Twelve Strategies for Urban Renewal

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Abstract: Urban renewal, a key aspect of China's current urban development, involves not only the physical transformation of the built environment but also the revitalization of neighborhoods, preservation of historical and cultural heritage, optimization of economic models, and sustainable revival of urban life. Drawing on extensive urban planning and renewal practice by the author and his team, this paper proposes twelve strategies for urban renewal, built on comprehensively consideration of humanistic values, technological applications, policy support, and market dynamics. Through specific case analyses, the paper explores the implementation outcomes and challenges of these strategies, aiming to provide new perspectives and solutions for urban renewal.

Keywords: urban renewal; people-oriented; precision; talent; allocation; AI empowerment; integration of virtual and reality

As China's urbanization enters a mature phase, many cities face issues such as outdated infrastructure, inefficient urban spatial planning, and a lack of community vitality. Urban renewal, as an effective means to address these challenges, has been widely implemented and studied across the globe. However, due to differences in cultural backgrounds, levels of economic development, and policy environments, the strategies and outcomes of urban renewal vary significantly across regions. In particular, rapid urbanization in China has given rise to unique urban challenges that require the formulation of more precise and effective urban renewal strategies tailored to local social, cultural, and economic conditions.

Based on the urban renewal practices of the author and their team (hereinafter referred to as "the team"), this paper summarizes twelve key principles derived from their practical experiences, reflecting essential insights and top-level design thinking in urban renewal work. Through this research, the paper aims to provide scientific and systematic theoretical support and strategic guidance for urban renewal practices not only in China but also globally, with the ultimate goal of promoting sustainable urban development and continuously improving the quality of life for urban residents.

1 Twelve Strategies for Urban Renewal

1.1 First Strategy: Urban Renewal, Human-Centered Core

Urban renewal must be human-centered at its core. The first step in any urban renewal project is to identify the resident population, as the content of the renewal should be tailored to meet their needs. Any renewal that deviates from the desires and expectations of the local population is generally considered a failed or counterproductive example.

In 1988, the author moved to Germany for further studies, spending a total of ten years in Germany and Paris, traveling extensively across European cities and participating in the renovation of European architecture. Upon arriving in Germany, the first project the author worked on was the redevelopment planning and design of the 36th district surrounding the Berlin Wall (Figure 1). Constructed in the 1960s, the Berlin Wall divided the city into two halves. Interestingly, the wall was not built along the national border but rather in a straight line, which

meant that the western side of the wall still contained East German territory. Consequently, neither West German police could cross the border nor could East German police scale the wall. This situation led to the creation of numerous enclaves along the Berlin Wall, areas that neither East nor West Germany could govern. Refugees and stateless people from around the world set up makeshift shelters in these zones, which gradually spilled over into surrounding areas, causing urban chaos. These areas were universally regarded with disdain.

In 1988, when the author first visited the 36th district for field research, they conducted detailed surveys of every building and household in the area. The results were astonishing: approximately 300,000 Turkish immigrants lived in this district. At that time, Germany had suffered massive male population losses during World War II, and its society was predominantly composed of women who had lost everything in the war and who harbored deep resentment toward both the war and the Nazis. These women were responsible for rebuilding their cities from the ground up. To address the labor shortage, Germany brought in large numbers of foreign workers, the majority of whom were from Turkey, most of them farmers. These workers settled in this particular area of Berlin. The author was struck by the realization that the urban renewal efforts in this area were, in fact, intended to improve conditions for the Turkish community, rather than for the native Germans, as commonly assumed.

In considering how to update the area, the author also took into account the eventual reunification of Germany. With the border likely to open in the future, the children living in this area would need spaces for recreation and interaction. Therefore, the design included the creation of a "Reunification Park" for the children of both East and West Germany. Prior to this, the Berlin Wall had caused all subway lines to stop at the wall, preventing east-west connections. In the new design, the subway lines were extended and fully integrated, linking the eastern and western parts of the city. To complete the design of this district, the author personally produced over 40 drawings (Figure 2), whereas the rest of the class collectively produced fewer than 20. When the German professors reviewed the design, they were deeply impressed, as the area, which had previously been associated with decay, was now infused with a sense of hope and future potential. The professors invited the dean to join the review, and, as a result, the author—then only in their third year of undergraduate studies and having been in Germany for just three months—was admitted directly to a doctoral program.

Ultimately, the redevelopment of this area (Figure 3) was implemented based on the author's design. Three years later, the Berlin Wall was indeed torn down, the subway lines were connected, and the entire park was completed (Figure 4). During the reunification of Germany, people from both East and West gathered in the park to celebrate. Through this project, the author witnessed a Chinese individual proposing a vision for the future of the city that even Germans had never considered—"The Design for German Reunification." This exemplifies the first strategy of urban renewal: the human-centered core. When the design resonates with people's hearts, success is inevitable; when it fails to connect with the people, focusing solely on the physical renovation of buildings, it will inevitably fail.

Urban renewal must first define the target population—understanding who the design is for, and who will benefit from the redevelopment. If the intended beneficiaries are not clearly identified, it is impossible to determine the content of the renewal, and the result will be repeated failure. Currently, the majority of failed urban renewal projects fall into a significant trap. It is akin to a designer suddenly telling a group of people, "Your clothes are unattractive; I'm going to change

all of your clothes." No matter how much money is spent, if the designer does not understand the needs of the people, the outcome will only be confusion and dissatisfaction. Only by connecting with people's hearts and understanding what they truly need in urban renewal can we create projects that are beloved by the people, financially viable, sustainable, and ultimately successful.

1.2 Second Strategy: Urban Renewal, Precision is Key

Urban renewal requires precision, with success found in the details and beauty in meticulousness. The second project the author worked on in Europe was the renovation of the old city of Paris in 1988, under the guidance of a mentor. In 1988, Paris's old city possessed excellent urban spaces, but it was in a state of severe decline. This decline was, in fact, a reflection of the decline of the people living there, much like the decline of rural areas and communities in China. In many rural areas of China, the decline is caused by the exodus of local elites who are capable of organizing and leading social life. When those who are able to carry the burden of rural communities leave for cities, the villages and small towns inevitably wither. Similarly, in declining urban areas, such as slums, there are often hidden elites. However, once these children go to university, they may never return. This is a devastating phenomenon for these areas, and the old city of Paris in need of renovation was a prime example of this situation.

In this area, every building had a clear historical record. The author and the team conducted extensive and detailed research on these buildings, displaying the findings throughout Paris. The stories of each building in the old neighborhood were showcased: the architect who designed it, other works by the same architect, the residents who once lived there, and the events that had taken place. This exhibition allowed local residents to take pride in their community and made Parisians aware of the profound cultural heritage embedded in these deteriorating neighborhoods. This display led to an even more significant outcome: the stories of each building attracted new, capable individuals. After the urban renewal, the old city quickly transformed from a decaying area into a vibrant zone, attracting upper-class professionals, university professors, and other affluent groups. It became one of Paris's most successful examples of urban renewal.

This illustrates the second strategy of urban renewal: precision is key. Success lies in the details, and beauty emerges from meticulousness. Urban renewal cannot be approached in the same way as designing new buildings or new towns. The details in urban renewal determine success or failure. By uncovering the historical and cultural value of the old city, and continuously attracting new investors who resonate with its cultural significance, this neighborhood will never fall into decline again.

1.3 Third Strategy: Urban Renewal, Collective Wisdom

Urban renewal thrives on collective wisdom. Designers should be tasked with identifying and transforming passive urban spaces into proactive ones. In 2003, the author's senior, then the head of the Hamburg Port Authority, invited the author (who had since returned to China) to Germany to participate in the redevelopment of the old city along the Elbe River in Hamburg. A group of 100 designers from around the world was assembled, and a space in an abandoned dock was selected. After simple arrangements with black and white tarpaulins, a design camp was set up (Figure 5). The designers worked together for two weeks, and the walls of the camp were covered with proposals. The final report, compiled from these ideas, was highly successful.

Not only did it revitalize the abandoned dock area, but it also led to the creation of the world's first free trade zone. Today, one of the most prestigious concert halls in the world—the Hamburg Concert Hall—was designed in this area, utilizing the immense load-bearing capacity of the old warehouses and transforming them into a major landmark of Hamburg.

This case illustrates the power of collective wisdom in urban renewal. If possible, designers from around the world should be invited to form a design camp to pool ideas and leverage the experience, exposure, and creativity of a diverse group of designers. These designers, having worked on various projects and seen numerous case studies, can discover untapped potential in the passive urban spaces of the city. Passive urban spaces refer to areas that degrade the overall quality of the city and are often abandoned. If designers are given the freedom to select these spaces, they will uncover the latent value that has yet to be activated, transforming these passive areas into proactive urban spaces. Design camps should ideally last 1 to 2 weeks; any longer, and the purpose and energy of the event may be lost.

The 2010 Shanghai World Expo also benefited from the power of collective wisdom. Initially, the Expo site was not located along the Huangpu River, but rather in the Chuansha area of Pudong New District, which is now home to the Disney theme park. The reasoning behind this decision was that the area was open, easy to build on, and could be handed over to Disney after the Expo. This site selection was made in 2004. However, the previous year, a global design competition had been held for urban planning in Guangzhou, and the author, who had chaired the competition's jury, recognized the immense creativity of the student participants. The author subsequently recommended the competition to the Shanghai Urban Planning Bureau, headed by Ms. Xia Liqing, inviting students to design the Expo area.

The design camp was set up at Tongji University, and all participants, regardless of nationality, were randomly grouped into 8 teams and worked intensively for three weeks. One of the teams, however, refused to design for the proposed site and insisted on working on a location they had chosen: the banks of the Huangpu River. Their reasoning was compelling: first, only the Huangpu River would allow people to recognize they were in Shanghai, while the Chuansha site did not evoke a sense of the city. Second, the existing infrastructure on the Huangpu River site could be reused, avoiding the need for complete reconstruction in a rural area. Third, the site contained many derelict factories from the 1990s to the 2000s. Fourth, the southeast winds in Shanghai had been blowing pollutants from these factories into the city, making it a major source of air pollution for the city center. Fifth, for over 150 years, slag from steel factories had been piled along the Huangpu River, with the river's tidal flow carrying pollutants to the Bund, making it a major source of pollution for the lower and middle reaches of the river. Therefore, the team chose to focus on Shanghai's historical center, aiming to address the environmental pollution caused by the city's wind and water, while revitalizing the decaying old industrial zone.

The report from this team moved both the professors and Ms. Xia Liqing, who gave them the highest marks. Their proposal was presented to the Shanghai city leadership, and as a result, the Expo site was moved to the heart of the Huangpu River, along its central banks.

1.4 Fourth Strategy: Urban Renewal, Turning Stone into Gold

Urban renewal turns stone into gold. Old factories can be transformed into new cultural landmarks, and the dirtiest histories can become the most ecological aspects of the city. The author has visited many industrial factories, including the Jiangnan Shipyard, where they

encountered three generations of "Jiangnan people"; the laboratory of the Ninth Design Institute (which housed China's largest hydraulic simulation system at the time); buildings that had once translated scientific literature, such as Mendeleev's periodic table; and workshops that had produced China's first seaplane. The more the author learned about these industrial relics, the more affection they developed for them, and the greater the desire to prolong the life of these buildings.

From a professional perspective, China's urban construction in recent years has become the subject of ridicule in the global architectural and planning communities, particularly due to the pervasive use of the term "demolition" in urban renewal projects. Therefore, it is necessary to showcase, through events like the Expo, that the Chinese people are also deeply committed to preserving and respecting their own historical culture. Although the Expo in Shanghai could only reflect a brief segment of China's modernizing history, it still served to convey to the world that China cherishes its own culture and is capable of producing scientifically and aesthetically sound urban planning designs.

The final Expo plan preserved 250,000 square meters of industrial buildings along both banks of the Huangpu River, eight residential districts, and 15,000 households in the Expo area. A typical example is the transformation of the Nanshi Power Plant into the Urban Future Pavilion, which later became the Shanghai Museum of Contemporary Art. This plan was unprecedented in the history of Expo architectural planning and received high praise from international architecture and planning communities, being repeatedly referenced in academic circles.

Following the Expo, cities across China began to embrace the revitalization of old factories. Many large companies and enterprises invested in the renovation of industrial heritage, which began to be treated with respect and offered opportunities for transformation. These former industrial areas have since become hubs of innovation in various cities.

1.5 Fifth Strategy: Urban Renewal, Life Maintenance

Urban renewal is life maintenance. Urban planning and construction is not only about giving birth to new life, but also about nurturing the entire life cycle of the city.

The World Expo presented a crucial theme: What is a city? Historically, three interpretations have emerged: The first is that "a city is a machine." In 1933, designers, architects, and planners from around the world adopted the "Charter of Athens," which defined the city as a machine capable of housing human activities such as sleeping, working, and recreation, all interconnected by transportation functions—residence, employment, recreation, and transportation being the four primary functions of the city. This view was heavily criticized in the 1970s, leading urban studies to shift towards a more complex understanding of cities. This led to the second interpretation: "A city is an organism." In 1977, the "Machu Picchu Declaration" in Lima, Peru, acknowledged that a city is an organic entity, a product of the combination of various elements and multifunctional integration.

Forty years after the concept of the city as an organism emerged, a third interpretation arose: "A city is a living being." The concept of "City-being" introduced at the Shanghai Expo likened the city to a living organism. Recognizing the city as a living entity has led to a fundamental realization: urban renewal is not merely about superficial repairs, but rather the maintenance of the city's life force. Urban renewal that does not address the vitality of the city is simply cosmetic beautification of a sick body.

Previously, urban planning and construction were seen more like the work of a midwife—bringing a new life into existence and then concluding the work. However, with this redefined perspective, we now understand that urban planning must provide care for the entire life cycle of the city. Urban renewal must ensure that the city's life remains in a healthy and sustainable state throughout its lifespan.

1.6 Sixth Strategy: Urban Renewal, Gene-Based Foundation

Urban renewal requires avoiding traps. Only by distinguishing between a city's genetic foundation and its cells can one avoid two extremes. In 2016, while working on the urban design for Beijing's sub-center, the author introduced the paradox of urban renewal. Two leading experts fiercely debated: one argued that this area has rich historical and cultural value, and even minor demolitions would be a loss to history, while the other argued that times have changed, and without demolition and transformation, no development could occur. Such debates left urban decision-makers in a difficult position.

This is the paradox of urban renewal— the tension between absolute preservation and absolute development. Therefore, the sixth strategy of urban renewal is to clearly differentiate between the city's genetic foundation and its cells. This distinction allows one to avoid both extremes. A city is a living organism, and just like any organism, it has genetic characteristics. The genetic makeup of a city includes its unique natural features, such as rivers and sea breezes; its historically significant landmarks; and the spatial structures that support infrastructure, such as squares. These are the elements that cannot be arbitrarily changed.

On the other hand, the city's cells are meant to be updated regularly. If these cells are not updated, the life of the city will stagnate. If urban renewal equates cells with genes, it could lead to a situation where every brick and glass pane is left untouched, preventing the integration of new materials and innovative networks, which would inevitably lead to the city's decline.

Therefore, it is crucial to carefully define what constitutes the city's genetic makeup and what should remain untouched. Once that is clarified, everything else becomes "cells," which must be updated for the city to thrive. In the design of Beijing's sub-center, everything that needed preservation was preserved, and everything that required updating was updated. Ultimately, the plan received high praise from the General Secretary.

1.7 Seventh Strategy: Urban Renewal, Health Check First

Urban renewal requires a health check first.

Since urban renewal involves maintaining the entire life cycle of a city, a health check must precede the update. In 2016, as part of the Beijing Sub-center project, the author's team established a "health check assessment" mechanism based on the theory of urban life. The health check for the sub-center's detailed planning covered an area of 155 km² and incorporated an "annual health check and a five-year evaluation," including assessments for specific districts, groups, and residential areas, forming a time- and space-based health check mechanism.

This system drew inspiration from the planning of Berlin and Brandenburg's capital region. After the plan was completed, annual evaluations were conducted to track whether the city's development aligned with the planning schedule. For instance, did the first year's progress meet 1/5 of the five-year plan? Did five years of progress reach 1/3 of the 15-year plan? Or was there any regression?

In April 2021, the Ministry of Housing and Urban-Rural Development issued a notice on the "2021 Urban Health Check Program," launching the national urban health check and evaluation process. This initiative aligns the Marxist theory with China's revolutionary practices in urban development.

The data used for urban diagnostics comes from a city database accumulated over 40 years. To date, this database includes data from 13,861 built-up areas worldwide, with 504,707 independent space units (i.e., neighborhoods). The team began constructing a global smart city evaluation index system in 2011 as part of the Chinese Academy of Engineering's "Strategic Research on Smart City Construction and Promotion in China." In 2022, the "City IQ" ranking was published, selecting 500 cities from 116 countries and regions that had either won international smart city awards or participated in smart city pilot programs. These cities were evaluated across five major categories: smart governance, smart ecology, smart economy, smart infrastructure, and talent innovation. This evaluation allows each city to gauge its intelligence level in these five areas and understand its relative position compared to other cities globally.

Based on the CBDB global city database and intelligent diagnostic technology, the team scientifically assessed global innovation capabilities. To explore the key factors influencing urban innovation and pathways for enhancing urban innovation, over 160 innovation elements were collected, and six key elements (K6) were identified: technological talent, technological infrastructure, capital markets, policy environment, ecological environment, and social culture. These were used to diagnose a city's strengths and weaknesses in terms of economic development, capital power, talent allocation, research capacity, and social and cultural environment.

1.8 Eighth Strategy: Urban Renewal, Talent-Oriented

Urban renewal must focus on talent attraction. Creative people, who were once seen as consumers, are now the driving force of cities.

Talent attraction is the most important factor in urban renewal. The author has guided doctoral research involving tracking the activity trajectories of 4.5 million young people to study the impact of creative class behaviors on urban space dynamics. The development of creative cities is not only about the clustering of creative industries but more importantly about paying attention to the creative individuals themselves.

In the Hangzhou case study, the research analyzed the distribution patterns of creative industries and their relationship with urban facilities and spatial structures. The study explored the mechanisms behind these spatial distribution patterns and constructed a theoretical framework to explain them. Four dimensions of influencing factors on the spatial distribution of creative industries were identified, which were further refined into eight environmental preferences through surveys of stakeholders. An empirical investigation of Hangzhou's creative industry distribution and its relationship with environmental elements validated the impact of these factors in real-world urban space.

From the perspective of "urban convenience," the most strongly correlated factors with the spatial distribution of creative industries are leisure services, retail businesses, and dining facilities. The study found that the spatial distribution of creative enterprises is closely linked to the density of restaurants, particularly specialty eateries and diverse dining options. These preferences were especially notable among consulting and software companies, which favored

proximity to commercial and dining facilities.

In any place, food plays a crucial role in fostering innovation communities. Eating is an act that crosses boundaries—across industries, enterprises, and even cities. Whether it's academicians, students, or grassroots individuals, all can dine together in the same space, and behind each type of cuisine lies a distinct cultural gene that influences the city. The intersection of these different people and cultural genes creates a fertile ground for innovation. "Makers" are also "eaters." The gathering of creative individuals, the generation of innovative ideas, and the production of creative products often occur on streets lined with eateries. This is because both "makers" and "eaters" share common traits: they love to communicate and are eager to experience diverse cultures.

This answers the fundamental question of what urban renewal should focus on—it should aim at future vitality and human desires. A "food street" is essential to attracting innovative talent.

1.9 Ninth strategy: Urban Renewal, Focus on Configuration

Urban renewal relies on functional configuration. Splitting is elementary, but integration is a high-level skill.

In the team's Xiamen iTOD project, based on urban big data, an intelligent diagnostic analysis was conducted on elements such as pedestrian flow, logistics, and economic activity before and after the construction of the R1 line connecting Xiamen, Zhangzhou, and Quanzhou. The analysis predicted that the opening of the R1 line would extend Xiamen's commuting circle to include an additional 2 million young people, resulting in more than a tenfold increase in regional transportation network activity. This would elevate the economic connections of Zhangzhou by 120%, Xiamen by 160%, and Quanzhou by 140%. The cities would form tight industrial complementarity, greatly enhancing the industrial agglomeration and energy levels of the Xiamen-Zhangzhou-Quanzhou area.

Furthermore, drawing on global TOD (Transit-Oriented Development) case studies and pattern analysis, the team innovatively proposed the "Station—Plate—Circle—Area" (SPAF) model. This model enabled intelligent configuration of functions around R1 line stations and their surrounding areas, categorizing TOD functions into four spatially integrated patterns: mutually supportive, compatible, cohabiting, and avoiding. The functional configuration surrounding subway stations varies greatly depending on the station type. A key aspect of urban planning is understanding which functions can coexist, complement, or avoid each other. When functions that are mutually supportive are grouped together, urban vitality will explode, and the subway stations will take on very different characteristics.

The team collected case studies from different cities' subway stations, examining the relationships of functions within 360m, 800m, and 1500m radii, discovering that some functions synergize within a 350m radius, while others work best within an 800m radius, and still others can thrive within 1500m. These findings provide new insights and opportunities for urban planning, insights that were previously unrecognized. Therefore, the expertise lies in configuration. Splitting functions into simple categories like red, yellow, and green blocks is easy, but the true skill lies in the precise combination of these functions. Poor configuration can lead to urban chaos.

Just as traditional Chinese medicine often uses compound prescriptions rather than single ingredients, cities that integrate complex functions truly possess the "flavor" of a city, allowing

them to enjoy the vitality of Chinese civilization.

1.10 Tenth strategy: Urban Renewal, AI Empowerment

Urban renewal requires AI empowerment. Small units, multiple interconnections, frequent testing, and iteration.

AI can significantly empower urban renewal. In the era of traditional planning, it was impossible to achieve precise updates at the micro-level or track the progress of urban changes. However, with the development of big data and artificial intelligence technologies, we can now far exceed traditional methods, making planning work more detailed, logical, and adaptable to current trends.

Taking the Xiamen iTOD project as an example, by benchmarking global cases, the team analyzed the Point of Interest (POI) data from various floors of TOD stations and surrounding buildings to identify configuration patterns. This allowed for detailed coding of urban functions—such as industry, housing, commerce, governance, green spaces, education, healthcare, infrastructure, transportation, and innovation—into categories ranging from broad to micro-level classifications. This enabled precise functional distribution within the urban three-dimensional space.

1.11 Eleventh strategy: Urban Renewal, Virtual and Physical Integration

Urban renewal requires the integration of virtual and physical realms. Virtual can drive the physical, and vice versa.

Today's era of urban renewal is fundamentally different from the past. While in the past, the physical world drove human imagination, today, virtual elements can also lead and shape the physical world.

In 2022, at the Digital China Conference held in Fuzhou, the author's team presented a project that utilized virtual reality and augmented reality technologies to interact with 328 buildings on both sides of the Min River. Through smartphones, citizens could view virtual images of dragons, goldfish, and other figures swimming among the buildings and over the river. In Fujian, goldfish are considered symbols of fortune, and this project creatively merged virtual and real elements, responding with three key scenarios: "Millennial Crossing," "Shining Both Shores," and "Multiverse."

By using virtual reality, the audience could view dynamic virtual scenes such as fish jumping through the "Dragon Gate" or banyan trees growing, interacting with the scenes based on their personal preferences. This created a seamless blend of the physical world and the virtual, transforming ordinary spaces into vivid, interactive experiences for citizens.

Through this project, the following insights emerged:

Technology maturity makes authenticity the most important factor. People want to see real-world representations. By combining familiar real-world scenes with virtual elements, technology can enhance people's understanding of and engagement with reality, enriching their vision for a better life.

Embrace technology and the future. Urban planning has always been driven by dreams and visions. By integrating technology with these dreams, planners can understand that the future originates from their own efforts. Both the virtual and physical realms ultimately serve the basic needs of urban residents.

In 2022, the team also explored the integration of virtual and physical urban renewal in the

Xianyuan Metaverse project in Taizhou, Zhejiang. This project introduced the metaverse to a traditional old street, achieving three global firsts: the first metaverse combining digital content with economic data, the first personalized metaverse experience for each individual, and the first seamless integration of outdoor and indoor scenarios within the metaverse.

Walking down the revitalized old street, consumer data was recorded in real-time, and recommendations for stores were made based on personal preferences. At the same time, personalized virtual experiences were created based on factors such as gender and age. The Xianyuan Metaverse project introduced a new model for urban revitalization, digitally empowering urban spaces and allowing every citizen to become a pioneer in this innovative experience.

1.12 Twelfth strategy: Urban Renewal, Recognize the Seven Challenges

Urban renewal faces seven challenges that must be understood clearly:

Planning difficulties. The planning and design of the renovation of existing buildings is far more complex than the planning for new cities. It requires more attention and precision.

Government approval difficulties. There is still no unified and executable standard for urban renewal, making approval processes challenging.

Consensus difficulties. Urban renewal involves multiple stakeholders—government, planners, developers, and residents—and aligning their varied interests is often difficult.

Capital involvement difficulties. Unlike new city development, where residents move in after construction, urban renewal often involves existing residents, which complicates capital investment. Investors must carefully craft compelling narratives around these projects.

Implementation difficulties. During construction, urban renewal projects may create noise and inconveniences for local residents.

Sustainability challenges. The key to truly revitalizing a city through renewal lies in attracting innovative talent and ensuring the continuous evolution of the city.

Academic recognition difficulties. As mentioned in previous sections, academia often gets caught in the extremes of preservation versus transformation. Only by distinguishing between a city's cultural genes and its cellular structures can this challenge be overcome.

2 Summary and Outlook

2.1 Summary of Patterns

Urban renewal occurs at various scales, including point-based, area-based (such as TOD), and city-wide levels. These three scales of urban renewal should adopt entirely different approaches. As cities evolve, so too do technologies, ideas, and the people themselves. To achieve urban renewal, it is crucial not only to rejuvenate the city's surface but also to revitalize its life force. The concept of renewal must transcend the physical urban fabric, buildings, and material aspects, returning instead to the vitality of the city itself and addressing the fundamental needs of its true inhabitants.

In summary, by analyzing various types of urban renewal practices, this study aims to provide urban planners with comprehensive reference materials. The "Twelve strategys of Urban Renewal" presented here, alongside strategies tailored to both domestic and international urban contexts, are intended to offer highly actionable and practical guidance for urban renewal efforts. Through empirical analysis, these strategies have been validated for their effectiveness in

real-world applications, providing a feasible methodology for future urban renewal projects.

2.2 Future Outlook

This paper outlines a systematic set of strategies for urban renewal, but in practical project implementation, there is often a gap between theory and reality. Looking ahead, urban renewal efforts should place more emphasis on the following areas:

(1) Community Engagement: Encouraging greater participation from residents in both the decision-making and implementation processes of urban renewal projects is crucial. This ensures that renewal efforts truly meet the needs and expectations of local communities.

(2) Technological Innovation: Leveraging rapidly evolving technologies such as big data, artificial intelligence, and virtual reality will be essential. Through smart diagnostics, urban health checks, and big data analysis, cities can precisely identify issues and potentials in renewal areas, providing scientifically-informed strategies and implementation pathways that ensure refined management and sustainable development of renewal projects.

(3) Green Sustainability: Emphasizing environmental protection and efficient resource utilization, urban renewal should promote green building practices and sustainable city design principles, minimizing the environmental impacts of urban renewal activities.

(4) Cultural Sensitivity: In the process of urban renewal, attention should be given to the preservation and enhancement of local cultural characteristics. At the same time, innovative elements should be integrated into the historical and cultural foundations, achieving trans-formative results and creating unique city landmarks. This approach will help enhance the city's brand value, reinforcing its uniqueness and appeal.

(5) Sustainable Capital Operation: Future urban renewal projects should fully leverage policy guidance, adopting more flexible and diverse policy measures to encourage effective capital involvement. This will ensure a sustainable model of capital operation, guaranteeing the long-term health and success of the projects.

Through ongoing research and practice, urban renewal will become an essential force in driving urban transformation, enhancing competitiveness, and improving residents' well-being. As global urbanization continues to advance, urban renewal will play an increasingly critical role worldwide, helping cities address the rapid changes they face and achieve sustainable development in the long run.

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