

Pricing Methods and Regulatory Policies for Existing Spatial Resources under Sustainable Urban Renewal Objectives

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Abstract: This study examines the economic drivers of urban renewal, compares benefit-sharing and cost-sharing arrangements under different land-tenure regimes, and reviews national and local approaches to pricing and regulating existing spatial resources. The findings indicate that capturing value increments and allocating rent gaps are essential to extending the fiscal potential of land-based public finance in urban renewal. Methods for calculating premiums on subdivided development rights provide the technical basis for value capture and also function as policy instruments for steering different forms of renewal. Closer coordination and integration between fiscal policy and spatial planning can support the establishment of a new and sustainable model of land-based public finance in China.

Keywords: urban renewal; land-based public finance; spatial-resource pricing; spatial planning; development rights

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China has entered the middle-to-late stage of urbanization. The 14th Five-Year Plan calls for the implementation of urban renewal, marking a shift in urban development from large-scale greenfield construction to quality improvement and regeneration of the existing built environment. The extensive construction undertaken during the period of rapid urbanization has left cities facing concentrated physical deterioration and an urgent need to restructure urban functions. By the end of 2023, China’s total urban built-up area had reached 63,700 km², while the total floor area of existing buildings exceeded 67 billion m² [1]. Between 2021 and 2023 alone, approximately 154,000 urban-renewal projects were implemented nationwide. Although some projects can attract market actors because of locational advantages or latent rent gaps, the renewal of public spaces, public-service facilities, and infrastructure continues to depend primarily on public investment. The scale of this demand places considerable pressure on local public finances.

Since 1987, China has operated a land-leasing system centered on the paid conveyance of state-owned land-use rights. Local governments have used land-price revenues to finance infrastructure, municipal services, and public facilities, thereby offsetting some of the negative externalities of land development [2]. Although excessive local dependence on land-based finance has long been criticized, the combination of paid land-use-right conveyance and market development profits undeniably formed one of the principal capital-circulation mechanisms driving China’s urban economy during the era of spatial expansion [3-4]. In the era of existing-stock renewal, however, governments can no longer rely on the conveyance of additional land to replenish fiscal resources and have therefore lost a major revenue source [5]. Serving the world’s largest urban population in the post-urbanization stage requires substantial expenditure on infrastructure operation, maintenance, and public services, further tightening public finances [6]. Strict controls on the expansion of construction land—and in some cases its net reduction—have consequently pushed many local governments toward the unsustainable practice of trading higher development capacity for fiscal revenue, while overlooking the long-term costs of exceeding spatial constraints, including higher urban operating costs, declining public-service quality, and ecological degradation [7].

Against this background, the sustainable transformation of land-based public finance has become an unavoidable issue in China's modernization [8]. Urban-renewal planning under fiscal constraints generally involves changes in the asset value of land caused by adjustments to development rights over existing spatial resources [9]. Such adjustments commonly include changes to land or subspaces in function, use, and development capacity; renewal or redemption of land-use terms; and the conversion of administratively allocated land into granted land. These changes usually require developers to make supplementary payments for land-use-right grants, enabling government and market actors to share the benefits generated by improvements in the quality and efficiency of existing spatial resources [10]. Yet the comparatively easy opportunities for redevelopment with large rent gaps—such as converting industrial land to tertiary uses or redeveloping shantytowns into market housing—have largely been exhausted [11]. Sustainable incremental fiscal revenue from urban renewal therefore depends on fine-grained planning and design that can unlock the value of existing spaces. In essence, this involves optimizing the spatial allocation of industry, population, and other factors to expand the long-term tax base [12], while also realizing one-off land-price revenues arising from adjustments to the bundle of development rights.

Accordingly, this study first investigates the internal drivers of urban renewal from the perspective of land economics. It then compares the distribution of benefits and the sharing of costs under China's land system and those of Western countries, reviews current national and local policies on land-use-right grant premiums in urban renewal, and proposes improvements to the pricing and regulation of existing spatial resources as well as to the integration of fiscal policy and spatial planning. The aim is to provide a reference for addressing the fiscal challenges of the urban-renewal era.

1 Economic Drivers and Institutional Choices in Urban Renewal

1.1 Rent-Gap Changes Triggered by Adjustments to Development Rights

Unlike the early phase of urbanization, when governments guided the outward expansion of newly developed land, urban renewal in the post-urbanization era depends more heavily on voluntary market transactions among holders of existing property rights. A key precondition for such transactions is whether the physical changes produced by renewal generate a commensurate increase in economic value [13]. Neo-Marxist economics argues that the market attractiveness of urban renewal rises as the land rent gap widens. The rent gap is the difference between the “actual ground rent” under current use and the “potential ground rent” expected after improvements in development conditions [14]. For market actors, renewal occurs when the rent gap becomes large enough to cover all redevelopment costs and still yield a surplus. Rent-gap theory therefore interprets urban renewal fundamentally as a process of creating additional land rent [15]. Government-led renewal undertaken for the public interest may instead narrow or reverse the rent gap and is often regarded as financially loss-making, but it constitutes a necessary public cost of correcting market failure [16].

Although rent-gap theory has been criticized for overstating the role of capital and neglecting the social forces that shape spatial change, it remains highly generalizable and explanatory in market-oriented contexts [17]. A substantial literature has examined the determinants of rent gaps and the ways in which their regulation can promote sustainable urban renewal [18-19]. In economics, potential ground rent is defined as the total capitalized value attainable under the “highest and best use” of land. Best use requires a good fit between location and function, and between development intensity and environmental carrying capacity—precisely the core objective of spatial planning [20]. The comparative advantages of location allow urban renewal to widen rent gaps and induce spontaneous redevelopment by assigning more suitable functions to the existing spatial environment [21]. Yet these advantages do not follow an immutable rule: spatial heterogeneity and market preferences under particular socioeconomic conditions can produce locally specific rent-gap mechanisms [22].

Spatial planning promotes the rational use and maximum comprehensive value of spatial resources by regulating development rights. In urban renewal, the adjustment of development rights is therefore a major technical means of influencing potential ground rent. Development rights comprise a bundle of subdivided

entitlements, including the right to obtain construction permission, to change use, and to increase development intensity [23-24]. Past practices—such as directly raising development intensity or replacing low-rent functions with high-rent uses—were often crude. Although they generated short-term land-price revenue and development profits for government and property owners, they also increased the long-term public costs of public-service provision and environmental governance in renewed areas. Spatial planning must therefore widen the rent gap enough to attract market participation without allowing the long-term public costs created by new development rights to undermine the sustainability of local public finances.

1.2 Public-Private Allocation of Rent Gaps in Urban Renewal

The rent gap accrues to both private and public actors. It not only creates gains for owners of existing spatial resources, but also supports the principle that part of land-value appreciation should be captured for the public, whether land is publicly or privately owned. Such public capture provides continuing fiscal resources for infrastructure investment and public-service provision [25]. This arrangement is known as land value capture: a policy instrument combining law, public finance, and spatial planning. Land value capture allows local governments or communities to recover part of the increase in land value generated by public investment and other government actions and to reinvest it, thereby creating a virtuous cycle between land value and public-service funding and improving the sustainability of urban finance [26].

The instruments used for land value capture vary markedly across land-tenure and fiscal systems. In countries with public or mixed land ownership, governments obtain infrastructure finance through the lease or transfer of public land [27], a mechanism particularly important in developing economies with limited initial public capital [28]. In countries dominated by private land ownership, governments rely more heavily on property taxes and taxes on value appreciation to fund the long-term operation of public services and maintenance of infrastructure [29]. Some scholars associate these two models with different stages of urbanization. During the early stage, governments may accumulate capital by transferring land rights to the private sector in exchange for one-off receipts [30]. Once urbanization matures and municipal infrastructure and public facilities become relatively complete, expenditure shifts from initial construction to long-term operation, while revenue shifts from one-off capital receipts to recurrent taxation [31]. On this basis, researchers have examined traditional land value capture instruments such as betterment levies and up-front betterment contributions, as well as newer instruments such as tax increment financing [32].

China's land-use-right grant premium is not simply a one-off capital receipt, because what is conveyed is a time-limited right to use state-owned construction land rather than ownership of the land itself. Land-price revenue is therefore, in effect, a partial recovery of periodically generated land-value increments, or rent gaps. In an initial conveyance, the actual rent of undeveloped land may be treated as zero, making potential rent equivalent to the entire rent gap. This gap can then be divided into land-price revenue captured by the public sector and development gains retained by private actors [33].

In urban renewal, the rent gap is more complex. Jiang Kaikai et al. [34] divide it into a depreciation rent gap, a development rent gap, and a regulatory rent gap. The depreciation rent gap consists of the additional economic output generated by renovating the buildings and built environment carried by the land. Public capture of this increment is mainly reflected in taxes on property transactions; value created by owner-initiated renovation of self-held property is generally not captured by the public sector because the underlying cost is borne by private actors and the renovation often creates positive externalities for surrounding urban space [35]. The development rent gap arises from passive appreciation caused by improvements in the surrounding urban environment and public services [36]. Because its costs are borne by the public sector and neighboring owners, public capture corresponds to a recurrent tax on property appreciation and is also relevant to current experiments with property taxation in China [37]. The regulatory rent gap is the difference between the market values of old and new development rights. Since the change in value is generated entirely by public regulation of land-use conditions, it corresponds to the supplementary payment of a land-use-right grant premium [38].

These studies show that land-based public finance in the context of existing-stock renewal is evolving toward diversified revenue streams because value increments have multiple sources and rent gaps are captured at different stages. The land-use-right grant premium captures the one-off transformation of the rent gap caused by changes between old and new development rights [39]. Importantly, however, short-term land financing through rent-gap capture is not the only fiscal source in the renewal era. Long-term revenue generated by a better spatial match among functions, industries, and other factors is more compatible with long-term urban operation. Moderately lowering land prices to widen private rent gaps, induce factor reallocation, and release economic vitality has therefore become a new option for allocating and dynamically regulating rent gaps between the public and private sectors.

2 Evolution of National Policies for Pricing Spatial Resources

2.1 Formation and Refinement of Market-Based Pricing Mechanisms

The 1988 amendment to the Constitution established the legal principle of paid land use, confirmed state ownership of urban land, and authorized the government to convey land-use rights within the limits prescribed by law. In the same year, Article 2 of the Land Administration Law of the People's Republic of China was amended to state that "the State shall, in accordance with law, institute a system of paid use of state-owned land; specific measures shall be formulated separately by the State Council" and that "the right to use state-owned or collectively owned land may be transferred in accordance with law; specific measures shall be formulated separately by the State Council."

In 1990, the State Council promulgated the Interim Regulations on the Assignment and Transfer of the Right to Use State-Owned Land in Urban Areas (hereafter, the Interim Regulations), which set out the basic rules governing the conveyance, transfer, lease, mortgage, termination, and allocation of land-use rights. Article 18 further stipulated that where a land user seeks to change the use specified in the land-use-right conveyance contract, consent must be obtained from the grantor and approval secured from the land administration and urban-planning authorities; the contract must then be re-executed, the premium adjusted, and registration completed. The Interim Regulations, however, did not specify how the land-use right should be priced. At this stage, pricing therefore relied mainly on administratively guided prices and lacked a clearly defined market mechanism.

The Urban Real Estate Administration Law of the People's Republic of China, promulgated in 1994, required benchmark land prices, standard parcel prices, and the replacement costs of different types of buildings to be determined and published periodically, with specific measures to be formulated by the State Council (Article 33). The Notice of the State Planning Commission and the State Land Administration on Fees for Land Price Appraisal, issued in the same year, introduced paid appraisal services to support the healthy development of land-price assessment under the emerging socialist market economy. In 1995, the Notice of the State Land Administration on Strengthening Land-Price Administration and Standardizing Land-Valuation Practices required land authorities at all levels to accelerate the appraisal of benchmark and standard parcel prices. The Measures for Determining the Minimum Price for the Conveyance of State-Owned Land-Use Rights by Agreement, also issued in 1995, marked the initial incorporation of market pricing into land-use-right conveyance, although the underlying techniques and policies were still incomplete and exploratory.

In 2002, the Regulations for Gradation and Classification of Urban Land and the Regulations for Valuation of Urban Land replaced their trial versions and established the basic principles, technical routes, methods, procedures, and output formats for land-price calculation. In 2006, the Notice of the General Office of the State Council on Regulating the Management of Revenues and Expenditures from the Conveyance of State-Owned Land-Use Rights prohibited any locality, department, or entity from reducing or waiving land-conveyance revenue in the name of "investment promotion," "old-city redevelopment," "reform of state-owned enterprises," or similar initiatives. It also prohibited "zero-price" or "negative-price" land transactions and disguised reductions through land-for-project exchanges, post-collection rebates, subsidies, or comparable arrangements.

The Property Law of the People's Republic of China, enacted in 2007, clarified the nature of construction-land-use rights, methods of acquisition, and the conditions governing transfer, alteration, and termination, thereby providing a stronger legal foundation for the land market (Chapter XII). The Urban and Rural Planning Law of the People's Republic of China, enacted in the same year, made a major addition to the earlier City Planning Law by establishing the necessary role of regulatory detailed-planning conditions in land conveyance (Articles 38 and 39). During this stage, direct government intervention gradually declined, while land prices were increasingly determined and regulated with reference to urban planning and market supply and demand. Pricing techniques and policies for land-use rights developed substantially, modern land-valuation methods became more complete, and the pricing of spatial resources became more scientific and transparent.

2.2 Evolution of Land-Pricing Policies for Existing Urban Space

The Central Urbanization Work Conference of 2013 adopted the policy orientation of “strictly controlling increments, activating existing stock, optimizing structure, and improving efficiency.” The Central Urban Work Conference of 2015 reiterated the need to pursue intensive development by setting an overall boundary, limiting capacity, and making better use of existing stock. The former Ministry of Land and Resources subsequently issued a series of notices on strictly controlling the scale of urban construction land. These policies demonstrate that China's development model had already begun a comprehensive shift toward urban renewal before the 14th Five-Year Plan formally called for an urban-renewal initiative. Supporting land-pricing policies also began to adjust at an early stage.

In 2013, the General Office of the Ministry of Land and Resources issued the Technical Specifications for Valuation of the Conveyance Price of State-Owned Construction-Land-Use Rights (Trial). The formal Technical Specifications for Valuation of the Conveyance Price of State-Owned Construction-Land-Use Rights (hereafter, the Technical Specifications), released in 2018, regulated changes in land-use conditions and refined the methods for calculating land prices when the floor-area ratio, land use, or multiple conditions of already conveyed land were adjusted, as well as the rules for determining the valuation date. In 2023, the Ministry of Natural Resources issued the Guidelines on Planning and Land Policies Supporting Urban Renewal. The Guidelines introduced new rules for determining reserve prices for mixed land use, exempting industrial intensification from additional land-price charges, and waiving part of the land price where land for public purposes is transferred. These provisions established a technical and policy foundation for pricing and regulating supplementary land-use-right grant premiums in urban renewal.

Nevertheless, national institutions inherited from the era of incremental development regulate only broad changes in development rights, such as land function and development capacity. They do not provide differentiated techniques for calculating supplementary land prices for common urban-renewal activities such as changes in the use of a subspace within an existing parcel. Important technical questions also remain ambiguous—for example, whether the original floor-area ratio should be the actual built ratio or the maximum specified in the planning conditions, and whether supplementary charges should be based on the current value or the original price of the land-use right. Local governments have consequently adopted divergent interpretations. Existing policies provide only general guidance and lack operational calculation pathways, making them poorly suited to situations in which changes in ownership, function, capacity, term, and spatial characteristics occur simultaneously across spatial objects of different scales and levels.

3 Local Practices in Pricing and Regulating Existing Spatial Resources

In recent years, the core urban-renewal regulations adopted by several leading Chinese cities have specified the circumstances in which supplementary land-use-right grant premiums apply, the authorities responsible for collection, and the subsequent use of the revenue. Supporting regulations further define pricing formulas. They typically use zoned benchmark-land-price methods or market appraisal to establish supplementary payment standards for different functions, while introducing adjustment factors for floor-area ratio and remaining land-use term (Table 1). In practice, local innovation has concentrated on improving the technical methods used to

price existing spatial resources and on using land premiums to steer different types and functions of urban renewal.

Table 1 Existing municipal policies and technical standards for supplementary land-use-right grant premiums in China

Year	Issuing authority	Policy document	Main provisions
2006	Nanjing Municipal Bureau of Land and Resources	Detailed Rules for the Supplementary Payment of Land-Use-Right Grant Premiums after Changes to Original Land-Use Conditions	General and special calculation methods for changes in floor-area ratio; differentiated calculation methods for changes in use; general and special methods for changes in land area; valuation date and appraisal method.
2008	Hangzhou Municipal Bureau of Land and Resources	Provisions on Further Strengthening Land-Market Administration and Regulating Procedures for Completing Paid Land-Use Formalities	General calculations for changes in use, capacity, and term; circumstances requiring a renewed conveyance; supplementary calculations for allocated and leased land with different uses; no additional charge for industrial intensification; calculations for supplementary acquisition of underground-space rights; land review and acceptance procedures; and disposal of land assets in enterprise restructuring.
2013	Xi'an Municipal People's Government	Notice on Further Promoting Economical and Intensive Land Use	No additional premium for industrial intensification; minimum-price policies for priority industries, strategic emerging industries, and enterprises relocating or renovating within the built-up area; and exemptions for specified modern-service uses in certain existing spaces.
2020	Nanjing Municipal People's Government	Regulations on the Administration of Changes to Planning Conditions after the Conveyance of State-Owned Land-Use Rights in Nanjing (2020 Revision)	Implements the Interim Regulations; no additional special provisions.
2020	Shenzhen Municipal Bureau of Planning and Natural Resources	Shenzhen Land-Price Calculation Rules	General methods for changes in use, capacity, and term; calculations for changes in the use conditions of retained land and allocated land; calculations for approved transfers of non-commercial housing supplied by agreement, excess completed floor area, and increased floor-area ratio on industrial land; special rules for individual districts; and installment-payment policies for major industrial, urban-renewal, and shantytown-redevelopment projects.
2021	Wuhan Municipal Bureau of Natural Resources and Planning	Implementation Rules for Economical, Intensive, and Efficient Land Use across the Municipality	General methods for changes in use, capacity, and term; calculations for different types of allocated land; calculation of grant-premium compensation when land is resumed; no additional premium for industrial intensification;

Year	Issuing authority	Policy document	Main provisions
			reciprocal calculations for differences in land premiums in land exchanges; calculations for excess capacity verified at completion; calculations for industrial projects in urban-village redevelopment; and methods for historically unresolved projects.
2021	Tianjin Municipal Bureau of Planning and Natural Resources	Notice on Further Regulating the Supplementary Payment of Consideration for State-Owned Construction Land	General methods for changes in use, capacity, and term; rules for determining the valuation date; and calculations where the floor-area ratio is below 1.0.
2022	Chengdu Municipal Bureau of Planning and Natural Resources	Notice on Strengthening Construction-Project Administration and Regulating Supplementary Land-Conveyance Revenue	Implements the Interim Regulations with no major special provisions; no additional premium for intensification of productive industrial land.
2023	Beijing Association of Real Estate Appraisers, Land Appraisers and Real Estate Registration Agents	Technical Guidelines for Valuation of State-Owned Construction-Land-Use Rights in Beijing (Trial)	General methods for changes in use, capacity, and term; market-comparison method preferred for urban-renewal projects; residual method preferred for projects retained and operated after development; calculation methods for mixed-use land; methods for weighting appraisal results; and technical approaches to separately built and integrated underground space.
2023	Guangzhou Municipal Bureau of Planning and Natural Resources	Rules for the Collection of Land-Use-Right Grant Premiums on State-Owned Construction Land in Guangzhou	General methods for changes in use, capacity, and term; partial reductions for conversion to profit-making research and design uses; calculations for ancillary offices and living-service facilities on industrial land; preferential methods for self-use projects; exemptions for reformed public housing; methods for allocated land and underground space; calculations for the market listing of public housing and resettlement housing; differentiated approaches to historically unresolved land; and other special cases.
2023	Chongqing Municipal Bureau of Planning and Natural Resources	Rules for Determining Parcel Prices for State-Owned Construction-Land-Use Rights in Chongqing	Calculations for the conversion of non-residential supporting facilities—such as commercial, office, and parking space—within policy housing supplied through allocation, including affordable housing, resettlement housing for rural-to-urban conversion, urban demolition and resettlement housing (including hazardous and dilapidated housing), and reformed public housing; exemptions for community facilities and certain non-counted floor areas; calculations for integrating

Year	Issuing authority	Policy document	Main provisions
			fragmented land; extending conveyance terms; historically unresolved land; and different types of allocated land.
2023	Nanning Municipal Bureau of Natural Resources	Notice on Methods for Calculating Supplementary Land-Use-Right Grant Payments for Housing on Allocated Land	Differentiated calculations for purchased public housing, collectively financed housing, commodity housing, and demolition-resettlement housing on allocated land.

3.1 Improving Pricing Methods for Existing Spatial Resources

Policy design for land prices depends on improving the methods used to price existing spatial resources. Without additional land-premium revenue, subsequent reductions, exemptions, and earmarked expenditure cannot be sustained. China's first local urban-renewal regulation, the Shenzhen Urban Renewal Measures of 2009, already distinguished between existing and additional floor area in functional-conversion projects (Article 27) and specified differentiated supplementary land-price payments for various floor-area ratios and additional functions in the demolition and reconstruction of urban villages, old residential settlements, and industrial areas (Articles 36-38). Since then, most cities that have established formal urban-renewal regimes have included provisions on changes in use and supplementary payments. Current local policies generally build on national standards such as the Technical Specifications for Valuation of the Conveyance Price of State-Owned Construction-Land-Use Rights and the Regulations for Valuation of Urban Land (Table 2). Only a few cities, notably Shenzhen and Chongqing, have substantially adapted general land-price techniques to local conditions.

The Shenzhen Land-Price Calculation Rules, issued in 2019, established a unified algorithm for supplementary land premiums in urban renewal (Table 3): supplementary premium = market land price × corresponding additional floor area × basic adjustment coefficient × urban-renewal-project adjustment coefficient. The market land price is determined through appraisal by a non-profit institution organized by the competent authority. In accordance with the Regulations for Valuation of Urban Land, the appraisal combines the standard-parcel-price coefficient correction method and the residual method (whole-site valuation), weighted at 70% and 30%, respectively. The “basic adjustment coefficient” includes land-price standards and coefficients for building type, remaining land-use term, property-right status, commercial floor level above ground, and underground space. The “urban-renewal-project adjustment coefficient” is the sum of the proportion of each land-use or transformation type in the developable construction land multiplied by the corresponding use-adjustment factor.

This method respects market principles while recognizing spatial-value differences among urban-renewal types. Its unit of calculation is not the whole parcel but the land area corresponding to a specific part of a building, which facilitates incremental renewal. A renewal actor need not consolidate ownership of every building on a parcel; it can renew a subspace after paying the corresponding land premium, thereby improving implementation efficiency.

In 2023, Chongqing issued updated rules for pricing construction-land-use rights. Closely aligned with local development needs, the rules provide detailed treatment of non-counted floor area, deductions for land prices previously charged on special functions, and supplementary pricing when formerly allocated land is converted to conveyance by agreement. Under ordinary circumstances—changes in land use, development capacity, or conveyance term—the supplementary premium is calculated as the product of the benchmark land price for the relevant use and grade in force when the planning and natural-resources authority accepts the application, the land-value-increment rate for that use and grade, the underground-space adjustment coefficient where applicable, and the additional floor area of the relevant use.

Special cases, such as converting allocated land to granted land, are calculated by function. In Nanning, for example, when purchased public housing or collectively financed housing on allocated land is converted to granted land by agreement, the formula uses the grid-point benchmark floor-land price, building floor area, floor-area-ratio adjustment coefficient, term adjustment coefficient, valuation-date adjustment coefficient, and a conversion coefficient of 10%. For demolition-resettlement housing, the conversion coefficient rises to 70%. These differentiated coefficients jointly consider the costs borne by right holders in acquiring the land and constructing the project, as well as their current ability to pay, thereby balancing equity and efficiency.

Table 2 Basic methods for calculating supplementary land-use-right grant premiums

Calculation subject	Formula
Only the planned floor-area ratio is increased	Supplementary premium = market-assessed floor land price × additional floor area
A reduction in the planned floor-area ratio produces a land-value increase	Supplementary premium = market-assessed total land price under the floor-area-ratio conditions in force when the application is accepted – market-assessed total land price under the former floor-area-ratio conditions
Only land use is changed	Supplementary premium = (market-assessed floor land price for the new use – market-assessed floor land price for the former use) × floor area
Land use and planned floor-area ratio are adjusted simultaneously	Supplementary premium = market-assessed floor land price for the new use × additional floor area + (market-assessed floor land price for the new use – market-assessed floor land price for the former use) × original total floor area
Only the chargeable above-ground floor area is adjusted, without changing the planned floor-area ratio	Supplementary premium = market-assessed floor land price × adjusted chargeable above-ground floor area

Table 3 Calculation of supplementary land-use-right grant premiums in Shenzhen

Calculation subject	Formula
① Change in land use after a land-supply contract has been signed ② Increase in floor area of ancillary commercial facilities or dormitory-type subsidized rental housing on M1, M0, W1, or W0 land ③ Allocated land that no longer meets the allocation criteria in the Opinions of the Shenzhen Municipal People's Government on Improving the Administration of State-Owned Land Supply and is converted to paid use	$\text{Supplementary premium} = \Sigma(\text{market land price} \times \text{corresponding floor area after the change} \times \text{basic adjustment coefficient after the change}) - \Sigma(\text{market land price} \times \text{corresponding floor area before the change} \times \text{basic adjustment coefficient before the change})$
Additional floor area of other buildings on M1, M0, W1, or W0 land	$\text{Supplementary premium} = [\Sigma(\text{market land price} \times \text{corresponding floor area after the change} \times \text{basic adjustment coefficient after the change}) - \Sigma(\text{market land price} \times \text{corresponding floor area before the change} \times \text{basic adjustment coefficient before the change})] \times 50\%$
Approved transfer of non-commercial	$\text{Supplementary premium} = [\Sigma(\text{market land price} \times$

Calculation subject	Formula
housing, other than policy housing, supplied by agreement	corresponding floor area after the change × basic adjustment coefficient after the change) – Σ(market land price × corresponding floor area before the change × basic adjustment coefficient before the change)] × 20%
Completed floor area on supplied land exceeds that specified in the supply contract and is confirmed by planning authorities for retention	Supplementary premium = [Σ(market land price × corresponding floor area after the change × basic adjustment coefficient after the change) – Σ(market land price × corresponding floor area before the change × basic adjustment coefficient before the change)] × 130%

3.2 Innovation in Policies for Regulating Land-Use-Right Grant Premiums in Urban Renewal

Supplementary land pricing for existing stock is a mechanism for allocating value increments generated by changes in land-use conditions. As urban renewal has deepened, some cities have used reductions, exemptions, and changes in collection methods as policy instruments to encourage spontaneous renewal of particular functions and to legalize historically unresolved land uses. These instruments can mobilize market participation while helping to resolve legacy problems.

The 2014 Shenzhen Notice on Interim Measures for Strengthening and Improving the Implementation of Urban Renewal specified how historical land in demolition-and-reconstruction projects should be handled and differentiated the sharing ratios when legalized historical land was transferred to a successor entity for renewal or incorporated into the government land reserve. The Shanghai Urban Renewal Regulations of 2021 stipulate that where urban renewal requires a supplementary land-use-right grant premium, the amount should be determined through market appraisal while taking account of land-acquisition costs and contributions of public elements. The provision of infrastructure and public-service facilities is treated as a public-element contribution and may justify a partial reduction in the supplementary premium.

Guangzhou likewise applies a relatively flexible policy. The 2024 Measures for Implementing the Redevelopment of Old Villages, Old Factories, and Old Urban Areas in Guangzhou require the premium payable for land supply in “three-old” redevelopment projects to be determined with comprehensive consideration of the renewal costs borne by the implementing entity. Chongqing exempts supplementary premiums where residential, commercial, or office land is intensified to provide refuge space, essential equipment rooms, or similar functions; where industrial, logistics, or warehousing land is intensified to improve land-use efficiency; or where the conveyance boundary is adjusted by adding land area without changing the floor-area ratio or overall building scale.

Some cities also allow deferred payment. To support industrial upgrading, transformation, and the integration of industry and urban development, the 2017 Guangzhou Implementation Opinions on Improving Urban Renewal and Promoting Economical and Intensive Land Use introduced a five-year “transition period” during which no additional land price is charged when state-owned old factories shift toward new industries or new business forms, thereby reducing both financial pressure and administrative burdens during industrial transformation. After the transition period, and subject to municipal approval, land-use procedures may be completed in accordance with the new industrial use.

A similar approach appears in the 2021 Guiding Opinions of the Beijing Municipal People’s Government on Implementing Urban Renewal. For five years after renewal, projects are not required to change the function, type of rights, or capacity specified in the original land-use-right conveyance agreement and need not pay an additional premium. The Chongqing Urban Renewal Measures issued in the same year encourage the adaptive reuse of existing land and buildings for government-supported sectors such as cultural and creative industries, health and elderly care, and scientific and technological innovation. After transformation and upgrading, right

holders may complete land-use and property-right procedures under applicable rules, provided the project conforms to planning.

A small number of cities regulate not only how supplementary premiums are collected but also how the resulting revenue is used. The Shanghai Detailed Rules for Implementing Planning and Land Policies in Urban Renewal (Trial) provide that, after the required special funds have been set aside, the balance of premiums collected through supplementary pricing of existing land may be allocated by each district to urban renewal, infrastructure construction, and related purposes. This arrangement replenishes dedicated renewal funds, eases local fiscal pressure, and allows revenue-generating projects to cross-subsidize public-interest projects.

4 Summary and Outlook for Pricing and Regulating Existing Spatial Resources

Accurately identifying the fair market value and potential rent gap of existing spatial resources, and actively regulating them, can prevent economic “windfalls” and “wipeouts.” It can also avert a new imbalance in the renewal market in which capital crowds into projects offering exceptional gains while low-return projects remain neglected. Accurate valuation is therefore both a technical precondition and a policy instrument for sharing spatial value increments between government and market actors.

4.1 Improving Pricing Methods for Existing Spatial Resources

Technically, two directions are particularly important. First, the object of valuation should move from the two-dimensional parcel to the fine-grained subdivision of local spaces. Second, the parameters of existing appraisal methods should be improved to reflect the distinctive characteristics of urban renewal. Most local repricing practices still follow a relatively simple logic and consider only value changes caused by conventional factors such as capacity, use, and term. In fact, the national Regulations for Valuation of Urban Land already state that when independent above-ground, surface, and underground rights are established on the same parcel, their prices should be assessed separately according to their boundaries, ownership, income-generating capacity, and property-right restrictions. Yet only a very small number of cities have applied local-space valuation in urban renewal. The added value created by changing functions across two-dimensional urban locations and recombining them in three-dimensional space is not fully reflected in current techniques, producing a mismatch between the market price and actual value of existing spatial resources.

The parameter systems of conventional methods—including the benchmark-land-price coefficient correction method, residual method, market-comparison method, income-capitalization method, and cost-approximation method—also require revision for urban-renewal scenarios. Traditional cost-approximation methods use parameters such as land compensation and resettlement costs, interest on land development, and land-development costs, but generally omit the direct cost of consolidating fragmented building ownership and the financing costs specific to renewal. Likewise, the parameter ranges used in residual methods—survey and design costs, preliminary works, internal infrastructure construction, real-estate development profit rates, sales profit rates, and management fees—and the capitalization rates for real estate, buildings, and land used in income-capitalization methods largely derive from historical experience with greenfield development. Applied to differentiated urban-renewal projects, they can therefore produce positive or negative bias of varying magnitude. National and local reforms of these basic methods remain limited. Existing land-price valuation systems urgently need to be adapted to the characteristics of existing spatial resources and the specific processes of redevelopment.

4.2 Regulatory Policies for Different Renewal Objectives

Policy innovation also has two principal directions. One is to adjust the land price itself through various correction coefficients; the other is to regulate the collection, subsidy, or rebate of an already determined land price. Local fiscal incentives for urban renewal have traditionally centered on tax concessions for investment promotion, rent subsidies, grants, interest subsidies, and exemptions from administrative charges. Traditional land-price corrections can be divided into planar physical-characteristic coefficients, which reflect the land and

its directly associated physical attributes—such as street-frontage depth and corner-lot effects—and external-condition coefficients, which capture the effects of environmental and locational conditions, including riverfront or waterfront location, green-space coverage, proximity to parks, concentration of commercial and service flows, and public-transport accessibility. Development-related coefficients include adjustments for floor-area ratio and the degree of land development.

Experience in pioneering cities shows that reducing or waiving the price of newly granted development rights can effectively guide the reuse of existing spatial resources. It has become a flexible instrument for supporting new industries and business forms and for addressing deficits in public welfare. Some cities have also replaced one-off collection with deferred, installment, or phased collection, reducing both the up-front development pressure and the long-term financing burden faced by market actors undertaking specified types of renewal. Under the conventional development model, developers finance land purchases in the market and can repay principal and interest only after the project is completed and revenue is generated through sales or retained operation. Where the risk of evasion can be controlled, changing the collection schedule does not reduce the government's recorded receivables, but it can shift market actors from financing land acquisition up front toward paying for land through long-term operation.

The rebate of land-use-right grant premiums in coordinated primary and secondary development is another important policy tool. Government may return part of the premium to a developer as compensation for the costs of primary development or for the commissioned construction of public services, infrastructure, or subsidized housing. Such arrangements can reduce direct fiscal expenditure while encouraging the renewal and supply of specified functions.

5 Reflection: Coordinating Fiscal and Tax Policies with Spatial Planning

A sustainable fiscal model for urban renewal requires more than technical and policy innovation in land pricing; it also requires close coordination and integration between land-related fiscal and tax policy and spatial planning. Local governments in China have historically depended heavily on land-conveyance revenue. This dependence encouraged rapid and sometimes imprudent land sales, lowered the efficiency of land use within cities, and allowed expanding construction land to encroach on agricultural and ecological space. In the era of existing-stock renewal, spatial planning can generate land-value increments by reallocating development rights and recombining functions, capacity, property rights, and location. For the private sector, these increments appear as higher rents and property values; for government, they represent additional fiscal potential. Better matching of development-right elements need not cause over-financialization through real estate. On the contrary, it can help address many of the urban problems accumulated during the period of rapid growth. The 2023 Guidelines on Planning and Land Policies Supporting Urban Renewal issued by the Ministry of Natural Resources therefore placed particular emphasis on coordinating territorial spatial planning with land policy. China's top-level urban-renewal institutions should explore a new land-based fiscal model founded on the reasonable allocation and regulation of rent gaps, while aligning the technical system of spatial planning with that model.

From conventional urban and land-use planning to the current territorial spatial-planning system, sustainable public finance has received insufficient attention. An optimal arrangement of land functions, development capacity, and built form does not necessarily maximize the rent gap; conversely, maximizing the rent gap may create excessive negative externalities and exceed the natural and artificial carrying capacity of urban space. The supply mix of development rights for different functions must therefore remain within a reasonable range of fiscal feasibility.

The immediate objective of urban-renewal planning should be to improve the fit between spatial functions and characteristics and the economic, social, and environmental conditions of the area in which they are located. Rent gaps should be widened through the optimized allocation of factors, rather than by directly increasing the floor-area ratio or the share of high-price functions. Based on spatial-planning schemes, local governments

should formulate rational long-term fiscal and tax plans, forecast the land-based revenue generated by urban renewal, and adjust spatial plans in light of expected value increments in existing space. The functional mix should balance one-off land-price receipts against long-term operating tax revenue. At the same time, planning should balance secondary conveyance revenue from existing spatial resources with short-term expenditure on supporting public facilities, and balance the long-term fiscal and tax revenue generated after renewal with the costs of operating and maintaining those facilities. Without exceeding the carrying capacity of existing space, fine-grained spatial planning and design can maximize land-value increments, distribute them reasonably between public and private actors, and establish a sustainable model of urban land-based public finance.

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