Comments on Further Strengthening Housing Security Work by Guangzhou City suggested that by 2025, a total of 650,000 market and 660,000 affordable housing units will be completed (Figure 2). Of these, 92% are expected to be public rental housing (600,000 units). This represents a fundamental shift away from homeownership towards the creation of long-term public housing assets with controlled rents, with the ownership of and responsibility for public rental housing remaining with the government.

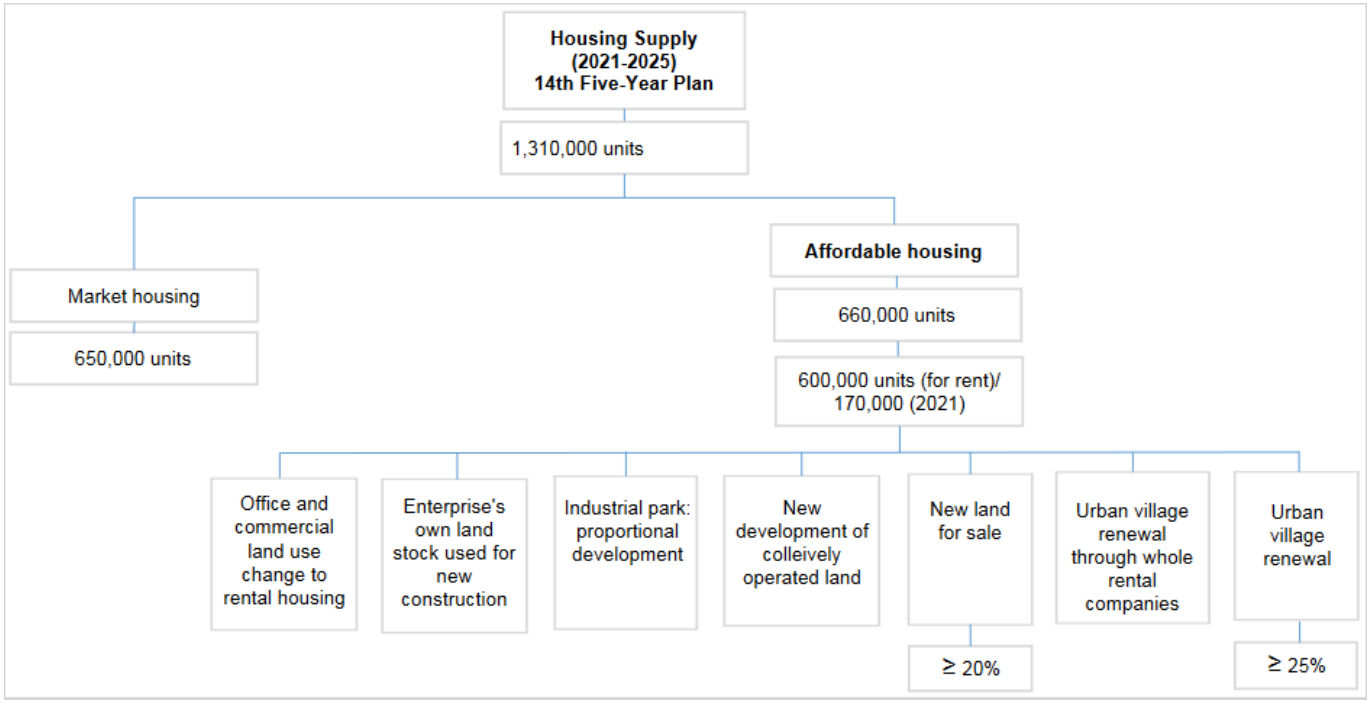


Figure 2. Housing Supply Plan for the period 2021 to 2025 (Fourteenth Five-Year Plan) in Guangzhou.

3. Housing Design Policies

Over the last two decades, affordable housing design in Guangzhou has been mainly regulated through the Guangzhou Instruction for the Design of Indemnificatory Housing (2013/2017) and the Guangzhou Instruction for Architectural Design of Affordable Housing and Talent Workers' Apartments (2022).

3.1. Comparison of Design Guides

"Design instructions" and their revisions have become important tools to control housing design outcomes and are related to key moments in affordable housing policy in

China. In 2013, when the central government delegated responsibility for affordable housing supply to local governments, the initial basic instruction included information about location, public facilities, and housing design standards. The updated 2017 version introduced two notable changes: a reduction in commercial facilities, such as restaurants and shops, from 6.5% to 5%, and a restriction to a maximum of 10 dwelling units per building floor. While profits from commercial facilities partially fund the maintenance of affordable housing, this change aims to strike a balance between their provision and increasing the supply of free public service facilities, such as community, health, or childcare centers. Reducing the number of units per floor improves privacy and enhances the quality of common spaces, particularly in high-density developments. These modifications in the design guidelines demonstrate a growing interest in improving the estate and housing design quality.

Transferring the supply and management of affordable housing to two state-owned companies has led to significant changes in housing procurement and policy. This includes widening housing access criteria, providing more homes for rent than ownership, and changing design guidelines. The current design instruction from 2022 incorporates different design standards for four types of affordable housing (Table 4). As first outlined in 2017, the current design standard for public rental housing specifies maximum gross floor areas for various housing types and minimum floor areas for living rooms and bedrooms. Setting a maximum is unusual for space standards but signifies that these instructions are less concerned with private-sector procurement.

Table 4. Comparison of design instructions for affordable housing in Guangzhou [21–23].

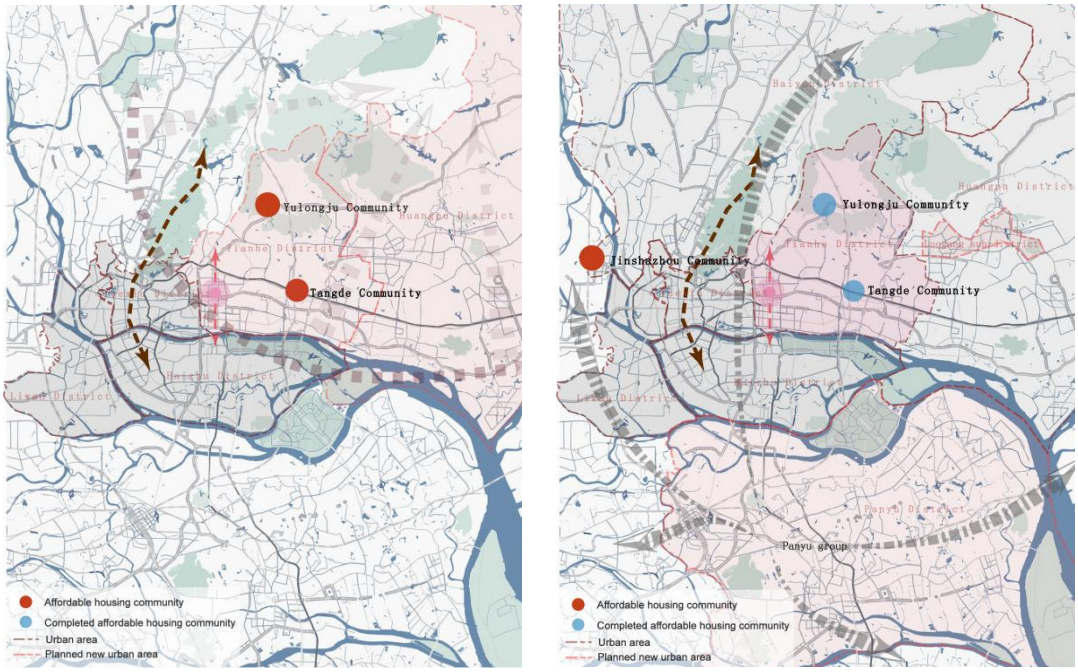
	2013	**2017**	**2022**			
Category	Indemnificatory housing		Government-subsidized housing			
	-		Public rental housing	Government-subsidized rental housing	Housing with shared ownership	Housing for talent workers
Group	Lower income		Lower-income New-employee Migrant worker	New citizen Young people	Middle-income households	Qualified high-level talents
Strategy	Limited construction standard and rent		Graded Rent	Limited rent	Limited use and profit and rent	-
Area	3B1L: 55–60 m² 2B1L: 45–55 m² 1B1L: 40–45 m² Single: 35–40 m²	3B1L: ≤60 m² 2B1L: 45–55 m² 1B1L: 40–45 m² Single: 35–40 m²	3B1L: ≤60 m² 2B1L: 45–55 m² 1B1L: 40–45 m² Single: 35–40 m²	3B1L: ≤70 m² 2B1L: 55–70 m² 1B1L: 45–60 m² Single: 40–55 m²	4B1L: ≤120 m² 3B1L: ≤90 m² 2B1L: 70–90 m² 1B1L: 50–70 m² Single: 35–50 m²	-
Living room	Width ≥ 2.6 m		Width ≥ 2.5 m	Width ≥ 2.7 m	Width ≥ 3 m	Width ≥ 3 m
Bedroom	Width ≥ 2.1 m		Width ≥ 2.1 m	Width ≥ 2.1 m		
General	-		2-star Green Building Construction; sponge city design; no separation between public/private housing; modular design			
Location	Max. distance to bus station: 500 m	-	Limited distance to transportation facilities			
Public facilities	Commercial ≤ 6.5%	Commercial ≤ 5%	Management office * ≤ 0.2%			
Standard floor	-	≤10 units/floor				
High of floor	≤2.8 m	2.8–2.9 m	≤2.9 m			

Notes: * Working space for people responsible for the management of the community. B = bedroom; L = living room.

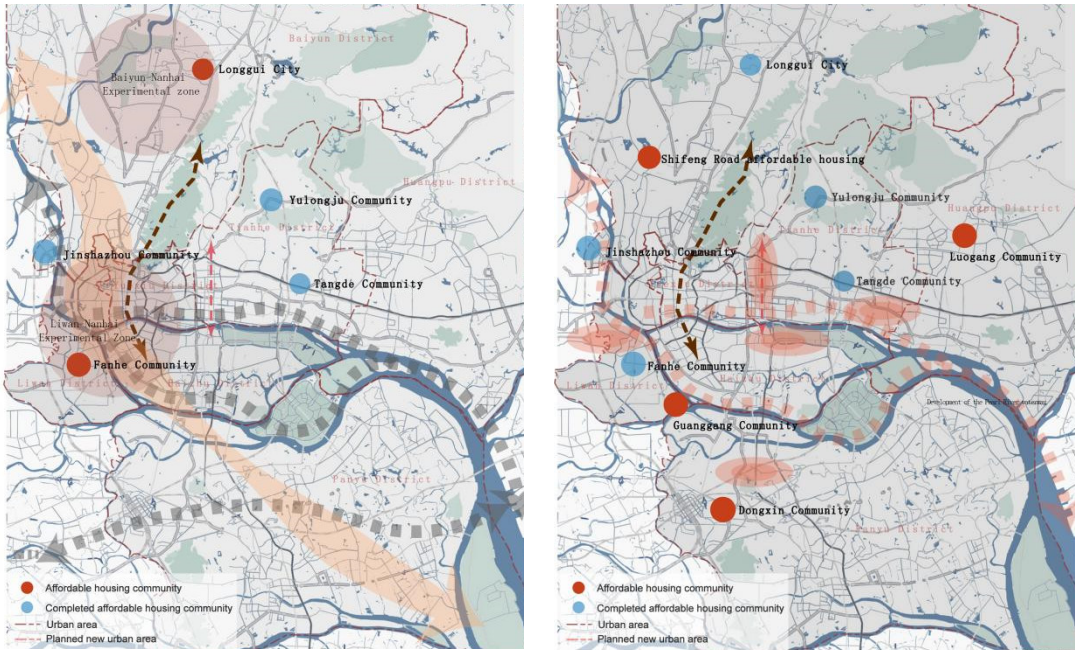
While public rental housing primarily targets low-income families, new employees, and migrant workers, the newly government-subsidized rental housing is designed for new citizens and young people. While slightly larger in size compared to other affordable housing options, it uses the same standard unit types, including three-bedroom and one-living room units, two-bedroom and one-living room units, one-bedroom and one-living room units, as well as single-room dwellings. In addition, the current instruction includes, for the first time, a new tenure: shared ownership. These homes are more spacious than those intended for rent, with three-bedroom and one-living room units reaching up to 90 m^2 in size, and a new four-bedroom and one-living room unit type offering up to 120 m^2. Another new form of housing is that for talent workers, which has no specific space standard except a minimum living room width of 3 m, thus permitting the greatest flexibility in design.

3.2. Large Community and Public Facilities

Since land in China is state owned, the land supply policy is generally effective and makes the development of large affordable housing communities feasible. The common tenure for early affordable housing communities was single tenure due to land-use planning, construction cost, and the locations of development sites. Affordable housing communities built between 1999 and 2005 were typically located at the periphery of urban centers. However, over time, they gradually became integrated into the urban fabric due to rapid urban growth. These early suburban communities faced many social issues and became known as "poor communities". Lacking basic public service facilities, the residents of these communities suffered from long daily commutes to work, lack of public transportation, and limited access to public services such as hospitals. Despite these challenges, they became activators of new urban areas (Figure 3).



(**a**) (**b**)



(**c**) (**d**)

Figure 3. Affordable housing locations in relation to urban masterplans. (**a**): 1997–2006 period and Guangzhou Urban Masterplan 2000. (**b**): 2007–2010 period and Guangzhou Urban Masterplan 2001–2010. (**c**): 2011–2017 period Guangzhou Urban Masterplan 2011–2020. (**d**): 2018–2012 period and Guangzhou Urban Masterplan 2017–2035.

The planning controls for affordable housing communities reflect significant changes in government policies and development approaches. The plot ratio of early affordable housing communities varied greatly depending on the project's location and the time of construction. For example, the plot ratio of the Tangde Community, built in 1997, was only 0.54, while that of the Jinshazhou Community, constructed in 2007, reached 2.24. In 2008, the Guangzhou Planning Bureau [44] further increased densities in its Opinions on Moderately Improving the Development Intensity of Residential Land of 2008, recommending that affordable housing should have a plot ratio between 2.8 and 4.0 to enhance land utilization. This represents a significantly higher density than that used in market housing communities (Table 5).

Table 5. Comparison of maximum plot ratios for affordable housing and market housing [41].

	Affordable Housing Community (Plot Ratio)			**Market Housing Community (Plot Ratio)**		
	Plot size (ha) ≥ 15	Plot size (ha) 5–15	Plot size (ha) ≤ 5	Plot size (ha) ≥ 15	Plot size (ha) 5–15	Plot size (ha) ≤ 5
Development Intensity Zone 1	3.3	3.7	4.0	2.8	3.2	3.5
Development Intensity Zone 2				2.6	3.0	3.3
Development Intensity Zone 3	2.8	3.4	3.8	2.4	2.7	2.9
Development Intensity Zone 4				2.6	2.6	2.8

Note: Development Intensity Zones are related to locations ranging from urban central areas to the urban periphery: 1—the highest, 4—the lowest.

These higher densities were adopted in many new affordable housing developments, such as the Jude Community in 2009 (plot ratio: 3.2) or the Fanghe Community in 2012 (plot ratio: 3.4). However, the Luogang Community recently completed in 2022 shows a new trend of decreasing the plot ratio again (Figure 4; Table 6). The community has a plot ratio of less than 2.5 to achieve a balance between a livable community environment and

high land-use efficiency. Although Guangzhou has not yet issued new guidance on plot ratios, the Detailed Rules for Land Management of Affordable Rental Housing Planning by the Shanghai Planning and Natural Resources Bureau (2022) [45] stipulate that plot ratios should be no greater than 2.5. Thus, density is used as an effective measure to control basic living conditions in residential communities.

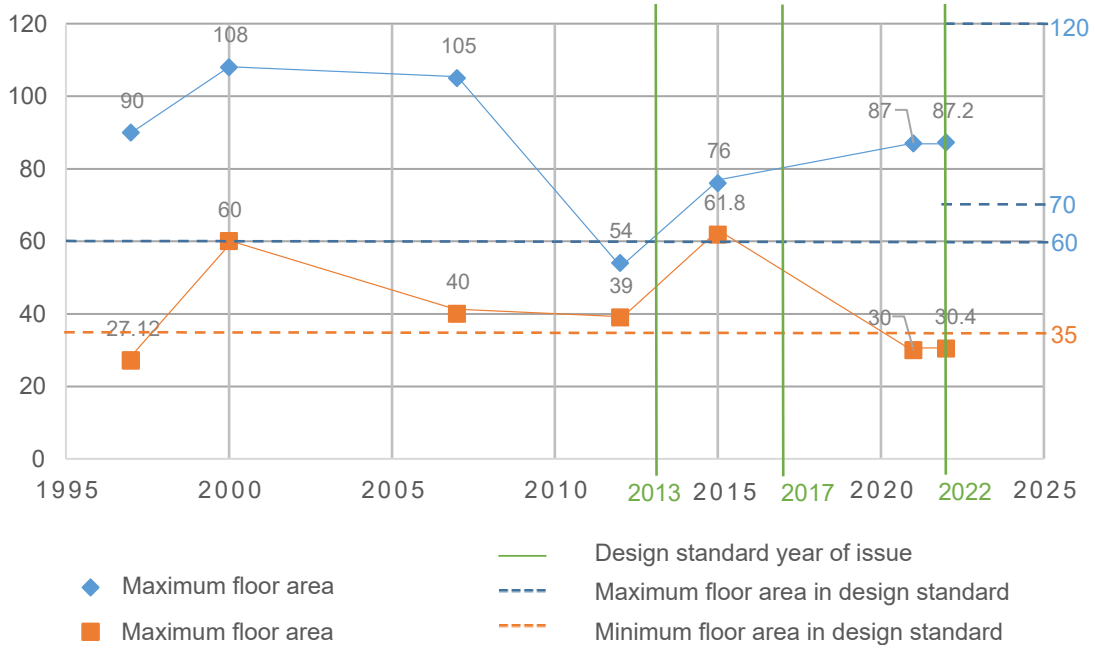


Figure 4. Changes in dwelling size in affordable housing in Guangzhou.

Table 6. Comparison of large affordable housing communities in Guangzhou.

Case	Year	Ratio	Total Units	Plot (m²)
Tangde Community	1997	0.54	11,324	1,000,000
Jinshazhou Community	2007	2.24	6116	189,000
Jude Community	2009	3.2	5576	67,800
Fanghe Community	2012	3.4	5935	110,000
Zede Community	2012	3.2	3424	87,000
Longgui City	2015	3.4	12,000	345,700
Shifenglu Affordable Housing	2021	3	3450	290,000
Dongxin Community	2022	3	3300	380,000
Luogang Community	2022	2.16	3072	405,000

For instance, Jinshazhou New Town was initially designed as a high-quality residential community with a low plot ratio and a planned population of 110,000. However, when its purpose shifted from private development to becoming an affordable housing community, its population exceeded the original planning target by nearly threefold. By 2013, while construction was still ongoing, approximately 300,000 people already lived in the community [46]. Therefore, both plot ratio and population size serve as critical indicators of residential community quality. They not only influence overall density and the living environment, which are key determinants of livability, but also impact the provision of public services and facilities.

The total number of dwelling units is another key indicator of the density and living quality in affordable housing communities, in addition to the plot ratio and population size. Except for a few particularly large communities with more than 10,000 households, such as the Tangde Community and Longgui City, early affordable housing communities

generally provided around 5,000 units, with the Jinshazhou Community and the Fanghe Community reaching a slightly higher total of 6,000 units each (Table 6).

According to the Urban Residential Area Planning and Design Standards by the Ministry of Housing and Urban-Rural Development (2018), a population range of 3,000–5,000 households is a reasonable size for a residential community. This range was first proposed in Chongqing in 2013 by the Opinions on Strengthening the Community Construction of Public Rental Housing [47]. It acknowledged that a large population size but lack of public facilities is a main cause of many problems faced by early affordable housing communities, with newer developments built since 2012, generally remaining within the recommended range of 3,000–5,000 households.

Residents in affordable housing communities are often from social groups with greater dependency on public services than others. Therefore, according to the Code of Urban Residential Areas Planning and Design (GB50180-2018) [48], public services in residential communities should include a range of facilities, which can be divided into eight functional areas: education, medical and health care, culture and sports, commercial services, finance, post and telecommunications, community services, and public utilities and administrative management. However, in the Guangzhou Instruction for the Design of Indemnificatory Housing (2013/2017/2022), only commercial and administrative facilities and car parking are mentioned. This lack of specific requirements has resulted in the common problem of service facilities provision being insufficient, especially in the first affordable housing communities in Guangzhou.

As required by Guangzhou's Interim Provisions on the Construction of Service Facilities for Residential Areas of 1988 and the Notice on Printing and Distributing the Provisions of Guangzhou on the Management of the Transfer of Public Service Facilities for Real Estate Development Projects of 2010 [49,50], the Guangzhou Housing Security Office is required to hand over all public facilities in affordable housing communities to the relevant government departments, who are to manage them and ensure they are well run and that residents can use them at a low cost. However, mismanagement and corruption have led to problems of privatization and vacant facilities. For example, the health center in the Jude Community was planned as a community hospital, but was eventually operated by the private Fuda Cancer Hospital [9]. This meant that residents could not access public medical services, and conflicts between residents and the government arose. Many early large-scale affordable housing communities such as the Jinshazhou Community and the Tangde Community experienced similar problems (Table 7).

Table 7. Comparison of planned, built, and current provision of public facilities in the three affordable housing communities Jude, Tangde, and Jinshazhou.

		Jude			Tangde			Jinshazhou		
Facility type	**Inadequate Facilities ***	**1**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**
Education	Secondary School				√	√	C			
Medical and health	Hospital	X	X	X	X	X	X	X	X	X
	Medical center	√	√	C	√	√	◎	X	X	X
Culture and sports	Cultural center				X	X	X	X	X	X
	Sports building	X	X	X	X	X	X			
Finance, post, telecommunication	Post and telecommunications							√	√	◎
Community services	Nursing home							X	X	X
	Rehabilitation center for the disabled				X	X	X	X	X	X
Municipal public utilities	Public Parking				X	X	X			
	Bus Stops							X	X	X
Administrative management	None									

Key: 1—planning; 2—construction; 3—current; X—not provided; √—provided; C—changed provision; ◎—left vacant after completion. * Only facilities in affordable housing are shown that are commonly found to be inadequate, e.g., secondary schools while primary schools are usually also provided.

The necessary holistic planning of the provision, transfer, and long-term maintenance of public service facilities was improved when responsibility for it was passed on to new state-owned companies that operated more like businesses. Developments built since 2012 provide more diverse public facilities including home care, elderly care or fitness centers, and have been built in more central urban areas with better public transportation. For example, the Luogang Community (2022) is located within the Luogang District in an area that is transforming into a new central urban district of Guangzhou.

While some newer residential communities in Guangzhou adhere to recent guidelines by offering a mix of affordable and market housing, most large affordable housing developments in the city still do not include such a mix. This is because private developers do not find it profitable, and there is a perceived risk of causing social conflicts.

3.3. Diversity of Housing Types

The gross internal floor area of dwellings in affordable housing has significantly changed over the last two decades (Figure 4). Dwelling size has increased from 1997 to 2007, but has reduced since 2008, which is due to a shift from homes built for ownership to smaller dwellings for rent. Coinciding with changes in the design instructions in 2013, 2017 and 2022, the maximum dwelling size was up to 108 m^2 in 2000, then reduced to 54 m^2 in the early 2010s, and currently stands at around 87 m^2. In contrast, the minimum dwelling size has seen little change since 2013 and is around 30 m^2.

While there have been great fluctuations in and experimentation with dwelling size, at the same time, much design emphasis has been placed on developing more diverse layouts and variations in dwelling types with similar gross internal floor areas to offer residents a greater choice that suits their different lifestyles, habits, and needs. For example, in the Fanghe Community, seven dwelling types ranging from 2B1L (two bedrooms and one living room) to 3B1L (three bedrooms and one living room) were developed within a similar floor area, ranging from 48.5 m^2 to 54.3 m^2 (Figure 5).

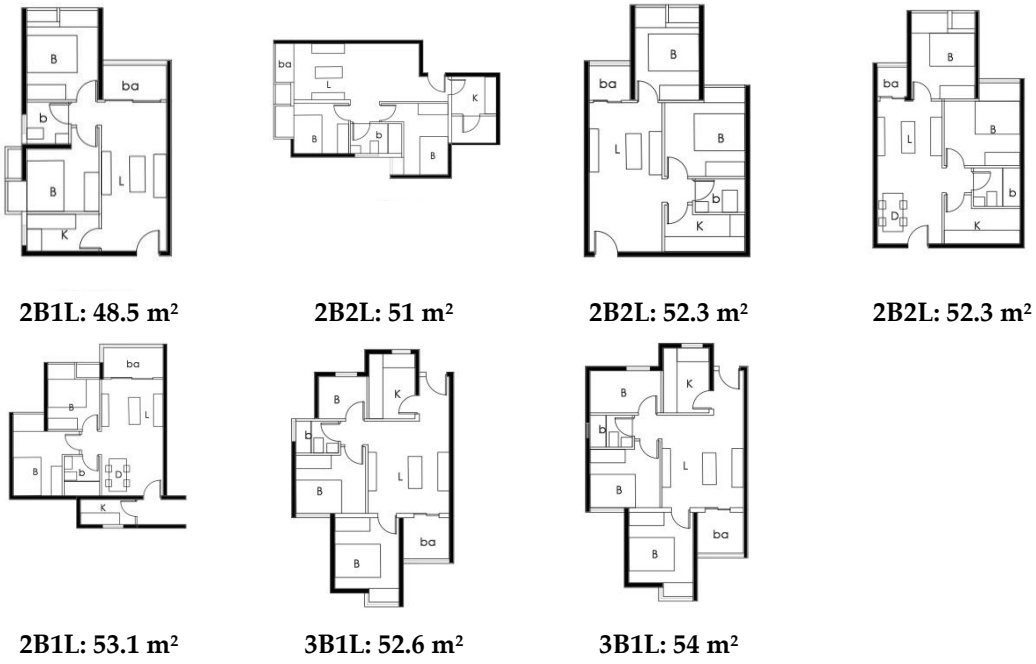


Figure 5. Affordable housing unit types in the Fanghe Community (2012). B = bedroom; L = living room.

3.4. Environmental Design

The spirit of design experimentation and innovation found in early affordable housing projects, such as the Jinshazhou Community (2007), is also evident in more recent developments like the Fanghe Community (2012), with an increasing design focus on environmental concerns. Fanghe is the first affordable housing development to meet new energy and Green Building standards, with great effort put into designing public or shared spaces that are well connected and functional, including rooftop areas, communal corridors, and a children's playground (Figure 6).

Figure 6. Common circulation spaces providing shared social space in the Fanghe Community (2012).

The Fanghe Community has also created a unique pedestrian system to connect different areas in the estate by elevating parts of the buildings on pilotis. This has freed up

sections of the ground-floor level of the buildings, turning them into 6 m tall open, public spaces that offer protection from the rain and sun while connecting different parts of the community (Figure 7). This provision of shared social space has been especially beneficial for smaller dwellings, often inhabited by single individuals.

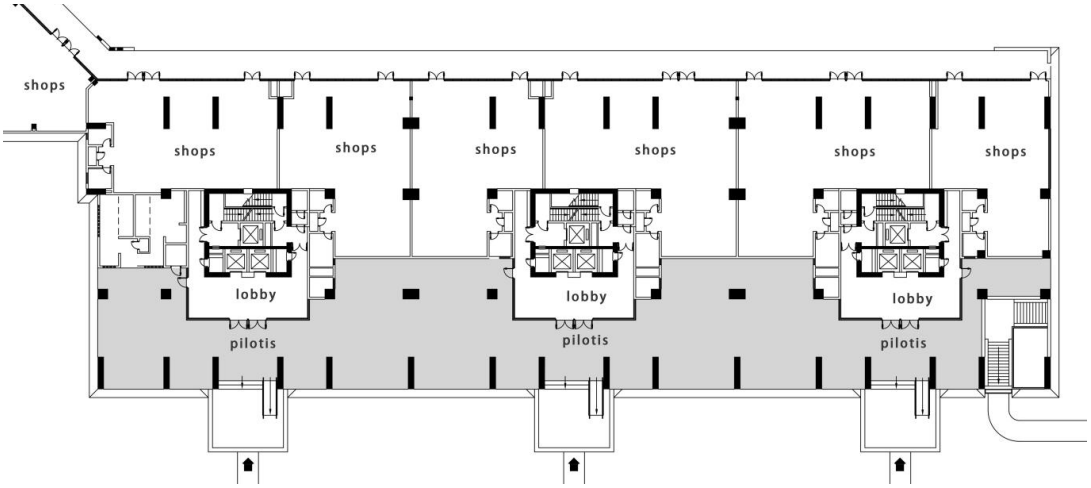


Figure 7. The use of pilotis to create a pedestrian system (Fanghe, 2012).

The design of the multi-layered green spaces and pedestrian spaces protected by a pilotis-supported structure improves the micro-climate. At the same time, materials in the external protective structure of the buildings were chosen to reduce energy consumption. Additional sustainable design features throughout the development are water-saving appliances, rainwater recycling, and graded water supply to improve recycling and reduce energy consumption.

Taking into account shared lifestyle preferences and climatic conditions in Guangzhou, the design of affordable housing has increasingly focused on improving the orientation of a housing unit, with rooms facing south and east preferred because west-facing rooms overheat and north-facing rooms receive no direct sunlight. Balconies and interior spaces are carefully designed to enhance both natural ventilation and daylight. Rooms oriented south and east provide a healthier and more comfortable interior environments with better natural ventilation and daylight. This is why more affordable housing is designed to maximize the number of dwellings with the preferred south and west orientation, which has led to building floor plans that were previously always symmetrical becoming asymmetrical as well as a change in housing typologies (Figure 8).

(**a**) (**b**)

(**c**) (**d**)

Figure 8. Changes in building layouts. (**a**,**b**): Symmetrical layouts in the Tangde Community (1997) and Jinshazhou Community (2007). (**c**,**d**): Asymmetrical layouts in the Dongxin Community (2022).

The orientation of a dwelling is particularly important for low-income households, as they tend to prioritize natural ventilation and light to save cost by reducing energy consumption. These factors are not only essential for environmental comfort, but also reduce long-term operational costs, especially in Guangzhou's humid and hot subtropical climate. In contrast, for high-income groups, the landscape may be considered more important than the dwelling orientation, as they can afford air conditioning [51]. Therefore, the planning and dwelling design of affordable housing communities should take into greater account the lifestyle preferences of low-income groups.

4. Conclusions

In 2022, the Liwan District and the Huangpu District of Guangzhou reclassified seven existing housing communities as affordable rental housing, including Jianfang Apartment in Liwan District, Jianmingda Mansion, Comba Communications Dormitory Building, and the East District Staff Building in the Huangpu District. This has provided a total of 3,758 affordable housing units [49]. Compared to the far-reaching housing marketization in the 1980s, this signifies a fundamental shift in housing priorities with the aim of securing housing as long-term public assets.

China's affordable housing supply system has significantly evolved to improve the quality and livability of residential communities. Design experimentation and pilot projects have become key strategies for adapting to rapid urban and social changes and improving housing and estate design. Further research is however needed to study in greater detail the benefits or disadvantages of using experimental pilot projects as a way of testing and implementing housing policy and design, as well as how China's affordable housing might differ from public housing provisions elsewhere.

Public rental housing has become the preferred affordable housing model in Guangzhou. To plan for sustainable future development, however, requires a comprehensive analysis of housing need and demand, social integration and division in tenure-blind estates, long-term housing affordability and locations, as well as questions around the provision of public services. A challenge that needs to be hereby assessed is whether state-owned enterprises can effectively manage and maintain public rental housing in the longer term to ensure equitable housing access and improve housing quality and standards at the same time.

Although Guangzhou has experience with affordable housing since the 1990s, official design guidelines and standards were only issued as recently as 2013. As discussed, the

latest 2022 version of the guidelines has seen significant changes, widening the target groups to include new employees and skilled workers. This shift reflects a transition from social housing for those in economic need to a public housing system accessible to a broader segment of society and a move away from market housing.

This not only acknowledges the diversity of housing needs in a rapidly growing city like Guangzhou, but also underscores the demand for more socially inclusive housing models. Importantly, this indicates a fundamental change in how the state assumes social welfare responsibilities and intervenes in the housing sector to limit private sector dominance.

However, moving forward, new design standards and indicators for the design and quality of housing are necessary. These standards may encompass regulations on space standards, plot ratios, total populations in residential communities, and long-term maintenance and management of service facilities, but should also consider the social and environmental values provided by housing. It is also important to study to what extent the recent transformation of housing supply is transferable to other contexts and countries in need of affordable housing.

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References

1. Shenzhen Land Resources and Real Estate Management Bureau. *Research on the Construction and Management Mechanism of Public Rental Housing*; Shenzhen Land Resources and Real Estate Management Bureau: Shenzhen, China, 2007.
2. Qiu, J.; Liu, Y.; Huang, Y. Two Structures of Affordable Housing Provision in Large Chinese Cities: Practices in Guangzhou and Shenzhen Against the Background of Development Transition. *South Archit.* **2020**, *3*, 114–119.
3. Chen, J.; Yang, Z.; Wang, Y. The New Chinese Model of Public Housing: A Step Forward or Backward? *Hous. Stud.* **2014**, *29*, 534–550.
4. Ministry of Housing and Urban-Rural Development; National Development and Reform Commission; Ministry of Finance; Ministry of Natural Resources. *Opinions on Further Regulating the Development of Public Rental Housing*; Ministry of Housing and Urban-Rural Development: Beijing, China, 2019; Document No. 55.
5. Gong, Y. and MacLachlan, I. Housing Allocation with Chinese Characteristics: The Case of Talent Workers in Shenzhen and Guangzhou. *Eurasian Geogr. Econ.* **2021**, *62*, 428–453.
6. State Council. *A Notification from the State Council on Further Deepening the Reform of the Urban Housing System and Accelerating Housing Construction*; State Council: Beijing, China, 1998; Document No. 23.
7. Liu, Y.; Qiu, J. From "Mass Model" to "Residual Model": Evolution of Affordable Housing Policies in Urban China since the 1990s. *Mod. Urban Res.* **2018**, *2*, 108–115.
8. State Council. *A Notification from the State Council to Promote Sustainable Development of Real Estate Industry*; State Council: Beijing, China, 2003; Document No. 18.
9. Yuan, Q.; Ma, X. Supply of Public Facilities in Indemnificatory Residential Community: A Case Study of Guangzhou. *City Plan. Rev.* **2012**, *36*, 24–30.
10. He, W.; Liu, Y. Affordable Housing and Neighborhood Evolution Characters. *Planners* **2014**, *30*, 5–12.
11. Wang, Y.; Alan, M. The New Affordable and Social Housing provision system in China. *Int. J. Hous. Policy* **2011**, *3*, 237–254.
12. Yan, J.; Haffner, M.; Elsinga, M. *Chinese Social Housing Governance: Three Levels of Government and the Creation of Hybrid Actors*; ENHR: Uppsala, Sweden, 2018.
13. Lin, Y. An Institutional and Governance Approach to Understand Large-scale Social Housing Construction in China. *Habitat Int.* **2018**, *78*, 96–105.

14. Deng, M.; Guo, H. Application of Lingnan Regional Adaptability Theory in Affordable Residential Quarter—Design of Guangzhou Fanghe Garden Affordable Residential Quarter. *Archit. J.* **2014**, *2*, 22–27.
15. Guo, H.; Li, M. Housing Affordability Embodied in Dwelling Unit Practicing the Evaluation of Affordable Housing Units in the Lingnan Region. *Archit. J.* **2017**, *2*, 63–68.
16. Li, M. Research on the Design of the Indemnificatory Housing Unit in Lingnan District Orienting to the Way of Living. Master's Thesis, South China University of Technology, Guangzhou, China, 2015.
17. He, F. Research on the Surface Design of Lingnan Indemnificatory Housing Base on the Regional Adaptability. Master's Thesis, South China University of Technology, Guangzhou, China, 2018.
18. Wang, F. Research on External Public Space Design of Affordable Housing Settlements in Guangzhou. Master's Thesis, South China University of Technology, Guangzhou, China, 2015.
19. Gong, Y.; Wei, Z.; Liu, Y. Online Consumption Behavior Characteristics of the Affordable Housing Residents and Their Influencing Factors in Guangzhou. *Econ. Geogr.* **2021**, *4*, 74–81.
20. Mo, H.; Wei, Z. Evolution of Community Planning in China under the Context of Improving the Quality of Residential Environments: Case Study on Subsidized Housing Estates in Guangzhou. *South Archit.* **2021**, *5*, 38–43.
21. Guangzhou Housing Security Office. *Guangzhou Instruction for Design of Indemnificatory Housing*; Guangzhou Housing Security Office: Guangzhou, China, 2013.
22. Guangzhou Housing Security Office. *Guangzhou Instruction for Design of Indemnificatory Housing*; Guangzhou Housing Security Office: Guangzhou, China, 2017.
23. Guangzhou Housing Security Office. *Guangzhou Instruction for Architectural Design of Affordable Housing and Talent Workers' Apartments*; Guangzhou Housing Security Office: Guangzhou, China, 2022.
24. Guangzhou Statistics Bureau. *Bulletin of the Seventh National Population Census in Guangzhou*; Guangzhou Statistics Bureau: Guangzhou, China, 2021.
25. Aydemir, A.Z.; Jacoby, S. Architectural design research: Drivers of practice. *Des. J.* **2022**, *25*, 657–674. https://doi.org/10.1080/14606925.2022.2081303.
26. Guangdong Development and Reform Commission. *Outline of the 11th Five-Year Plan for National Economic and Social Development in Guangdong Province*; Guangdong Statistical Information Network 2006. Available online: http://stats.gd.gov.cn/ (accessed on 12 October 2022).
27. Guangzhou Housing and Urban-Rural Construction Bureau. *The Fourteenth Five-Year Plan of Housing Development in Guangzhou*; Guangzhou Housing and Urban-Rural Construction Bureau: Guangzhou, China, 2021.
28. Pan, J. Based on Urban Growth Machine Theory of the Studying of Construction Mode of Indemnificatory Apartment of Guangzhou. Master's Thesis, Guangzhou University, Guangzhou, China, 2013.
29. Zhou, S.; Chen, L.; Wu, Z. The Jobs-housing Relocation and Spatial Matching of Residents in Alleviatory Housing Neighborhoods in Guangzhou. *Geogr. Res.* **2010**, *29*, 1735–1745.
30. Ma, X.; Yuan, Q.; Zhao, J. Socio-spatial Characteristics of Guangzhou's Indemnificatory Communities. *Geogr. Res.* **2012**, *31*, 2080–2093.
31. Wang, X. The Space Development Research of the Low-Income Residents in Nanjing. Master's Thesis, Nanjing University, Nanjing, China, 2004; pp. 56–60.
32. Zou, B.; Zhou, L.; Zhang, J. Research on Housing Supply Mode and Spatial Layout for Middle-low-income Groups-Take Shenzhen as an Example. In *Harmonious Urban Planning, Proceedings of 2007 China Urban Planning Annual Conference*; Heilongjiang Science and Technology Press: Harbin, China, 2007.
33. Yuan, Q. Two Cases of Affordable Housing Construction in Guangzhou. *Beijing Plan. Rev.* **2015**, *4*, 174–177.
34. Wei, Z.; Chen, T.; Meng, Z.; Qian, Q. The Dilemma and Solution of Social Housing Development in Guangzhou: Comparative Study of Public Housing in Hong Kong. *Urban Plan. Int.* **2015**, *30*, 109–115.
35. Guangzhou Finance Bureau; Guangzhou Land Resources and Housing Management Bureau and Guangzhou Housing Reform Office. *Provisions of Guangzhou on the Administration of Payment of Land Transfer Fee and Income Distribution for Purchased Public Housing and Affordable Housing Listing*; Guangzhou Finance Bureau: Guangzhou, China, 2005, Document No. 963.
36. Yu, J.; Liu, Y. Evaluation on Residential Satisfaction of Indemnificatory Housing in Different Periods of Guangzhou: Based on the Empirical Research of Two Typical Case Areas. *J. Guangzhou Univ.* **2018**, *17*, 67–73.
37. Guangzhou Housing and Urban-Rural Construction Bureau. *Notice on Further Strengthening the Housing Security Work of Registered Families*; Guangzhou Housing and Urban-Rural Construction Bureau: Guangzhou, China, 2018.
38. Guangzhou Statistics Bureau. *Guangzhou Statistical Yearbook 2021*; Guangzhou Statistics Bureau: Guangzhou, China, 2022.
39. Guangzhou Housing and Urban-Rural Construction Bureau. *The Measures of Guangzhou on the Guarantee of Public Rental Housing for New Employees without Housing*; Guangzhou Housing and Urban-Rural Construction Bureau: Guangzhou, China, 2020; Document No. 17.
40. Guangzhou Housing and Urban-Rural Construction Bureau. *Notice on Publishing the Rent Standard of Public Rental Housing*; Guangzhou Housing and Urban-Rural Construction Bureau: Guangzhou, China, 2019.
41. Liu, C. Exploration on the Model of Public Letting House-From Shenzhen's Example. Master's Thesis, Central China Normal University, Wuhan, China, 2008.
42. Guangzhou Housing Security Office. *Guangzhou Public Rental Housing System Implementation Measures*; Guangzhou Housing Security Office: Guangzhou, China, 2010.

43. Central Government of People's Republic of China. Speed up Affordable Housing Construction. 2008. Available online: http://www.gov.cn (accessed on 5 March 2023).
44. Guangzhou Planning Bureau. *Opinions on Moderately Improving the Development Intensity of Residential Land*; Guangzhou Planning Bureau: Guangzhou, China, 2008; Document No. 284.
45. Shanghai Planning and Natural Resources Bureau. *Detailed Rules for Land Management of Affordable Rental Housing Planning in Shanghai*; Shanghai Planning and Natural Resources Bureau: Shanghai, China, 2022; Document No. 20.
46. Hu, X. Research on Affordable Housing Design in Jinshazhou Guangzhou. Master's Thesis, South China University of Technology, Guangzhou, China, 2013; pp. 24–25.
47. Chongqing People's Government. *Opinions on Strengthening the Community Construction of Public Rental Housing*; Chongqing People's Government: Chongqing, China, 2013; Document No. 73.
48. *GB50180-2018*; Urban Residential Area Planning and Design Standards. Ministry of Housing and Urban-Rural Development: Beijing, China, 2018.
49. Guangzhou People's Government. *Interim Provisions on the Construction of Supporting Facilities for Residential Areas in Guangzhou*; Guangzhou People's Government: Guangzhou, China, 1988; Document No. 13.
50. Guangzhou People's Government. *Notice on Printing and Distributing the Provisions of Guangzhou on the Management of the Transfer of Public Service Facilities for Real Estate Development Projects*; Guangzhou People's Government: Guangzhou, China, 2010; Document No. 15.
51. Huang, J.; Xie, D.; Xu, Y. History Review and Mistakes Reflection on Planning and Construction of Indemnificatory Community in Transitional Period—A Case Study of Guangzhou. *Huazhong Archit.* **2014**, *32*, 13–15.