

# Housing and Urban Development

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**Disclaimer :** "The paper has been submitted without any formal editing. The opinions expressed in the paper are solely those of the author and are based on an analysis of various reports and data sources from the city government of Hangzhou spanning over several years. The paper aims to highlight how Hangzhou has become a model city for future urbanization, green infrastructure, inclusivity, and sustainability. However, it should be noted that this paper is not a conclusive assessment but rather an exploratory study of the various factors that contribute to Hangzhou's success."

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## Abstract

The 21<sup>st</sup> century is often referred to as the Asian century due to the rise in economic, infrastructure, and technological development in the region. However, this growth alone is not sufficient for the coming decades. Unlike the Western nations in the 19<sup>th</sup> and 20<sup>th</sup> centuries, Asian nations must approach modernization and urbanization with a focus on Green Infrastructure, Sustainable Urban Development, Cultural Heritage Renovation & Retention, Low Carbon Buildings, New technologies & innovation cultivation, diversity inclusion, and other related factors. All these factors contribute to ecological urban sustainability.

This paper explores how Hangzhou city policies have made the city sustainable, fostered a high level of migration inclusivity, and addressed modernization while preserving cultural heritage. We also compare the recent Asian Games 2022 to other ecologically sustainable projects, while keeping the Asian ethos intact. Finally, we examine what makes Hangzhou a model city and how it influences the region by addressing migration, fostering newer technologies and healthy competition, retaining various family businesses, and more.

Understanding the "Hangzhou Model" is vital in predicting future changes in the region.

**Keywords :** Low carbon constructions, ecological urban sustainability, Hangzhou model, renovation & retention, migration diversity & inclusion, green infrastructure, Asian games.

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## 1. Overview

In 2012, a plan was made to establish an international framework for the standardization of Sustainable Cities and Communities under the ISO/ TC268. The ISO's scope includes development requirements, frameworks, guidance, and supporting techniques and tools necessary to help both rural and urban areas achieve sustainable development. This was later expanded by [ISO/TC 268 SC1] and [ISO/TC 268 SC2]. In a global conference of the ISO Technical Committee for Standardization on sustainability factors such as infrastructure & services, organizational issues, mobility, and transportation, it was announced one month after the G20 2016 in Hangzhou, China.

The city of Hangzhou submitted the "Hangzhou Plan" in compliance with ISO 37101:2016 requirements, utilizing the PDCA method to implement the international city pilot work. As a result, Hangzhou has emerged as the first global leader in standardized sustainable urban development. According to Mr. Bernard Gendron, Chairperson of [ISO/TC 268], Hangzhou has numerous highlights and has shown significant results in six areas of urban attraction, protection, ecological environment improvement, and resilience related to ISO 37101, surpassing the world in many aspects. Hangzhou has become a pioneer in sustainable development standards, green urban development, and infrastructure, serving as a model for other nations. Therefore, the "Hangzhou Plan" is a remarkable milestone that demonstrates China's wisdom and vision to the world.

*\*PDCA method – Plan, Do, Check, Act method*

Standards play a crucial role in modern society. A robust standardization system is essential to support the management of environmentally friendly public transportation options, such as bike-sharing, and the construction of sustainable infrastructure by repurposing and renovating old buildings. Hangzhou, located in China, has set an example by becoming the first city in the country to establish the following:

- The country's first e-commerce quality management standard technical committee
- The country's first elevator emergency response standardization and national demonstration
- The country's first intelligent disability care standardization
- One of the first Chinese cities to participate in the first public bicycle carbon emission trading

According to the BBC, Hangzhou is one of the eight cities in the world that provides the best public bicycle services.

## 2. Why Hangzhou Matters ?

It is essential to understand why Hangzhou can serve as a model for future urban development and how its characteristics make it ecologically sustainable. Hangzhou is a beautiful city with a young and dynamic population, including many educated youths. **Its Gross State Domestic Product (GSDP) in 2023 reached 2 trillion RMB (277 billion USD).** The core industry (Hangzhou digital economy) contributed 568 billion RMB, an increase of 8.5% from the previous year. The city's digital economy accounts for 28% of the province's GDP, which is a new record high. Hangzhou drives new-age businesses and science and technology sectors that promote economic growth and innovation. The manufacturing industry contributes 4.5% to the GSDP, with sectors such as industrial robotics, automation, and solar being among the fastest growing in the region. These sectors have nearly doubled their growth from the previous year, with a Compound Annual Growth Rate (CAGR) of 14%.

*\*GSDP – Gross State Domestic Product [ GDP of a particular State or Province ]*

Hangzhou and the province are home to a highly educated talent pool and are known for their thriving digital economy and manufacturing industries. In 2023, the city boasted 400,000 degree-holders under the age of 35. Since 2016, Hangzhou has remained the national leader in attracting talented individuals. Many young people come to Hangzhou to pursue their entrepreneurial dreams due to the presence of numerous private enterprises. Hangzhou ranks fourth in the country in terms of average salary, third in per capita deposits, and first in per capita consumption expenditure, making it an attractive destination for businesses, policymakers, and government to adopt new standardization rules. The city also has a young population and a high number of high-income families, ranking fifth in the country after Beijing, Shanghai, Guangzhou, and Shenzhen. These metrics indicate the region's healthy financials and consumption trends.

The increasing population places a greater demand on urban governance and public services. **A higher GDP indicates a more diverse economic and social environment, which requires the full mobilization of different market players to cater to the growing needs of the city.** To achieve this, a more flexible government model and better-balanced public services are necessary. **Hangzhou, being a 2 trillion yuan economy, must tackle the sustainability problem and identify its growth drivers.**

## 3. Housing in Hangzhou

The city government of Hangzhou is committed to promoting entrepreneurship and local talent by offering a housing allowance to all recent graduates who have proof of graduation and residency in the city. New graduates can receive a housing allowance for 2-3 years, with undergraduates receiving 10,000 RMB per year, post-graduates receiving 30,000 RMB per year, and doctoral candidates receiving 100,000 RMB per year. Non-fresh graduates can apply for subsidies through talent rental housing schemes, which are subject to selection and approval criteria.

Hangzhou has a thriving entrepreneurial ecosystem, and the city government offers several grants and subsidies through competitions at both city and university levels. Many new companies that qualify (those less than 3-5 years old) can receive funding ranging from 200,000 RMB to 5 million RMB. Start-ups can also benefit from ultra-low interest rates and free subsidies offered by banks. This system has helped many companies to incorporate and establish themselves in Hangzhou. Several foreign entrepreneurs have taken advantage of these benefits to establish their presence in China.

Hangzhou has established "Special Talent Day" to support and encourage the local talent pool. To provide better services to this talent pool, the city has implemented its own talent code management program. This program is designed to manage and provide services such as housing, tourism, settlement, education, entry and exit, medical care, and financing. To accommodate the growing population resulting from expansion, renovation, and restoration, the city government has committed to subsidizing rental housing for new Hangzhou residents and young people. By 2025, the government plans to launch no less than 5,000 units of public rental housing and no less than 8,000 units of affordable rental housing every year. Furthermore, employees have the option to contribute 10% - 24% of their income to the housing provident fund, which can be used to obtain loans. The government uses these funds to improve elderly communities, provide elderly care services, and ensure housing security, basic living security, and employment security.

#### **4. Urban Public Bicycle Security Management**

Hangzhou has made significant investments in its bicycle sharing system. As of 2019, the city has established 3,582 service points and 84,100 bicycles. The system has one of the highest daily rental volumes in China, with 448,600 people renting bicycles each day on average. The system's features include self-service operation, intelligent management, free time for rentals, overtime charges, and real-time settlement. Its success has made it the most extensive bicycle sharing system in the world. The standardized operation and monitoring of the bikes through their various service points ensures that tire pressure, screw tightness, and other important factors are

regularly checked. This system has become an essential mode of urban transportation for citizens and tourists alike.

In 2011, the Hangzhou Quality Supervision Bureau played a key role in establishing the Hangzhou Public Bicycle Traffic Service Development Department to improve the operation and management of public bicycles. This department is responsible for creating and implementing standards to enhance local services. In 2012, Hangzhou city developed its own standard, known as DB3301/T0011 – 2013, which outlines the "Urban Public Bicycle Operation Security Management Service Specification." Later, in 2013, the Zhejiang Provincial Local standard DB33/T898 was established, which is also focused on "Urban Public Bicycle Management Service Specification." Finally, in 2014, a national standard was created and implemented. This is a great example of how Hangzhou has been a leader in establishing sustainable standardization systems.

## **5. West Lake Longjing - going out standardization of culture**

Hangzhou is a very beautiful and scenic city. It is also known as the city of 1000 islands. Hangzhou is locally called the "Garden of Shanghai" due to its proximity to the cosmopolitan city. This city is known for 3 important things – The West Lake, Longjing Premium Tea, and Alibaba (Jack Ma). The areas around the west lake stretch for many hectares and are used in Longjing tea cultivation. It is called West Lake Longjing Tea is considered one of China's top premium teas. The first-grade tea cultivation area spans 1000 acres and is regarded as a protection area of the west lake. In 2015, the tea output was more than 100 tons (first-grade tea leaves) with an output value of 118 million RMB (16.4 million USD).

In order to enhance the tea garden and establish more "beautiful tea gardens" in the West Lake Longjing area, the Hangzhou West Lake Scenic Area Management Committee has developed a "National Beautiful Tea Garden Comprehensive Standardization Demonstration Zone (West Lake)." The committee's objective is to harmonize the ecological, production, and aesthetic aspects of the tea industry. By improving the technical standards that govern the ecological environment of tea, as well as the skill level of tea farmers, there has been a dual enhancement of social and economic benefits that has significantly contributed to the establishment of a local culture and flavor. This has led to the exportation and international recognition "going-out" of tea due to standardized practices.

In 2016, the West Lake Longjing Tea Producing Area launched an initiative to promote international management standards in tea cultivation and use. This initiative, known as the International Demonstration of the Longjing tea, aimed to raise awareness about the high-quality tea produced in the region. As part of this initiative, a "Sino-

European Mutual Recognition and Mutual Guarantee” launch ceremony was held in August 2016 to showcase the management norms, quality, and brand of West Lake Longjing tea. This initiative has helped to preserve the urban and ecological heritage of the region while also attracting new businesses and promoting global recognition of this premium product. By standardizing the production and marketing of Longjing tea, the cultural aspect of urban development and sustainability is also being preserved. This way, the “going out” of the product due to standardization preserves the urban & ecological heritage. Furthermore, this approach to urban development promotes commercial cooperation between nations and helps to develop urban infrastructure in a culturally sensitive way. This is an important strategy that separates regular megacities from culturally harmonious developed urban cities.

## **6. The E-commerce Standardization**

Hangzhou is known as the e-commerce capital of China, being the birthplace of Alibaba. In 2013, the Hangzhou Quality Supervision Bureau approved the "AQSIQ E-commerce Product Quality Risk Monitoring Center" and the "AQSIQ E-Commerce Product Quality Complaint Report Disposal Center." Their objective is to create a complete e-commerce platform for quality management and process standardization, utilizing cloud technology and big data for risk monitoring, online sampling, source tracing, local investigation, and credit management. Consequently, the "National E-commerce Product Quality Information Sharing Alliance" was established. On April 6, 2016, the "National E-commerce Quality Management Standardization Technical Committee" was established in Hangzhou. Under this provision, the Hangzhou Quality Supervision Bureau is promoting the formation of global mainstream e-commerce enterprises such as Alibaba and Amazon to form the International E-commerce Transaction Protection Standardization Technical Committee jointly. Such policies help bring local and foreign enterprises together in the city's development and urbanization.

## **7. Relocation Projects of Urban Industrial Enterprises**

Since 2002, the city has been moving urban industrial enterprises to more suitable locations in order to adjust the industrial layout and urbanization of the city. The main goal is to upgrade and create a modern urban environment, improve people's lives, encourage non-green industries to relocate with structural adjustments, and increase investment in technological transformation. This element is essential for every city. It is not about making cities bigger, but rather about making urbanization sustainable by adopting more green technology and innovation.

A classic example of this is, in 2002, a Hangzhou Oxygen Generation Factory (Hanie Industries), which had over 50 years of heritage, moved from the Gongshu Suburban district to the Lin'an Suburban district. The biggest challenge was the 6 industrial-style buildings were lying here as relics for over 10 years. Herzog & de Meuron, after surveying the site, concluded that the industrial remains would be valuable in Hangzhou's future urban life, requiring thoughtful planning, new architecture, and landscape design. **The existing factory building was renovated, repurposed, and regenerated.** After several years of upgrading, the O2 museum was showcased to the world in stages, including China's first Urban Museum leading Global Urban Change and the Museum of Arts and Science defining the concepts of the future of museums.

On September 17, 2023, the "MVRDV: Green Factory," the architectural art exhibition curated by Weng Ling, renowned art and cultural planner and founder of Innovative IDEAS of art and culture, opened the O2 museum. The exhibition is not only to showcase the MVRDV's 30 years of practice in the field of sustainability but also to attempt to bring green issues to public debate. The exhibition focuses on Hangzhou as a city representing Chinese urban tradition and urban development of the 21st century, discussing how a city can absorb energy from the past and upgrade to the future under ecological sustainability. Weng Ling believes that Hangzhou can become the leading center for China's "Big Art, Big Science." With the city undergoing constant upgradation and having the renaissance touch under repurpose and renovation, the sustainability of urban development will increase over time. Thus, making Hangzhou a model city of the East.

## **8. Hangzhou Asian Games 2022**

The Hangzhou Asian Games 2022 has been nicknamed "Green Asian Games" by environmentalists in the local papers. With big sports events like this, new urban development must consider the many small elements that make up the city. **This edition of the Asian Games has placed a strong focus on sustainability and green initiatives. The games have aimed for low or zero carbon emissions by using methanol as a low-carbon fuel for the torch and flare.** The "Asian Games Squash Hall of the Hangzhou Olympic Sports Center" was created by rebuilding the original 4D exhibition hall of "The Hangzhou National Expo Center," using the same facilities and equipment. The city has also issued the Asian Games Green and Healthy Building Design Guidelines, promoting pre-fabricated buildings, renewable materials, sound absorption materials, and insulation pipelines. Additionally, the city chose low-carbon equipment and processes, which significantly reduced construction waste.

Sustainable urban development requires the construction of healthy buildings that have a minimal carbon footprint and can be easily repurposed in the future. One

example of non-including sustainable practices includes the parliament building in London, UK, which is currently leaking asbestos. This poses a significant challenge for the construction workers who are trying to renovate the building without causing further damage. The asbestos leakage is unsustainable, polluting, and costs taxpayers millions of dollars annually to manage. In the Asian Games 2022, to reduce waste, the scraps of the mascot were collected and repurposed to create newer mascots and color decorations.

Hangzhou showcased its green development methods and lifestyles through the Asian Games and China's Waste-Free City Construction model. Many local government departments and committees are integrating sustainable urban development practices to make the entire city a sustainable future city. Educational institutes are prime advocates of such concepts, especially for the younger generation. We need more "Zero Waste Infrastructure" policies, methodologies, and frameworks taught in class as a part of sustainability, green engineering & infrastructure, and inclusive urban culture.

To create a healthy and thriving culture in future urban cities, incorporating green infrastructure, sustainable practices, and urban development standardization frameworks are not enough. It is imperative to prioritize migration inclusivity and local community engagement as part of sustainable urban development. This approach will help boost the economy, create new-age businesses, and sustain family businesses (legacy businesses). Many cities in Zhejiang Province have adopted selective frameworks of Hangzhou modernization and applied them in their city. However, it is essential to tailor and adapt the takeaways from Hangzhou, keeping in mind the unique cultural history and characteristics of each city.