

The 6th Guangzhou International Award for Urban Innovation: Collection of Outstanding Initiatives from Chinese Cities

Foreign Affairs Office of the People's Government of Guangzhou Municipality
Guangzhou Institute for Urban Innovation





Guangzhou Tram



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Enhancing Traffic Safety Near Schools Through Child-Friendly Collaborative Construction and Sharing Approach



 Xianning, China



The COVID-19 pandemic revealed many structural weaknesses in urban planning and design that exacerbated social, economic and environmental disparities. Overcoming these disparities has since become a priority for enhancing the resilience of the city. This initiative is an outstanding example of how a youth-centered approach to urban safety and place-making can be combined to help improve traffic safety, enhance urban vitality, build high-quality public spaces and help people look at the city through children’s eyes. This initiative effectively integrates these goals and takes advantage of the opportunities provided by traffic safety improvement projects to build a successful public space for children, promoting their learning and interaction with parents and neighbors, and fostering a sense of community ownership and pride. The initiative requires low investments, has a short implementation time and is thus inherently replicable and scalable.



Basic City Data

Population size: 3,036,100

Surface Area (sq.km): 9,752

Population Density (people/sq.km): 268

GDP Per Capita (U.S.\$): 8,590

Main Source of Prosperity: Agriculture, tourism, and Public Health related Services

XIANNING , CHINA

Abstract

In China, traffic congestion and safety concerns near schools pose significant challenges for management in some cities. Many parents, apprehensive about their children's safety, choose to drive them to school, exacerbating not only traffic issues but also a lot of time wasted. However, with financial constraints and no national directives, particularly in medium-sized cities like Xianning, prioritizing and executing effective solutions remains an uphill task. Addressing this issue demands collaboration across multiple departments, such as education, transportation, policing, and more, coupled with enhanced awareness among parents and students.

Background and Origins

Traffic congestion around city schools poses a significant challenge to urban management in Xianning. A primary contributor to this problem is the limited space around schools. It often leads to congestion when parents drive to drop off or pick up their children, creating a major headache known as the “school run” . Furthermore, disparities in educational resources across different parts of the city, largely stemming from economic variations, exacerbate the issue.

The 7th Elementary School of Xianning is situated in a suburban area, with its access roads in poor condition. These roads lack essential infrastructure such as street lights, surveillance equipment, and proper pavements. The intersection leading to the school doesn't have traffic signals, forcing teachers to manage traffic and escort students. All these problems have been overlooked for a long time.

The initiative emphasizes the importance of creating high-quality public spaces for urban residents. By transforming disadvantaged school environments into child-friendly, learning-oriented spaces, the initiative can address educational inequality in cities, and encourage marginalized children to engage in social interactions, strengthening their communication skills and problem-solving abilities. It also offers a fun, creative outlet so as to prevent negative psychological outcomes in these children.

The initiative anchors to the UN’ s 1996 "Child-Friendly Cities" concept and China's 2021 directives: the "China Children's Development Program (2021-2030)" and the "Guiding Opinions on Promoting the Construction of Child-Friendly Cities." It drew inspiration and alignment from multiple Sustainable Development Goals (SDGs). Moreover, it embodies the principles of the New Urban Agenda, championing equal urban opportunities and fostering safe, accessible, and green public domains.

Key Measures

The initiative represents the true essence of public-private-community partnership. The 7th Elementary School of Xianning was donated by 19 local companies and 73 citizens in 1998. In 2023, the initiative brought a new opportunity to reignite the foundational spirit of collaboration that gave birth to the school, and extend it to public-public, public-private and public-community engagement. With the personal involvement of the mayor and a wide range of departments, the city worked tirelessly to ensure the initiative’ s success and build bridges between different sectors. The private sector, recognizing the challenge, responded commendably. Private developers not only donated land for safer pathways and bike lanes but went a step further. They transformed an entire street in the

neighbouring estate into a pedestrian-only zone. The walls and fences were dismantled to open up the vista along the paths to make the walking experience more agreeable for 1-meter-tall persons. Parents, in an expression of community involvement, organized four “walking bus routes”, increasing the proportion of students walking to school from a mere 30% to an impressive 95%. Furthermore, in a unique melding of responsibility and education, each class, comprising teachers and students, is now charged with plant care, seamlessly integrating this task with the biology curriculum.

The initiative was financed by the city’s Xianning Urban Management Committee and the Xianning Housing and Urban-Rural Development Bureau. This funding accelerated infrastructure enhancements around the school. Additionally, the initiative saw the elimination of sidewalk parking and the inception of a school bus service. Private developers voluntarily dismantled barriers, allowing pedestrian access, and offered vacant space for temporary school parking. Moreover, local factories supplied waste materials like bottles, metal, and tires, donated recycled soil derived from water plant sludge. Talented local artists, working together with the school children, ingeniously transformed these waste materials into imaginative street furniture and public space decorations.

International advanced concepts are incorporated into urban needs and projects. This process aims to create high-quality project proposals that align with local requirements and receive strong support from city leaders and relevant decision-makers for this innovation. The initiative indeed encountered some challenges, not least the need for increasing additional funding as many of the innovations involved infrastructure re-design and thus additional expenses. The initiative, nonetheless, gained government support and resulted in the adjustment in the allocation on departmental budgets to fund different projects of the overall initiative. Also, the non-traditional and unique structures created by students were transformed into physical objects using methods such as 3D printing and handcrafting with fiberglass in compliance with engineering practice and accepted norms and standards. The extensive use of recycled materials in the project posed challenges during the engineering acceptance and auditing processes. To address this issue, the initiative collaborated with the urban planning bureau to develop city-level design guidelines, providing clarity and promotion for the incorporation of recycled materials.



XIANNING , CHINA

Key Innovative Aspects

1.Approaching the project from a “one-meter height” perspective, engineers collaborate closely with children, listening carefully to their thoughts. Creative concepts such as wall painting and 'protecting the Earth' originate from the imaginative ideas of the students.

2.Public participation is encouraged. The proposed public spaces are designed with children's inputs and prioritize learning. Local residents are invited to rejuvenate abandoned spaces, turning them into shared gardens.

3.A franchise policy has been implemented to incentivize real estate developers to remove boundary walls of residential complexes to expand communal spaces. Apart from that, ancillary businesses such as restaurants and after school related business are also encouraged.

4.Promoting green, low-carbon, and environmentally friendly lifestyles. In the scheme of “Shared Garden” , the construction materials were sourced from discarded bottles and cans collected by children. In public space construction around the school campus, more than 50 percent of the materials used were derived from recycled content. The entire process was conceived, from the start, as a means to educate children and their respective families to adopt low-carbon and environment-friendly habits and lifestyles.

5.Strengthening communication to build linkages among seven government sectors and multiple departments. As a result, cooperation has been enhanced among bureaus of urban management, housing and construction, public security, and education, as well as with the communities and the school.

6.Establishing four pedestrian only school routes, supported by over 100 parent volunteers.

7.The practices have been extended to other twenty schools rapidly. At the same time, city-wide design guidelines and implementation standards have been established.

Desired & Achieved Outcome

This initiative seeks to significantly improve traffic safety around schools and upgrade road infrastructure, fostering a safe and appealing route for students to walk to school and diminishing the necessity for parents to engage in the “school run” . The initiative also aims to elevate these concerns to the municipal government level. By doing so, it aims to create city-wide positive change with participation from various entities including Housing and Urban-Rural Development Bureau, Urban Planning Department, City Management Committee, Traffic Police, Neighborhood Committees, Education Bureau, schools, and private developers. A set of guidelines has been formulated and disseminated to numerous schools and cities.

After the implementation of the initiative, there was a clear separation between private car drop-offs and students walking to school. The proportion of students walking to school increased significantly from 30% to 95%. The number of private cars for student drop-offs decreased from 120 cars per hour to just 8 cars per hour. Within a 1-kilometer radius of the school, the number of traffic accidents decreased from 50 incidents per year to just one (this accident unrelated to children).

The renovation project directly impacts 800 school students and extends its benefits to their parents, families, and neighboring residents. With the initiative serving as a model, it has been replicated in 20 schools in Xianning, benefiting more than 30,000 primary school students and preschoolers.

Lessons Learned

Due to the spread of the COVID-19 pandemic, many cities have been hit hard in terms of vitality and economic strength. Therefore, it is urgent to enhance the resilience of the city, achieve environmental sustainability, improve traffic safety, enhance urban vitality, and construct high-quality public spaces, encouraging people to go out and build a city for children and youth. This initiative aims to integrate these goals and take advantage of the opportunities provided by traffic safety improvement projects to build a successful public space for children, promoting their learning and interaction with parents and neighbors, and fostering a sense of community ownership and pride. The project requires low investment, has a short implementation time, and has excellent promotional value.

Child-friendly projects should truly understand the needs and thoughts of children, allowing them to actively participate in and influence the actual projects, developing their creativity, self-confidence, and social skills, laying a solid foundation for their future.

Urban sustainability and growth necessitate the collective involvement of all stakeholders. Beyond the conventional players like governments and construction firms, it's imperative to incorporate students, parents, community members, and local businesses in urban projects. Other cities can glean insights from its "co-funding, co-building, and co-creating" ethos, with its emphasis on collaboration and a people-first approach. By sharing its model, the initiative aims to inspire similar transformative efforts elsewhere, ultimately realizing more child-centered, vibrant, and resilient urban landscapes.





Century-Old Zhangyuan and Its Journey of Renewal



 Shanghai, China



Many cities in China followed a radical model for the renewal of historical buildings and districts. Basically, it involved the demolition of old buildings and re-building replicas of the old. Shanghai has decided to use a different approach, restoring an entire historical district without demolishing old buildings and the old fabric of the neighbourhood. The operation consisted of setting up a new business model, new partnerships and new financial vehicles to provide free alternative housing solutions for those residing in historical buildings, refurbish old buildings while improving their energy efficiency and a network of spaces and pedestrian paths and bridges to breathe new life into a historical place of local Shikumen culture an architectural style unique to Shanghai.



BASIC CITY DATA

Population size: 24,894,300

Surface Area (sq. km): 6340.5

Population Density (people/sq.km): 3,926

GDP Per Capita (U.S.\$): 26,900

Main Source of Prosperity: Finance, High-end manufacturing, Wholesale and retail trade, real estate

SHANGHAI, CHINA

Abstract

The renovation and development of the Zhangyuan area aim to present the high-specification and multi-faceted Shikumen culture in its original fashion. This goal is achieved through the restoration and protective renovation of the historical buildings with the philosophy of "repairing the old as the old" and adding necessary infrastructure. A multi-dimensional comprehensive plan has been devised to take advantage of the historical significance of Zhangyuan as "the No.1 Park of Shanghai". According to this plan, an interconnected three-dimensional system of skywalks, North Maoming Road Pedestrian Street and underground space will be built to enhance the pedestrian experience. Multiple venues, including an art museum and a performance arts centre, will also be established to form a cultural hub for the residents. At the same time, the commercial sector will further cultivate the theme of Shanghainese culture, develop brand-new commercial functions and format through its leading fashion consumption experiences, and transform the area into the most influential and reputable commercial district of downtown Shanghai.



Background Information & Origins

The life quality of Zhangyuan residents is heavily impacted by the issues arising from old buildings. Even with several extensive renovations, there were limited improvements to residents' living conditions because of the constraints of the circumstances. For example, there were still 576 resident households without restrooms and were still using portable toilets. Consequently, almost half of these buildings were put up for low-end leasing, further damaging the Zhangyuan buildings. As such, residents have a strong desire for renewal.

The goals of the initiative are as follows:

(a) The initiative is designed to transform the Zhangyuan area from a residential area into the most influential commercial district in the heart of Shanghai with a rich cultural and commercial experience such that citizens can perceive the practical results of high-quality development, high-quality life and high-efficiency governance in this area.

Key Measures

1. Collected development plans of similar projects from all over the world and learned from international experiences on historical building protection, underground area development, functionality and traffic management to formulate the development plan of this initiative. The initiative aims to preserve the historical legacy of the century-old Zhangyuan in its entirety with the philosophy of block-by-block development.

2. Thoroughly evaluated each historical building in Zhangyuan on its historical, artistic, scientific and social values to determine key protection sites and formulate protection guidelines and renewal strategies.

3. Retain the original appearance of the historic building and renovate it according to historical accuracy.

4. Integrate traditional Shanghai culture with international trendy culture and promote coordinated development of culture, business and tourism. The Shanghai Shikumen architecture culture is integrated with other diverse cultures to create greater cultural influence.



Innovative Aspects

The initiative should be considered evolutionary. As more and more emphasis was put on the protection of Shanghainese history and culture, there were new requirements for the preservation and renewal of the Zhangyuan area. In other central urban areas, the transformation of old districts follows the philosophy of 'retain, renovate, demolish' approach, making Zhangyuan's preservation and development a pioneer in this field. Shanghai Jing'an Real Estate Group has innovated mechanisms, improved policies, and utilized resources flexibly to organically combine historical heritage preservation and city functionality improvements with enhanced spatial quality. With the philosophy of organic renewal and overall protection, the group gradually advances urban renewal efforts. The initiative aims to innovatively renew and sustainably utilize the area on the basis of respecting the original layout and

SHANGHAI, CHINA

features in order to promote an integration of history and modern life and make its cultural heritage a unique trademark of the city.

The initiative is innovative in the following aspects:

(a) To ensure the proper protection of the buildings after businesses move in, the Jing'an District Party Committee and Jing'an District Government required a team of experts to provide a building-specific list containing all elements of the renovated building that cannot be altered. Any special modifications by future businesses will require expert review and approval.

(b) To ensure the success of urban renewal, the project team has collaborated with relevant city departments to carry out policy and system adjustments and developments in areas such as planning, approval, investment and financing. The team has also expanded the financing mechanisms in a diverse manner to gather funds for urban renewal. The initiative has also improved the participation mechanisms through which residents, enterprises and social organizations can participate in urban renewal and protective renovation.



Desired & Achieved Outcome

The buildings in Zhangyuan did meet modern-day living requirements, whereas 576 households living in Zhangyuan had no sanitation facilities. Through the protective acquisition, the 1,125 Zhangyuan households now moved into new apartment buildings close by, with better housing and sanitary conditions such as flush toilets and independent kitchens. They now enjoy improved quality of life in their new homes.

A building-specific management guide has been established in the progression of the project for each of the 174 buildings within the Zhangyuan area, which has become a city-wide standard for protective renovation. The city government is now implementing this standard in other urban renewal projects. With the goal of a green, healthy, energy-efficient and environment-friendly outcome in mind, the project aims to achieve two stars in the Green Building Label Standard and a platinum level in the WELL Building Standard.

Since its opening in November 2022, Zhangyuan has hosted many openings for brands' first location in China as well as premieres of shows. People of all occupations and ages are able to enjoy a quality life and a brand new experience of Shanghainese culture in Zhangyuan. Zhangyuan has increased foot traffic by 40% during holidays and weekends and increased business turnover by 20%.



Integrated and Smart Neonatal Health Management System-empowering Mothers, the Family and the Community

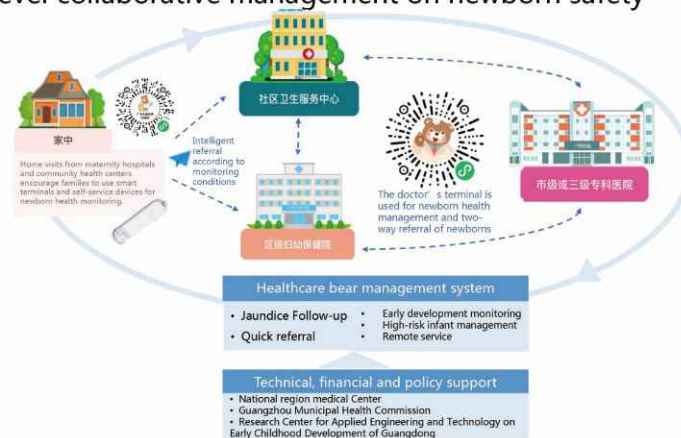


 Guangzhou, China



Guangzhou's approach to preventing neonatal jaundice from becoming a serious and life-threatening problem is an outstanding example of a system's approach to preventative health care. It is based on the seamless sharing of data on the health of newborn children between all three tiers of the healthcare system and the families concerned. AI-assisted home-based monitoring provides early warnings to the system which in turn mobilizes doctors, clinics and community-based health workers to make better-informed decisions and follow-up action. The system has already paid for itself in terms of reduction of cases requiring hospitalization and is now being extended to the child up to 18 years of age. With further development of AI-assisted diagnostics and care, this approach has the potential to transform health care.

Three-level collaborative management on newborn safety



BASIC CITY DATA

Population size: 18,734,000

Surface Area (sq.km): 7434.40

Population Density (people/sq.km): 2530

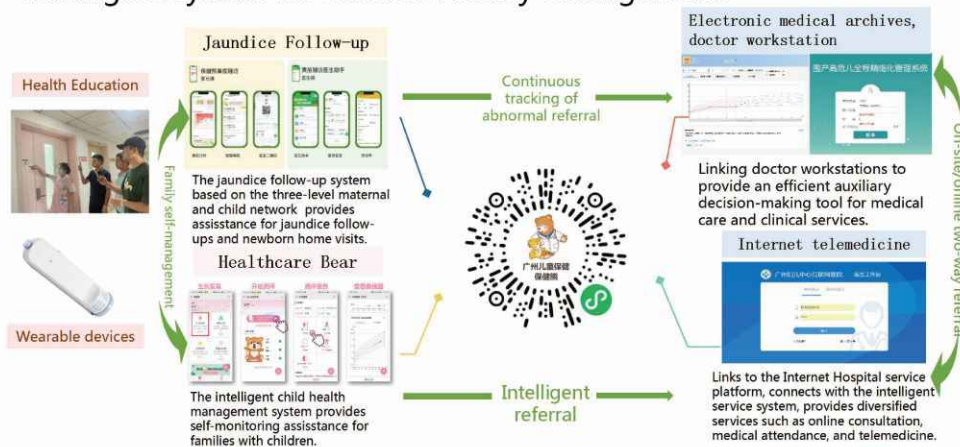
GDP Per Capita (U.S.\$): 20943.8

Main Source of Prosperity: Advanced Manufacturing Industry,
High-technology Industry

Abstract

Neonatal jaundice is a common clinical manifestation in Chinese newborns, which can lead to neurological sequelae or even death in severe cases. Neonatal health care is crucial to protect the health of newborns. Based on the local three-tier maternal and children's health service delivery system, by harnessing information and AI technology, Guangzhou developed a neonatal health management system where data across all level health institutions are pooled, interconnected and analyzed. This empowers mothers and families to actively assess and monitor the newborn's health conditions and predict the risk of infantile jaundice at home after discharge from the hospital. It also allows community healthcare givers to implement rapid hospital referrals and tertiary hospital paediatricians to easily access comprehensive health records. It further enables health administrators to track and monitor regional neonatal health conditions. It improves the newborns' well-being, reduces stress on the mother and families, optimizes the use of tertiary health resources and contributes to an integrated healthcare delivery system in Guangzhou.

Intelligent system for newborn safety management



Background Information & Origins

Guangzhou, the third largest city in China, boasts an ever-growing population that exceeds 18 million, with 160,000 newborns each year. 60% of term and 80% of preterm infants develop neonatal jaundice in China. While most of these cases are physiological, in rare cases, they may indicate serious underlying diseases such as bilirubin encephalopathy and kernicterus (with 50%~75% mortality and very expensive treatment). After discharge from the hospital, parents and community general practitioners are usually less knowledgeable and experienced in the prediction and detection of risky jaundice. It may either cause unnecessary tertiary hospital visits or lead to severe morbidity or mortality if the risky babies are not identified and referred to a hospital in time. Rapid differentiation, early diagnosis and urgent management of risky jaundice are critical not only to preserve life and avoid long-term neurologic deficits for the newborn but also to optimize the use of health care resources. In the meantime, during the COVID-19 pandemic, it became apparent that both prenatal and postnatal care had to undergo major changes to

avoid unnecessary visits to the hospital and possible contamination. A system was devised to enable pregnant women to conduct routine tests at home and to share the results through the 5G network with the health care system.



Key Measures

The current initiative aims to improve the public neonatal health service delivering model and reduce the incidence of neonatal hyper-bilirubinemia encephalopathy and the associated morbidity and mortality. It does so by developing an integrated, interconnected, universally accessible, cost-effective and smart online neonatal health management system. The objective was to develop a system that could be conveniently used by mothers, families, community and rural health practitioners, tertiary hospital paediatricians, and government health sector administrators.

With the guidance and supervision of the Guangzhou Health Commission, the initiative was designed, developed and implemented by the Guangzhou Women and Children's Medical Center (GWCMC). All 11 district-level maternal and Child Health Care Centers and 202 community health care centers participate in the system. The system consists of an interactive knowledge base and an information sharing and communication system that can be accessed in real-time by all tiers of the maternal and child health care system through 5G connectivity.

The initiative benefits children, covering newborn families in the city; parents are informed of and use the system before and after discharge from the hospital and at community visits; community doctors and doctors at medical institutions use the system to assist in obtaining information and accurate diagnosis and treatment at the time of consultation; and the initiative provides proactive popularization of science to increase the level of awareness among newborn caregivers.

The system is AI-augmented to look at trends and tendencies and to correlate health challenges with other factors, including past medical history. This constitutes the foundations of what might become the first step towards an integrated and smart systems (or metaverse) approach that will link the existing health-oriented system with social, economic and environmental determinants of health and well-being.

GUANGZHOU, CHINA

Innovative Aspects

The innovation lies on several fronts:

1. It is a voluntary system, and no one is obliged to subscribe to the system. For those who subscribe, there is the harnessing of information on newborns and the evolution of the child's growth. This provides a basic profile for the newborn.

2. With the use of information and technology, parents and community health workers can detect potentially severe cases of infantile jaundice and other ailments in a timely manner. This involves the at-home monitoring of key indicators as well as imagery.

3. The information is accessible across all children's hospitals and referral hospitals so that the child can be sent to the nearest appropriate facility for further diagnosis and eventual treatment.

The system and the information are accessible throughout the three-tier maternal and children health service delivery system in Guangzhou. The system integrates the needs of parents and newborn babies with resources and functions of community health centers, district-level maternal and children health care centers and hospitals. Data across the above stakeholders are pooled, interconnected and analyzed to constitute a smart knowledge base on growth conditions through the age of 18.

This is both an evolutionary and a revolutionary initiative. The COVID-19 pandemic revealed weaknesses and gaps in the management system for neonatal jaundice in the Guangzhou context. To address these weaknesses, it carefully analyzed each of the challenges and integrated the needs, resources and functions of families, community health centers, district-level maternal and children health care centers and hospitals in the field of neonatal health monitoring and management. Based on the three-tier maternal and children health service delivery system in Guangzhou, by harnessing information and AI technology, the initiative develops a locally adapted, easy-to-use online system where data across the above stakeholders are pooled, interconnected and analyzed. This empowers mothers and families to actively and continuously assess the health conditions of their newborns, especially the risk of neonatal jaundice.

The system is revolutionary as it is shared across the entire healthcare system, including community healthcare givers to assist in rapid hospital referral, tertiary hospital paediatricians to have access to comprehensive health records, and hospitals and health administrators to track and monitor the regional neonatal health condition. It not only improves the newborn's well-being but also optimizes the use of tertiary health resources and contributes to an integrated health care delivery system in Guangzhou. In addition, the system is also evolutionary. The program has been continuously improved in practice, aligning with government regulations as well as the service needs of families to provide better service and support.

Desired and Expected Outcomes

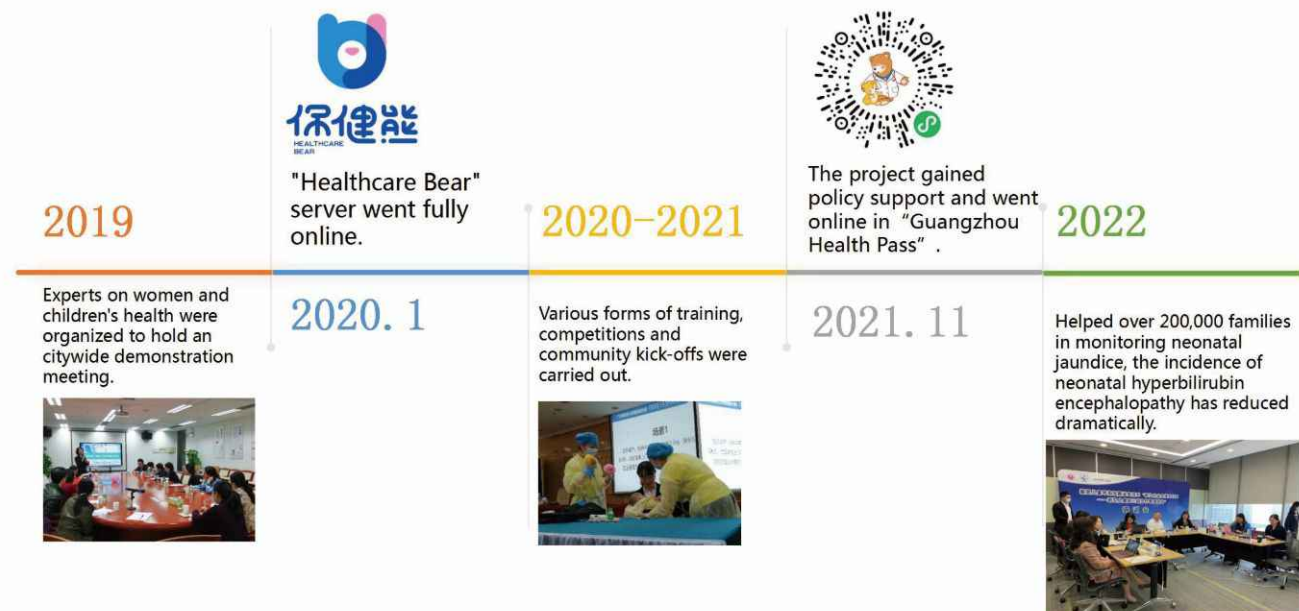
The initiative has raised awareness of the role and importance of community healthcare providers and families in managing neonatal jaundice and establishes an accessible and mother and family-centered health monitoring system. Just as importantly, the system optimizes the use of tertiary health resources and contributes to an integrated healthcare delivery system in Guangzhou. The gains in cost-efficiencies and cost-effectiveness enable the healthcare system to improve services across the board.

Although the system is voluntary, the vast majority of mothers and to-be mothers are subscribing to the system. Currently, the program has assisted over 200,000 families in monitoring neonatal jaundice, recording more than 1,200 pieces of information on neonatal jaundice per day and more than 2,000 text messages sent through the system to mothers every day. In the future, 180,000 newborns are expected to benefit from the initiative every year. The system has paid for itself in terms of reduction in costs of providing emergency care and post-care services. The number of hospitalized neonatal bilirubin encephalopathy cases at the Guangzhou Women and Children's Medical Center dropped from 30 cases in 2020 to 0 cases in 2022.

Guangzhou's experience is already informing national-level policymaking. Guangzhou and Guangdong Province are more than willing to help other cities and regions in devising their own strategies to improve prenatal, neonatal and postnatal healthcare systems.

COVID-19 revealed some very important gaps and shortcomings in Guangzhou's neonatal care system. Parents tended to rush to the hospital, bypassing community-level care providers and the referral system. The lockdowns imposed during the pandemic obliged the healthcare system to review and revise its entire system and governance structure. It realized that it had to empower the people at the base, namely mothers, families and community-level caregivers, as the starting point and work upward. Once these priorities were defined, IT and AI played a significant contributing role by allowing and enabling the sharing of information, knowledge, expertise and experience in a system-wide approach. The initiative is still primarily a health initiative. The next steps will be to explore how the system, through the help of AI, can be integrated with knowledge and information pertaining to the social, economic and environmental determinants of health and well-being. This will provide the foundations for a people-centered "metaverse" system for the truly comprehensive health and well-being of mankind.

Project schedule





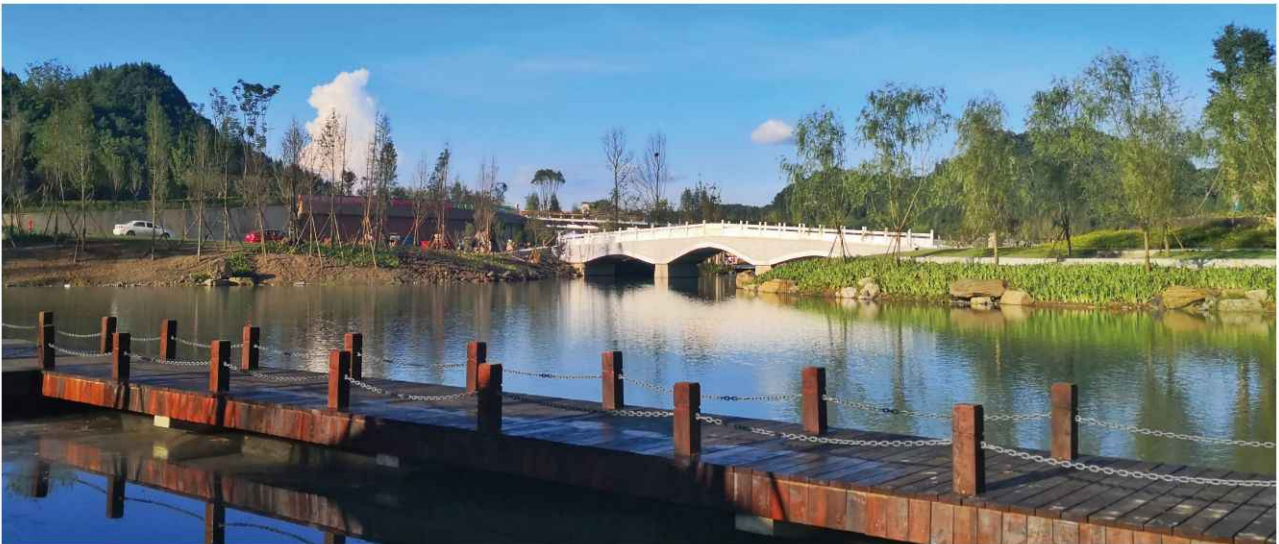
Comprehensive Water Environment Management Project



 Bijie, China



Zhijin comprehensive water management project is a good example of a people-centered and comprehensive approach to bio-remediation. While its primary purpose is to restore the ecology of a river and related water bodies, the project also serves as a flood-prevention system, a waste water purification system, a “sponge” to help use the power of water to help regulate the micro-climate, and a recreational area. Its innovation is further underscored by the use of a special purpose vehicle (SPV) where government-backed guarantees enable the mobilization of private investment.



BASIC CITY DATA

Population size: 1,263,700

Surface Area (sq.km): 2, 868

Population Density (people/sq.km): 4, 080

GDP Per Capita (U.S.\$): 4080

Main Source of Prosperity: Industry, tourism, agriculture

BIJIE, CHINA

Abstract

The Comprehensive Water Environmental Management project in Zhijin County's urban area aims to enhance the water and green space across the main city region. This endeavor seeks to forge a harmonious blend of modern urban living with natural elements, seamlessly integrating mountains, water bodies, and the urban landscape. This initiative has a dual purpose. On the one hand, it safeguards the ecological equilibrium of the natural surroundings, regulating microclimates, purifying the air, and enriching the urban ecosystem. On the other hand, through sub-projects such as the Fenghuang Ecological Park, the initiative aims to purify the water bodies, preserving water quality and providing a suitable habitat for diverse aquatic species. Ultimately, this effort fosters biodiversity and uplifts the ecological fabric of the urban area along the Zhijin River.

Background & Origin

Zhijin has abundant coal resources. In the 1980s, unregulated private-run coal mines were everywhere and caused severe pollution to the Zhijin River. Coal was once the “business card” of Zhijin, but significant environmental impacts were associated with coal mining operations, causing serious damage to the land, ecology and human living environment. Over the years, many measures were taken to treat the river and enhance its function during flood occurrences; however, only small improvements have been achieved. In June 2016, Zhijin County experienced an extremely hefty rain, daily rainfall exceeded 305 millimeters, the highest in local meteorological history. Due to the destruction of the environment on the upper stream of the Zhijin River, in the event of flooding, the urban area of Zhijin encountered significant impacts, resulting in direct economic losses of more than 100 million yuan (around USD 13,772,207).

Therefore, starting in 2017, Zhijin determined to make great efforts to manage its water environment and started the implementation of the Comprehensive Water Environment Management Project. The county government, based on the research and investigation of the local situation, taking the city's future development into account, decided to take robust measures to treat the river, including building the Fenghuang Ecological Park on the upper stream of Zhijin River.

Key measures and Innovative Aspects

Zhijin County began the construction of an ecological park in 2017 as a sub-project of its comprehensive water environment management project. The park is located at the upper reaches of the Zhijin River. Before the park was built, the occurrence of flooding significantly impacted the city of Zhijin. The park has four major functions: flood control, water quality enhancement, water conservation, and ecological replenishment. It has now become an area for citizens to relax, enjoy water sports, and learn knowledge about nature.

The county government invited relevant departments to plan and design, and adopted a PPP (Public-Private Partnership) model to mobilize more resources for the initiative. It raised funds through private capital, a Special Purpose Vehicle company and local government-backed investment units. Over 37.2 km of the river section had been treated. The park has a planned land area of 128.7 hectares and includes building a wetland park, a mountain park,

water conservation, landscaping, migratory bird habitats, etc. It aims to design eight lakes and will be able to store 278,400 cubic metres of water after completion.

Main features:

(1) Flood control and storage: The initiative includes building artificial lakes to store water, reconstructing the river channel upstream, river anti-scouring and slope protection, constructing river drop dams, etc. These measures have greatly improved the flood control capacity of the upstream river channel of the Zhijin River.

(2) Water source control and interception of sewage: A new sewage trunk pipe is built along the Zhijin River, and the rain pollution is diverted through the 5-50m green belt on both sides of the river. The surrounding rainwater is filtered and purified to prevent the surrounding sediment from flowing into the river with the water and reduce the sediment transport volume in the river. Domestic sewage of the surrounding inhabitants is all directed and discharged to the sewage treatment plant at the river downstream, and the upstream coal mines are now being closely monitored, strictly requiring the factories to take all necessary steps to treat the wastewater to avoid water pollution. After water treatment and conservation, the river's water quality has been significantly enhanced.

(3) Ecological restoration: Through constructing ecological wetlands, ecological barges, river desilting and dredging, drop dams to increase water oxygenation and green belts to filter and intercept pollution, the ecosystem in the river and surrounding area has been gradually repaired. In the park, a protection area for migratory birds is also built. The local community and enthusiasts planted arbour fruit trees and raised fish to form a more livable habitat for birds. Now, around 20-50 migratory birds, such as egrets, grey herons, and Mandarin ducks, live in the protection area, and in autumn, usually more than 300 of them reside here.

(4) Application of sponge city concept: By applying the concept of sponge city in the design and implementation, the initiative helped maintain an ecological balance of the natural environment, adjusting the microclimate, purifying the atmosphere, and improving the environment of the main city area.

(5) Integrating culture in nature: The park has also created several unique cultural attractions, integrating traditional local culture with nature.



Expected Outcomes

1. Flood control benefits

The implementation of the project has significantly enhanced the flood control capability of the city, empowering the city to cope with unprecedented floods and ensuring the safety of local residents and properties.

2. Ecological benefits

Through the construction of the park, the river's water quality has been dramatically improved from its source. It can now help maintain the ecological balance of the natural environment, adjusting the microclimate, purifying the atmosphere and improving the ecological environment of the main city region. At the same time, it purifies and safeguards the water body, providing a suitable habitat for the aquatic organisms, thereby protecting biodiversity and improving the ecological environment of Zijin. According to the recent monitoring report, after the initiative implementation, the water quality in the river upstream has been significantly improved, iron ion in the water reduced to 0.19 mg/l and no manganese ion was detected. The pH level is now 7-7.5, considered a neutral water quality level.

3. Economic benefits

(1) Increased local tourism income, bringing direct economic benefits. Every weekend, around 5000-10000 tourists would visit the park.

(2) Job creation both during construction and after completion through local industrial and economic development;

(3) Impetus for the development of other sectors of the economy, including real estate, retail, water-related recreation and agritainment, contributing to poverty alleviation and local economic development.

4. Social benefits

(1) Improving the living environment, the quality of life and well-being of the people

(2) Improving the citizen's awareness of environmental protection.



Improving Responsiveness, Accountability and Transparency for Good Urban Governance



Dalian, China



Like many other cities around the world, COVID-19 revealed the necessity for Zhongshan to re-examine its governance system. The city became deeply aware of the importance of linking its data and information systems with the people at the grassroots. The updating of data and information and its sharing with community-based social organizations has made the entire system more responsive, more accountable and more transparent. Issues and problems can be reported upward, demanding a timely and well-synchronized response. Conversely, issues and problems detected through data analytics can be investigated and verified at the local level.



BASIC CITY DATA (Zhongshan District of Dalian)

Population size: 471,200

Surface Area (sq.km): 47.41

Population Density (people/sq.km): 9,939

GDP Per Capita (U.S.\$): 16,725 (Dalian)

Main Source of Prosperity: Equipment manufacturing, petrochemical and electronic information

DALIAN, CHINA

Abstract

The initiative aims to make sustainable development more meaningful for the inhabitants of Zhongshan District, Dalian. It focuses on a grid management model to establish a governance system that connects districts, sub-district offices, communities, and grids (neighbourhoods) to engage stakeholders at all levels to work together to solve problems at the grassroots level. The system empowers community workers through data sharing to overcome bureaucratic red tape and sectoral silos by obliging the municipal government to be more responsive, more transparent and more accountable. In addressing issues of public security and safety affecting the lives and livelihoods of all city inhabitants, especially the most vulnerable.

Background & Origin

As the financial and commercial center of Dalian, Zhongshan District has jurisdiction over 6 sub-district offices and 65 communities with a total population of 471,200. It is in the process of rapid urbanization and economic development. Improving social inclusion, public safety, adaptability, and sustainability of the urban ecosystem is the primary goal of grassroots urban governance in Zhongshan District.

Under the traditional governance model, government departments work independently, and without proper sharing of information, people's concerns and problems are sometimes not being reported to relevant departments and are being addressed timely and effectively. Also, all departments rely on community workers to collect and report information through respective channels, which creates enormous workloads for the community workers. The COVID-19 pandemic has also made the Zhongshan District realize more deeply the importance of data sharing for urban governance at the grassroots level.

Zhongshan District has learned from the experience of Jing' an District in Shanghai and explored building this new model of grassroots governance empowered by data sharing. By breaking down information barriers and integrating data resources, this initiative aims to address issues related to urban governance caused by "silos" in traditional governance models. The system is designed to improve responsiveness, accountability and transparency in dealing with both recurrent and exceptional problems or issues in urban governance and management. It does so by ensuring that a problem, however small or large, is addressed as soon as it is reported by an inhabitant. For example, if there is uncollected waste owing to road construction, residents or social workers can report this problem through an app. Relevant departments are obliged to respond as soon as they get the information.

Key Measures & Innovative Aspects

This initiative is led by the district government and managed by the district's big data center. It integrates more than 260 types of data from relevant departments such as emergency response, civil affairs, health, economic development, etc, and establishes a shared "data pool". The community workers at each grid are directly responsible for data collection and update, and the data is cleaned and collected by the district's big data center and then sent to various departments and units for follow-up. Technologies such as GIS mapping and video aggregation were used to allow visible management and collaborative problem-solving. The linkage and interoperability of data.

have enabled the sharing data resources among various departments and significantly improved effectiveness in urban governance. Zhongshan District will further enhance this "Network + Public Services" model to promote the effective delivery of the urban governance system at the four tiers of government (i.e. district, sub-district offices, communities and grids) through the linkage of data resources so as to achieve digital management for a matrix of urban communities at the grassroots level.

The initiative has also developed a public opinion platform. It collects public opinions of needs and concerns and generates a "wish list" from the people. It will then accurately label the raised issue and allocate it to relevant people or departments for follow-up. It brings the issues that people care about to relevant personnel and departments' attention and ensures it is adequately addressed. Special attention has been paid to the most vulnerable groups, such as the empty-nested elderly, and the initiative equips community workers with information and tools to provide personalized services to them. For instance, since relevant data on companies within the jurisdiction is being integrated into the system, community workers can search for high-quality elderly care resources and recommend suitable options to those needing care. Many community volunteers also participated in the initiative, and some of the "wishes" are being forwarded to volunteers with unique skills who can provide professional services, such as neighbourhood dispute resolution.

A new model of "data exchange, one update, and multiple sharing" has been formed through the data linkage mechanism, greatly improving work efficiency and playing a vital role during the pandemic. Post-pandemic, this mode of work has been widely utilized in various fields, such as emergency response and providing care and services to the most vulnerable groups, such as the elderly population and people with disabilities, through the development of various apps and tools. In the process, data has been continuously accumulated, and the database of Zhongshan has continuously been enriched.



DALIAN, CHINA

Desired Change Or Outcome

The initiative promoted the sharing of data among various departments, integrated more than 6.3 million pieces of data from national, provincial and municipal apps and self-developed systems, and significantly improved governance efficiency. Through data sharing, it allowed the government to better understand the current situation, helped to optimize the allocation of public services and resources to provide accurate services for residents, and in turn, greatly improved the satisfaction rate of the inhabitants. In 2023, the number of complaints about people's well-being received by the Zhongshan District has decreased by 6% compared to last year. The initiative will continue to provide specialized and portable services to the most vulnerable groups living in the region, including 136,800 elderly, 5000 people with disabilities, orphans and other vulnerable groups.

Zhongshan District and the city of Dalian, in general, have witnessed tremendous improvement in social stability and safety in recent years, while criminal and public security incidents in Dalian have been declining, and people's sense of security has increased to 98%. In 2022, work safety accidents decreased by 18.5% compared to 2021, and the dispute resolution rate continues to grow and reach 99% in 2022.

At the same time, the initiative also increases the density of the service economy and the accuracy of resource allocation, continuously optimizes the business environment, upgrades digital infrastructure, and enhances the core competitiveness of the digital economy in Zhongshan District.





Smart Network Project



Dongguan, China



The Smart Network Project of Dongguan provides a compelling example of how “big data” should be used to help improve urban management. Dongguan’s approach is based on creating human-scale fine mesh urban clusters where data on likely issues and problems affecting people’s safety, health and well-being is not only collected at a very local level but is also verified by a network of 10,000 “pairs of eyes” on the ground that can rapidly investigate, verify and report on potential risks and hazards. This “hybrid” approach represents an integrated digital and human platform offering more people and community-centered responses to managing and solving potential physical risks and hazards as well as mediating and resolving social conflicts.



BASIC CITY DATA

Population size: 10,440,000

Surface Area (sq.km): 2542.67

Population Density (people/sq.km): 4282.6

GDP Per Capita (U.S.\$): 14,966

Main Source of Prosperity: manufacturing industry

DONGGUAN, CHINA

Abstract

Dongguan has actively explored a new model of governance. It consists of an integrated information platform for social governance—the "Smart Network". This information platform mines data resources of relevance to social governance and realizes cross-departmental and cross-jurisdictional information sharing. The city is divided into 2,945 basic grids to form 10,291 intelligent network sub-systems, which inform the municipal government, 35 township- and 597 village-level platforms. The network focuses on three tasks: population registry, urban management and emergency response. A total of 475 items involving education, public security, civil affairs, market management, fire hazards, urban management, housing construction and the functions of another 18 departments are included in the system. Since the beginning of this year, grid administrators have discovered a total of 2.956 million problems and hidden hazards in place, with a resolution rate of 99.29%.

Background Information & Origins

Dongguan, with a population of over 10 million, is one of the few prefecture-level cities in China without districts and counties. With rapid industrialization and urbanization, more and more people migrated to Dongguan for work, while the migrant population accounts for more than 70% of the total population. The city was encountering challenges in coordinating public services and social governance. governance, defined as a system that places the health, safety and wellbeing of all inhabitants at the forefront of decision-making.

To further improve the city's ability to predict and prevent, detect and resolve problems and hidden dangers, to make the city safer and more inclusive, and to provide the people with a stronger sense of happiness and security, the initiative created a new model of "digitalization+grid" governance of the city. Based on Dongguan's dual administrative structure of city and town, it established a three-level linkage mechanism of the city, townships and villages. This framework consists of "one network and unified management" to improve information sharing, resource allocation and operational efficiency across departments and jurisdictions.

The initiative has gone through three phases. In 2016, the initiative built a system around the goals of "grid-style social management, information support and refined public service" and design features such as a command & dispatch center, problem classifications and a mobile app for grid administrators. In 2018, the second phase was launched to improve the system, adding functions such as performance evaluation and information display and bringing more departments into the system. In 2020, it developed visualization and auxiliary decision-making analysis functions to achieve risk prediction, prevention, and accurate situational assessment.

Key Measures & Innovative Aspects

The initiative establishes a leading group for digital government reform and construction headed by the main leaders of the municipal government, an expert committee on digital government and a chief data officer system. Professional teams such as Huawei Technologies Co., LTD., Digital Guangdong Network Construction Co., LTD., Dongguan Digital Economy Group, Guangdong Telecom Planning and Design Institute, and Digital Government Expert Committee were involved in planning, design, construction and implementation.

The initiative integrates non-governmental and grassroots organizations such as enterprise managers, landlords and tenant associations, service operators, security officers, fire wardens and the general public. In total, some 10,291 people form the network. 300 people work as mobile inspection teams that can rapidly investigate and report on difficult or complex problems.

Also, the initiative launched a series of special campaigns to address critical issues. For instance, it launched a special campaign to prevent drowning accidents, sent out a task force to patrol dangerous water areas where accidents are most likely to happen and saved many lives.

The initiative is revolutionary. Under the Smart Network, Dongguan was divided into 2,945 basic grids, with 10,291 people forming the network. It established command and dispatch centers at the municipal, township, and village levels, categorized specific problem items and operational standards, and developed a unified operational information system throughout the city. Through grid management and informatization, it has built this social network for urban governance consisting of over 10,000 grassroots grid administrators to discover problems, report problems and resolve problems, allowing the city to detect potential issues more quickly and address the needs and concerns of the people more effectively. Dongguan integrated public service management resources, improved grassroots service management platforms, and eliminated hidden hazards and risks in the bud through the coordinated efforts of in-depth investigation and reporting by grassroots grid administrators and precise law enforcement and handling by the functional departments.



DONGGUAN, CHINA

Desired Change Or Outcome

This initiative covers the three-level administrative system of the government in Dongguan, involving 35 townships (subdistricts), 597 villages (communities), 49 municipal departments, and 275 public institutions. 10.44 million inhabitants are directly being affected by the initiative. The "Smart Network Project" integrates public service management resources, improves grassroots service management platforms, and effectively promotes a new situation in Dongguan's urban governance.

As of October 2023, the network had discovered a total of 17,599,000 issues, and the issues were either being resolved by the community workers onsite or being reported to relevant functional departments such as the police department, fire department, urban management department, and health control department to deal with. 97.4% of the cases were resolved. Among the reported issues, fire hazard risks accounted for 68.1% and other issues include unsafely placed hazardous chemical substances, food safety issues, neighbourhood disputes etc.

The network and the grid administrator ensured that all citizens were being cared for and that all problems and hidden risks in the area were managed and controlled. The grid administrators would build great rapport with the people living in their grid, and the people would lean on them for help. The grid administrators assist with all kinds of issues, including tenant and landlord conflicts, helping lost children find their way back to their parents, assisting workers to demand back-pay wages, etc. Special attention is paid to the most vulnerable groups, such as the elderly living alone, people with disabilities, people with mental distress, etc. The network has provided direct services to more than 700,000 people.

The network subscribes to 130 million pieces of data in 14 categories from police, market supervision, urban management and other departments from the overall database for Dongguan government affairs, and 55.58 million pieces of data were integrated into the new smart network. Data on population, buildings/rooms, infrastructures, and city facilities are all integrated into the network, effectively consolidating the database of Grid-style urban management in China.





Intelligent Water Governance System for a Liveable and Resilient City



 Fuzhou, China



This initiative is a good example of how cities prone to flooding need to address this challenge. One of the consequences of climate change is the increased likelihood of flash floods and waterlogging affecting low-lying areas, which are usually inhabited by poorer communities. As seen in many other initiatives designed to improve urban resilience, the key lies in urban governance and the ability to bridge administrative and jurisdictional silos to adopt a systems approach to sustainable urban development.



BASIC CITY DATA

Population size: 3,050,000

Surface Area (sq.km): 333

Population Density (people/sq.km): 9159

GDP Per Capita (U.S.\$):

Main Source of Prosperity: Electronic information, advanced equipment, petrochemical, modern textile and clothing

FUZHOU, CHINA

Abstract

Fuzhou is located on the estuary of the Min River. Two branches of the river traverse the city. During the heavy rainy season, the urban areas of Fuzhou often suffered from the combined disasters of floods, waterlogging and high tides. This affected all low-lying areas and the health, wellbeing and livelihoods of the most vulnerable segments of the population. Due to decentralized operations, lack of coordination, and insufficient emergency response capacities of water management departments, the city had poor flood control efficiency, posing severe threats to people's safety and property. In 2017, Fuzhou took the lead in forming an Urban Hydrographic Net Joint Drainage and Dispatch Center by integrating five divisions related to water management under the city's Municipal Bureau of Urban-Rural Development, Urban Management Commission, and the Water Conservancy Bureau. The center achieves unified management of flood prevention, waterlogging, drainage, water diversion and sewage treatment. The system has greatly improved water management efficiency through intelligent water dispatch involving hundreds of reservoirs, lakes, ponds, rivers, sluices, and pumping stations in metropolitan Fuzhou, creating an exemplary model for other cities and regions.

Background & Origins

Since 2016, Fuzhou has fully embraced the implementation of the 2030 Agenda for Sustainable Development and the New Urban Agenda. The entry point for making Fuzhou more resilient and sustainable and to combat inequality was to adopt an integrated water management approach.

The initiative was sparked by recurrent flooding, waterlogging and drainage problems that occurred each year with the advent of heavy rains. Fuzhou's unique landforms (with hundreds of lakes, reservoirs, streams and ponds), topography and climatic conditions are prone to natural disaster risks. Rapid urbanization also resulted in the expansion of built-up and largely impermeable surfaces, reducing the space for water absorption and retention. The original water governance system was uncoordinated between departments and jurisdictions, resulting in inefficiency and poor emergency response capabilities. The above-mentioned problems all contributed to the loss of property, economic opportunity and productivity when a natural disaster occurred and resulted in a lack of trust in the government's ability to engage in sustainable development—changes needed to be made.

Key Measures

Changes were made at three different levels in three phases. The first change was in governance. Previous “silos” in the form of departments and units working separately from one another were brought under a unified system integrating all functions related to water management and drainage. The second change was in management and administration. This involved the establishment of the Urban Hydrographic Joint Drainage and Dispatch Center in 2017. The third change was in applying technology, including AI, and creating a comprehensive and smart water management and disaster prevention system. This took two years to roll out and is being improved upon continuously.

The initiative includes partnerships among the public sector, the private sector and communities, with the

public sector playing a leading role. The changes in the public sector were the most important dimension to get the public entities to work together and break down “silos” to achieve unified water management and dispatch. Without this change, partnerships with other sectors cannot work. The private sector played a crucial role in terms of establishing water system patrol teams and emergency rescue teams, which were equipped with corresponding equipment to carry out the work of “daily patrol + emergency rescue” . The Fuzhou intelligent water management platform (a hydrographic scientific scheduling system) is used to realize remote monitoring and automatic control. In the meantime, the general public was engaged as well. The initiative joined hands with the local communities to organize activities to encourage various groups of people, including children, to participate in water management and establish channels for public monitoring and supervision and quick bottom-up feedback.

One of the prominent sub-projects was the Liuhuaxi River initiative. With a total construction length of 4.4 kilometres, it built sewage interception pipes totalling seven kilometres, 22 interception wells and one reservoir. It cleaned up 638,000 cubic meters of river garbage and waste, improved the area's flood prevention and drainage capacity and its ability to resist and recover from natural disasters such as typhoons and heavy rains. Furthermore, it provided 133,000 residents (44,300 households including 23,900 elderly) along the stream, particularly 78,000 low-income people (26,500 families), with safe, livable and resilient urban settlements.



Innovative Aspects

The Fuzhou Urban Hydrographic Net Joint Drainage and Dispatch Center, as a pioneering, revolutionary water management mechanism in China, has effectively enhanced the city’s water management capacity and urban resilience. It collects and analyzes data such as flood-prone urban areas, maximum depth and volumes of water

FUZHOU, CHINA

bodies, and flood receding time during typhoons and cloud bursts, based on which it assesses, in real-time, the city's capacity to prevent waterlogging and withstand flooding, and further optimizes and improves water management and flood prevention.

The initiative innovatively integrated the functions of five former divisions involving water management under different government departments, including the Inland River Management Office of the Municipal Bureau of Urban-Rural Development, the Water Supply and Drainage Center, the Drinking Water Office of the Urban Management Commission, the Reservoir Administration of the Water Conservancy Bureau, and the Min River Downstream Administration Center. It achieves unified management of flood prevention, waterlogging drainage, water diversion, and sewage treatment while coordinating the management of hundreds of reservoirs, lakes, ponds, rivers, sluices, and pumping stations in the metropolitan area of Fuzhou.

The joint drainage and dispatch mechanism adopts a work pattern featuring jurisdiction-based management, multi-level accountability, and assigned responsibility. This enables dispatch command to reach directly to the persons in charge and makes the management process traceable and the flood prevention responsibilities transparent, eliminating problems such as lack of coordination and inefficiencies in water management.



Desired & Expected Outcomes

The mechanism has increased water management efficiency and strengthened urban resilience. Urban drainage and anti-waterlogging emergency response efficiency have increased by 50%, and the efficiency of water dispatch and storage of its reservoirs, lakes and rivers has improved by more than 30%, significantly reducing risks and destruction caused by typhoons. Moreover, by leveraging the natural tides of the Min River, it can save electricity usage by 36.67 million Kilowatt-hour, equivalent to 32,000 tons of carbon dioxide emission each year. Compared to Typhoon Longwang in 2005, the submerged size of the urban area and flood receding time were reduced by more than 50% during Typhoon Doksuri in 2023, significantly reducing material losses caused by the flooding.

The initiative helps create a safe, resilient living environment for more than 3 million urban residents (488,000 children and 489,000 older adults). In the future, this mechanism will be further implemented throughout the Fuzhou metropolitan area to benefit 10 million local people and will be promoted to more than 40 cities around China.



Protection of Blue-Tailed Bee-Eaters in the Lower Reaches of Haikou's Wuyuan River



📍 Haikou, China



Haikou is the capital of Hainan Island, the only place in China that is located in the tropical zone. As a major tourist destination, Haikou seeks to preserve its natural environment. Aside from coconut groves, beaches, mangrove forests and volcanoes, biodiversity, and especially bird life, is a key component of Haikou's contribution to the attainment of the Sustainable Development Goals. Protecting a rare species of bird requires a comprehensive and integrated approach to the management of the natural environment, including its natural habitat – the wetlands.



BASIC CITY DATA

Population size: 2.908million

Surface Area (sq.km): 2296.82

Population Density (people/sq.km): 1280

GDP Per Capita (U.S.\$): 10,037.96

Main Source of Prosperity: Trade, Tourism

HAIKOU, CHINA

Abstract

In 2018, blue-tailed bee-eaters (*Merops philippinus*), a second-class nationally protected animal in China, were discovered using the sandy walls of abandoned mines along the lower reaches of Haikou's Wuyuan River as nesting and breeding sites. To protect these breeding ground for the bee-eaters, the Haikou Municipal Government established a protection area in the lower reaches of the Wuyuan River in June 2019, and mobilized social forces to help establish the breeding grounds. The number of blue-tailed bee-eaters in Haikou increased from 26, at the time when they were first discovered, to more than 80 now. At the same time, a variety of popular science education activities were carried out to help the public learn about blue-tailed bee-eaters. Having achieved a good degree of social influence, this project has become one of the beautiful “ecological business cards” of Haikou.

Background & Origin

Alongside the growing urban development of Haikou's west coast, said area's available land for bee-eaters to nest and breed has continuously shrunk. Figuring out how to protect biodiversity while simultaneously promoting urban development has been one of the Haikou Municipal Government's major challenges.

In order to provide a stable bee-eater breeding ground on Haikou's west coast, specific protected breeding grounds were constructed and managed. To attract more bee-eaters to nest in the breeding ground, the planning and design plan of the “Haikou City Wuyuan River Bee-Tiger Themed Nature Education Field Project” has been developed, and management of breeding grounds has been carried out every year accordingly.

Key measures

The initiative is jointly formulated and invested in by the government, various foundations and social organizations. Wetland protection departments in municipal and district level governments are responsible for supervision and management, while the Mangrove Conservation Foundation provides technical guidance and the Duotan Wetlands Institute is responsible for project implementation.

Small-scale habitat creation for bee-eaters were carried out in the protection area, and community volunteer also participated in the building of the breeding grounds, such as jointly repairing bee-eater nesting slopes, clean up weeds and dwarf vegetation, digging ditches to create artificial wetlands, building and repairing bird watching sheds etc.

Also, as the birds' breeding grounds are located on the land which is part of the nearby village's collective resources, the government consulted and negotiated with local communities many times to gained the support from them, and obtained land use rights through ecological compensation.

Innovative Aspects

Incremental in nature, this practice is also innovative. Located in the lower reaches of Haikou's Wuyuan River,

the creation of this bee-eater protection ground has drawn on the experience of social organizations, and by incorporating the specific protected area into the greater “Wuyuan River Wetlands Protection Area” ,

it innovatively created China’ s first wetlands-type “Alipay Ant Forest” public welfare protected area. This has become the first urban bird breeding sanctuary in Hainan to be jointly built and managed by a combination of the government, foundations, and social organizations.



Desired Change Or Outcome

Now a safe and sustainable breeding ground for bee-eaters is build, their population is gradually increasing and other key national protected wild animals (such as the shikra, red junglefowl and leopard cat) have also been spotted. With rich biodiversity here, it has become a popular place for public education on nature.

The government commissioned the Haikou Duotan Wetlands Institute to carry out monitoring of the bee-eater population and provide scientific support for Haikou’ s protection of bee-eaters. At the same time, Duotan was also entrusted with recording the activities of other wild animals found within the reserve.

By organizing various science popularization activities, nearly 10,000 local residents have had the opportunity to have hands-on learning experiences related to bee-eaters and an estimated 50,000 people will participate in future bee-eater protection activities.

The initiative was selected as one of the “100+ Biodiversity Positive Practices and Actions Around the World” of COP15, and one of the 40 outstanding cases of biodiversity protection in the China.

Lessons

In the process of building an “international wetland city” , Haikou continues to explore and innovate urban ecological governance methods through a model that brings together the government, social welfare organizations, communities, volunteers and other parties, and takes multiple measures simultaneously to ensure the sustainability of conservation actions.



Patent Navigation Facilitating Innovation and Development for Enterprises in Northeast China's Old Industrial Bases



 Harbin, China



Harbin has been the capital of China's northeastern industrial homeland. Founded in the steel and metallurgical industry, Harbin and much of the Northeast of China have become a rust belt. But not all is lost, as these heavy industries have a historical record of innovation. Patents play a critical role in industrial innovation. Navigating the global patent registry and systems is a complicated process at best. Harbin's approach is truly revolutionary, as very few municipal governments in the world provide such a service to their local enterprises. By doing so, Harbin is facilitating access to and application for patents by local industrial enterprises by providing a one-stop-shop for patent search, referral and application.



BASIC CITY DATA

Population size: 9,395,000

Surface Area (sq.km): 53,076

Population Density (people/sq.km): 177

GDP Per Capita (U.S.\$): 8,658.07

Main Source of Prosperity: manufacturing industry, new materials industry, biopharmaceutical industry

HARBIN, CHINA

Abstract

Patent navigation is an exploratory work based on the utilization of patent information resources and patent analysis, embedding patent application into industrial technology innovation, product innovation, organizational innovation, and business model innovation, guiding and supporting the scientific development of industries. Harbin New Area promotes patent navigation throughout the entire region, promotes the application of intellectual property rights, promotes the innovative development of regional enterprises. So far it carries out 8 enterprise patent navigation projects, supported 8 enterprises inventing over 100 patents.

Background & Origin

Since 2013, the Chinese government has been conducting pilot projects for patent navigation nationwide, and in 2020, it introduced the national standard "Patent Navigation Guidelines". To promote regional economic development, the Harbin New Area Market Supervision Administration has been promoting patent navigation throughout the entire region since 2020 to foster innovation and development for local enterprises.

The implementation of patent navigation serves three main purposes:

- 1.It enhances the awareness of the importance of intellectual property among enterprises in the area, encouraging them to take action to protect their innovations.
- 2.It aims to assist enterprises in the region in avoiding intellectual property infringement risks, clearing the path for their potential listing or going public.
- 3.It guides enterprises to seek more patent applications and optimize their patent portfolio, thereby boosting their competitiveness and value.

Key Measures

Innovation is the first driving force leading development. In recent years, the economic development of the old industrial base in Northeast China has encountered some challenges, and it is crucial to support enterprises to carry out scientific and technological innovation. Patent navigation is an important means to promote scientific and technological innovation.

To ensure the successful implementation of the patent navigation project, the Heilongjiang Technology Market Association has been entrusted with overseeing the project evaluation process and engaging provincial intellectual property experts to participate in the evaluation and defence of the project. The initiative accepts business guidance from the provincial and municipal intellectual property bureaus, and the district industry and information technology bureau assist in recommending the list of enterprises to implement the patent navigation project. The district's finance provided funding of 500,000 RMB to support the implementation of patent navigation by enterprises. The funds have been allocated for a regional industrial patent navigation project and eight enterprise-level patent navigation initiatives.

The initiative encourages and guides enterprises to try to innovate through training and helping enterprises avoid the risk of intellectual property infringement and optimize patents' layout. In addition, the number of patent

applications filed by a company can be queried through the patent database. Analyzing the number of patent applications by the company in 2022 can help assess the effectiveness of its patent navigation efforts.

Innovative Aspects

The initiative boasts two aspects of innovation. Firstly, it introduces institutional innovation as the first district-level initiative in China to conduct enterprise patent navigation. This is particularly significant in the context of overcoming obstacles to the re-development of the Northeast's old industrial base. The project leverages intellectual property efforts to support enterprise growth. Secondly, it showcases the innovation of tools by tapping into the vast repositories of global patent databases, encompassing billions of patent documents. Through careful analysis, it enables the identification of patent trends in specific technology domains and provides insights into competitors' patent strategies.



Expected & Achieved Outcome

The patent navigation project is concentrated in Harbin New Area, a major measure and strategic fulcrum for China to implement a new revitalization strategy for old industrial bases such as Northeast China and promote the construction of the "Belt and Road". This endeavor has been progressively driving the innovative development of Harbin New Area. In 2022, 8 enterprise patent navigation projects were carried out, with a total of over 100 new invention patents created by the 8 enterprises. With the help of patent navigation, one of the enterprises, Guosheng Biology, has discovered a new research direction for combining animal diseases with red blood cells for tumor treatment, expanding experimental domains. It also fostered the Shenzhen Industrial Park in Harbin into a national-level industrial navigation base. The "Harbin New Area Composite Material Industry Patent Navigation" project launched in 2020, has benefited 5 enterprises in Composite Material Industry



Transitional Housing



 Hong Kong, China



Transitional Housing is a temporary quick fix for chronic public housing shortage in Hong Kong. Hong Kong was well-known for its well-studied and emulated model for public housing. Political arguments and stalemate over last decade resulted in no new land being allocated public housing. Rising housing prices pushed many poorer families out of the housing market. They moved to overcrowded and inadequate housing conditions. While the government has since re-allocated land for public housing, it will take decades to fill the gap. Transitional Housing is a temporary solution, funded by the Government, on land provided by the private sector which is earmarked for long-term development and implemented by non-governmental organisations. Speed, agility and flexibility are required to provide adequate housing conditions in the short term, requiring the Government to substantially improve internal coordination.



BASIC CITY DATA

Population size: 7553000

Population Growth Rate(%): 0.80

Surface Area (sq.km): 1107

Population Density (people/sq.km): 7193.1

GDP Per Capita (U.S.\$): 49180.1

Main Source of Prosperity: Trading and logistics, Financial Services, Professional Services and other Producer Services, Tourism

HONG KONG, CHINA

Abstract

In the past few years, Hong Kong has been using and promoting the Modular integrated Construction (MiC) approach and adaptive reuse of vacant buildings with the aim to providing Transitional Housing quickly to over 200,000 poor people who are residing in inadequate housing, including those poor-quality subdivided units (SDUs). The HKSAR Government provides funding, as well as assists and facilitates Non-government Organisations (NGOs) to make use of short-term vacant land and premises from the HKSAR Government or private sector for the supply of Transitional Housing in a timely manner. Transitional Housing is a new form of housing which not only provides dwelling but also enhances social integration and personal empowerment with the provision of diversified social services. By adopting innovative MiC technology and other fast-track measures, coupled with cross-sectoral collaboration among the Government, private sector and NGOs, Transitional Housing has been well received by the community and benefited many people in need.

BACKGROUND INFORMATION & ORIGINS

Land shortage has been plaguing Hong Kong in recent years. The political situation in the past two decades created a lot of arguments and hurdles in town planning, funding and other statutory processes. The built-up land area remained almost the same, leading to a shortage of land for housing, slowing down housing production with sharp increase in housing prices. Many poor citizens moved into various inadequate housing including SDUs of old buildings. In 2021, there were 107,400 households with 215,700 people living in SDUs, with very congested space and inadequate living conditions.

The HKSAR Government has, in the long term, identified sufficient land for public rental housing development to fulfil the housing demand in the coming 10-year period. However, it is anticipated that only one-third of the said housing supply could be completed for the first 5-year period (2023-24 to 2027-28). To overcome the foreseeable shortage of public rental housing supply in the coming five years, Transitional Housing, an innovative policy, was therefore implemented as one of the key short-term quick solution to improve the housing conditions for 20,000+ households with imminent housing need, to alleviate the hardship faced by the families who are inadequately-housed and/or waiting to be allocated to the public rental housing. The Government established a Task Force on Transitional Housing (TFTH) in June 2018 and the Legislative Council approved a HK\$11.6 (US\$1.49) billion Funding Scheme (Funding Scheme) in June 2020 to support Transitional Housing projects to be implemented and operated by NGOs. In the 2021 Policy Address, the target supply of Transitional Housing was set at 20,000 units.

Measures

(1) A new policy: Transitional Housing, was implemented as an immediate response to the shortfall of public rental housing supply in the short term. The policy involves cross-sector collaboration between the Government, Private Sector and NGOs.

(2) Innovation on the better utilization of scarce land and idle premises which are only available for short-term usage but have long term development plans.

(3) Adoption of innovative Modular Integrated Construction (MiC) approach in order to minimize the

construction time and recyclability, so as to speed up the production of Transitional Housing units.

The idea of Transitional Housing was brought to reality only with the seamless public-private-community partnership amongst the Government, Private Sector and NGOs, with each party playing an indispensable role in achieving the common goal.

i. The HKSAR Government, as the leading party with a dedicated task force set up to provide policy guidance, land and financial support to materialize Transitional Housing efficiently and effectively.

ii. Private Sectors (developers) contribute some of the vacant land and properties which are pending long-term development.

iii. NGOs are responsible to manage and operate the Transitional Housing projects and provide social services and other support for the empowerment of tenants.

The TFTH was set up to facilitate the implementation of the Transitional Housing policy. The TFTH helps identify or assess the viability of potential sites/ premises for Transitional Housing development, and assists NGOs to implement projects through the funding support, feasibility study, and facilitation during the construction and operation stages.



INNOVATIVE ASPECTS

(i) To alleviate the hardship faced by families waiting for public rental housing, the Transitional Housing initiative provided a revolutionary solution to fill up the short-term public rental housing shortfall by fast-tracked MiC construction of 20,000 Transitional Housing units by NGOs, to be followed by the further 30,000 Light Public Housing units which was newly announced in the 2022 Policy Address;

(ii) As there is no immediately available land for public rental housing development in the short term and land development takes time, the Transitional Housing initiative has established an operational mechanism to enable the use of temporarily idle public and private land resources for the construction. Not only was funding made available, but it also strengthened collaboration among Government departments and helped speed up infrastructure improvement in remotely located Transitional Housing projects;

(iii) Since the Transitional Housing sites are with limited duration of use before implementation of its long-term use, the construction time needs to be drastically shortened in order to allow sufficient period for the

HONG KONG, CHINA

operation. This is achieved by revolutionarily adopting the recyclable MiC approach for the new buildings on vacant land, as well as the fast-tracked conversion of vacant buildings/premises. The construction period for buildings on vacant land was shortened from the traditional of approximately 40 months to about 12 months.

(iv Implementation of the Transitional Housing projects provided opportunities to forge highly interactive cross sectoral and trans-professional collaboration among the government, private landowners/developers, NGOs, development-related professionals and charity funds. A societal collaborative network has incidentally been knitted under the common goal of pushing ahead the Transitional Housing initiative and maximizing its potential benefits to the inadequately housed grassroot families.

DESIRED CHANGE OR OUTCOME

TFTH secured 53 projects to provide about 21,000 units across different districts in Hong Kong. As at the end of September 2023, about 8 000 units are already in operation and another 13,000 new units are expected to be completed and commissioned in the coming two years. Around 8,000 households and 16,000 people, of which over 2,000 children have already benefited from the projects, and it is expected a total of over 21,000 households and 45,000 people, of which over 8,000 children, will be benefited in the coming years.

At the household level, Transitional Housing improves living conditions, mental health, family relationship and children development. At the social level, the NGOs could empower tenants' social integration for an inclusive community. This has catalyzed cross-sector efforts in fighting poverty and inadequate housing. As at July 2023, there were approximately 15% single-parent families, 29% with elderly members of 60-year-old or above, 9% with new immigrants, and 2% ethnic minorities' families residing in the Transitional Housing projects. These figures reflect the equity integration side of the Transitional Housing projects.

The implementation of MiC boosted up the construction industries' experience in this new building technology. The adoption of MiC approach could expedite construction time of buildings for various purposes including permanent housing, disaster shelters, etc. Besides, based on the Transitional Housing experience, a more ambitious and further enhanced policy, i.e. Light Public Housing, is being implemented with a target of providing 30,000 units by 2027/28, in order to meet the imminent housing needs of those families who have been waiting for public rental housing for years.

Hong Kong' s Transitional Housing programme is remarkable worldwide in terms of its largest scale, fastest delivery of adequate housing and widest cross-sector participation, of which the experience should be shared with other cities.



Xiaosongtao Lane Urban Regeneration Project



 Nanjing, China



Centrally located and of historical importance, Xiaosongtao Lane has become a victim of urban decay and neglect. While restoring and regenerating this neighbourhood is, in itself, a relatively small-scale initiative and borrows heavily on existing best practices, its unique approach has a potentially far-reaching impact on all future historical and cultural urban projects in China. The approach seeks to preserve the old and build the new while reducing carbon emissions both during and after construction. This has led the City of Nanjing to engage a wide range of public, private and academic partners to come up with solutions that take into account the carbon life-cycle of the materials and techniques used and the carbon footprint of the neighbourhood once it is completed.



BASIC CITY DATA

Population size: 9491100

Population Growth Rate(%): 0.72

Surface Area (sq.km): 6587.04

Population Density (people/sq.km): 1441

GDP Per Capita (U.S.\$):

Main Source of Prosperity:

NANJING, CHINA

Abstract

The Xiaosongtao Area is an example of the 20th-century planning of Nanjing as the Capital of the Republic of China during the so-called Nanjing Decade (1927–1937), with its high cultural and historical value in morphological, environmental, social, and economic aspects. It is a hybrid area, mixed with commercial buildings, office buildings, public facilities and housing. It is only 1 km away from the Xinjiekou central commercial area (the center of Nanjing). Surrounded by the commercial buildings along the boundaries of the blocks, housing estates in the area were initially built for the middle/upper class with high quality, But nowadays, most of the residents are low-income households with poor living conditions. The Xiaosongtao initiative aims not only to renovate housing conditions but improve the overall environment of the area and upgrade the quality of public space for the benefit of the residents.

Background & Origins

Xiaosongtao Lane is located in the central area of Nanjing, with a total land area of about 10,100 square meters. It was build decades ago, and problems arose, such as hidden safety risks of building structures, random construction, and narrow/blocked fire emergency exits. More than 70% of the households live in less than 30 square meters, and the old and dilapidated houses have long lagged behind the basic needs of modern life, and the quality of living is extremely poor. In addition, the high-density additions in the site of Xiaosongtao destroyed the inheritance of historical context, and it is necessary to restore and maintain the harmonious unity of urban style from the dual dimensions of time and space. Also, the energy efficiency of households is low, and the household's energy use structure needs to be improved to create an environmentally friendly neighborhood.



Implementation

How to retain the original street texture has become the primary concern of the Xiaosongtao initiative, while green and low-carbon are two keywords for the initiative. The initiative is mainly financed by the Nanjing Historic City Protection and Construction Group and partly funded by the Energy Foundation to support the environment-related target. The amount of current government subsidies is RMB10,000,000. (around USD 1,370,000)

The goals of this initiative are:

1) Improve the urban fabric in terms of continuity, coherence, efficient use of space, and traffic reduction. This phase has been completed.

2) Achieve the overall improvement of the floor area ratio and the attractiveness for investment in ground floor businesses to revitalize the local economy, bring animation to the streets, and improve rental income. This phase is to be completed by the end of 2023.

3) Formulate context-specific green building technology policy guidelines for retrofitting old buildings and introducing new energy-saving technology. This phase is to be completed by the end of 2024.

4) Establish a staged performance evaluation and assessment system for building energy conservation and low-carbon development. This phase is to be completed by the end of 2025.

This initiative involved multiple partners from the public sector, private sector, academia, and NGOs, each providing unique inputs to the successful implementation of the initiative:

1) School of Architecture of Southeast University: Based on the preliminary research and low-carbon technology framework, complete the scheme design and construction drawing design.

2) School of Architecture of Southeast University, Nanjing Energy Conservation Evaluation Center, Nanjing Historic City Protection and Construction Group: Carbon emission accounting and value conversion in the process of “preservation, transformation, demolition” of existing buildings; calculation and value conversion of carbon emissions that can be reduced by the low-carbon design of new buildings; low-carbon technical measures and planning points for urban residential area renewal plans, etc.

3) Development and Reform Commission of Qinhuai District, Qinhuai Branch of Planning and Capital: Provide carbon subsidies for project planning, design, and construction stages by converting the economic value and ecological value of carbon reduction; Mobilise funds for the use of new materials, new technologies and new concepts based on the actual effect of energy saving and carbon reduction; compensation for the plot ratio of the newly added public buildings, infrastructure, and public space occupied areas, and moderately relaxing planning and construction standards such as sunshine, spacing and other key planning and design policies; provide incentives for the incremental costs of low-carbon renewal measures in the scheme etc.

4) Nanjing Historic City Protection and Construction Group, Development and Reform Commission of Qinhuai District: Design an easy-to-publicize carbon conversion table; Image data and pictures of the area (including a comparison of old and new plots, old and new buildings, old and new technologies, old and new spaces, old and new lifestyles, etc.); designing a small fixed “urban carbon memory” exhibition space in the area, etc.

Key Innovative Aspects

The initiative is innovative in the following aspects:

1) Planning and Design: Respect the project specifications and urban standards, and not increase additional investment for the investor, to meet the relocation regulations of the builder, and adopt the plan of raising the floor height for the actual users of the house. It provides a variety of options for units of the same area, fully taking into account the needs and desires of all parties.

2) Management and Procedures: Establish a multi-department and multi-stakeholder joint business mechanism to simplify and solidify the research, suggestion, and decision-making process.

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3) Tools of Technology and Assessment: Complete the carbon emission survey of existing buildings in Xiaosongtao Lane, form a detailed list of carbon impact factors and an accounting base, and incorporate them into the optimization process of Xiaosongtao's implementation plan.

This initiative is both evolutionary and revolutionary.

Evolutionary: The social and economic goals in this project are consistent with previous urban regeneration projects and many methods and approaches have been borrowed and adapted from other similar projects. As for regeneration mode, it has an evolutionary change in the combination of 'preservation, transformation and demolition' and the first such pilot project in Nanjing.

Revolutionary: The use of a carbon accounting system and carbon reduction technology is a first in China. It is a highly complex system as it involves calculating the carbon footprint comprehensively. It also poses challenges for implementation in, for example, the reuse of old building materials, causing problems related to demolition methods, data collection, site management, and materials storage. It's also difficult to obtain the carbon emission factor of building materials, which needs to force upstream material manufacturers to conduct third-party audits of their products to obtain the corresponding carbon emission factors.



Desired Change Or Outcome

Economic benefits:

The initiative focuses on the context, geographical context, and network of people. The design pays attention to the renewal of style and appearance, continuity of urban space, and traffic management. The goal is to implement a comprehensive transformation of the physical space as well as the quality of life. After the renovation, the overall improvement of the floor area ratio and the investment attraction of the ground floor business will have brought economic benefits to the builder, convenience for the inhabitants, help activated the local economy, and reduced energy consumption and carbon emissions.

Social benefits:

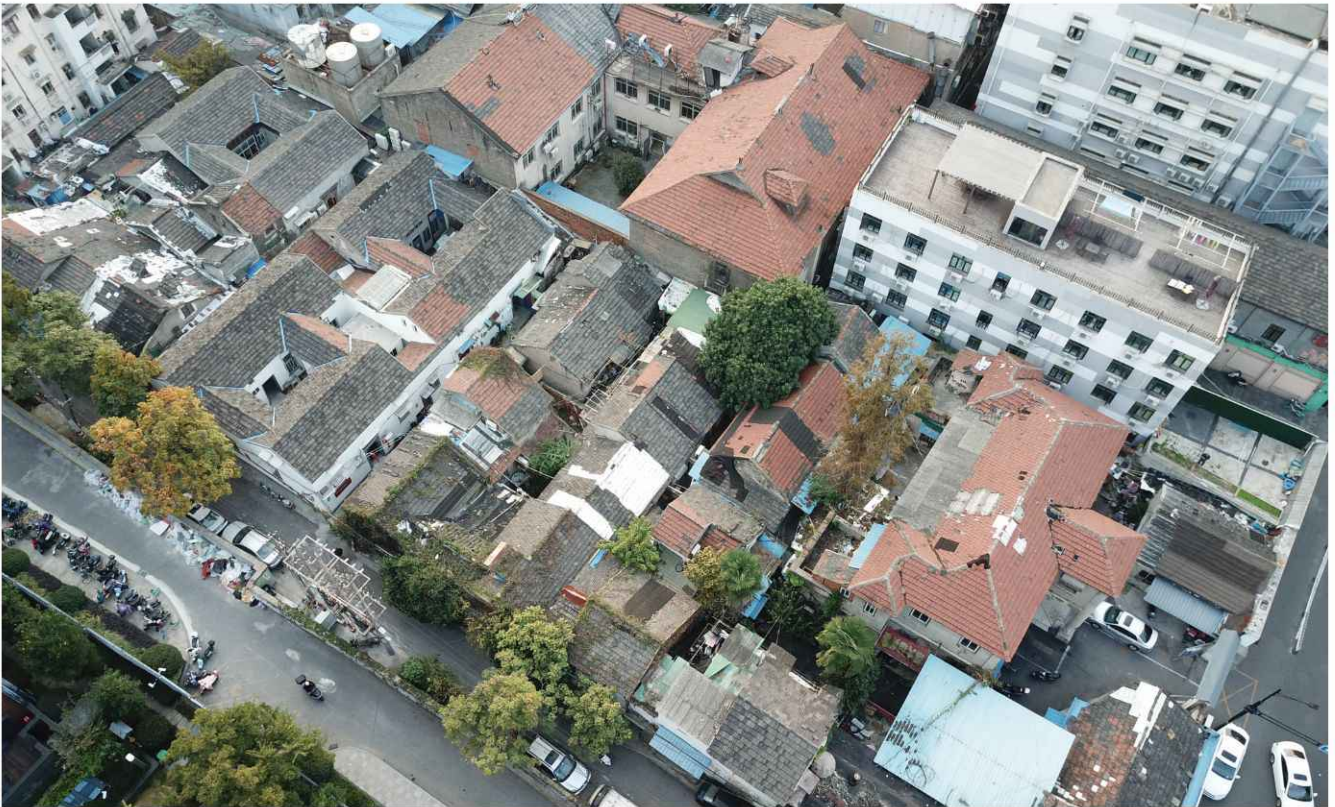
The initiative is seeking to balance the past and the present and promote the organic development of the building industry. Great care is taken to maintain and improve people's livelihoods, improve the living conditions of the residents, and improve their quality of life. The current residents include 170 people in total, 80% of whom are elderly. The community as a whole needs a more rational use of space, better interfaces between the built environment, green space, and space used for mobility and by motor vehicles. This involves a clear segregation of space for non-motorized means of mobility and traffic taming.

Environmental Benefits:

The initiative seeks to coordinate the present and the future, take the long-term ecological economy as the goal, comprehensively use a variety of green technologies, and fully research and organize ventilation and lighting, thermal insulation, sunshades, water circulation system, etc., to achieve the design standard of a sponge city; While improving the floor area ratio of the site, the building density is reasonably controlled, enough open space is reserved and three-dimensional greening is set up to achieve a comprehensive improvement in ecological harmony, environmental facilities, and space utilization.

Lessons

As one of the first pilot projects of urban renewal in Jiangsu Province and the first residential lot in Nanjing to implement the “preservation, transformation and demolition” renewal method, Xiao Songtao Alley hopes to provide more replicable and “popularizable” experience for other historical and cultural streets.





Qingdao-Towards a Global Livable, Open and Sustainable Modern Metropolis



摄影：张楠

 Qingdao, China



This initiative provides a compelling example of a city that is trying to put itself on the world map by improving its social, economic and environmental sustainability. It is doing so by embracing the targets and indicators of the global agendas, more specifically, the Sustainable Development Goals and the New Urban Agenda. In addition, it is establishing a shared vision of the future by cross-departmental collaborations and engaging a wide range of public, private and civil society stakeholders.



"Internationalization Plus" Action Plan Benchmarking Cases Instruction Manual

BASIC CITY DATA

Population size: 10340000

Surface Area (sq.km): 11293

Population Density (people/sq.km): 916

GDP Per Capita (U.S.\$): 20,065

Main Source of Prosperity: Smart home appliances, rail transit equipment, new energy vehicles, high-end chemicals, Marine equipment, food and beverage, textile and garment industries

QINGDAO, CHINA

Abstract

In 2015, Qingdao initiated the implementation of an International City Strategy. This strategy involves 67 departments in formulating a framework document for a comprehensive, coordinated and sustainable development paradigm for the future and an index system based on the challenges faced by the city. Qingdao identified the standards and benchmarks for future development with a global perspective, formulated and implemented a total of 564 key tasks in the biennial publication of “Action Plan of Internationalization+”, sorted out high-standard cases from around the world, compiled and printed 424 cases of the four-round biennial “ ‘Internationalization Plus’ Action Plan Benchmarking Cases Instruction Manual” and established various channels to receive feedback and supervision, designed to transform Qingdao into a livable, open and modern metropolis.

Background Information & Origins

In 2015, Qingdao issued a new policy directive for establishing the Qingdao International City Strategy Promotion Committee to promote the International City Strategy. In 2021, further to adopting the Sustainable Development Goals and the New Urban Agenda, Qingdao proposed to embark on a new journey of building a modern international metropolis and promoting higher quality, more efficient, fairer, more sustainable, safer economic and social development.

To realize its ambitions, Qingdao analyzed lessons learned from sustainable development strategies in cities as wide-ranging as Singapore, London, Tokyo, Shanghai, Shenzhen, etc. This analysis led Qingdao to formulate a set of goals to become a modern “global” sustainable city that is socially inclusive, ecologically sound, safe and secure with a transparent legal system and its own cultural identity. Qingdao seeks to achieve not only all of the SDGs but also become a model ocean center and city with the highest health, happiness and well-being levels. By 2021, Qingdao will become a regional economic centre city with international influence. By 2049, Qingdao will become one of the world’s most economically developed, culturally prosperous, environmentally friendly, carbon neutral and livable cities.

Key Measures

Qingdao established a multi-level governance framework to promote the international city strategy focused on the local attainment of the Global Agendas. This framework involves all 67 departmental units of the Municipal government. All 67 units are held accountable for the coordinated and integrated implementation of the action plan for internationalization. The framework engages all public, private and civil society stakeholders in regular consultations, meetings and reviews. The action plan includes aspects such as climate action, disaster response, and sustainable finance. It is designed to provide a holistic approach to urban development, bridging administrative silos and horizontal and vertical cooperation across all jurisdictions. Progresses in the attainment of goals and processes are documented in a biennial report that is vetted by the Qingdao International City Strategy Expert Advisory Committee and Qingdao international interactive platform. These entities represent a wide range of civil society and private sector stakeholders and social actors and are empowered to provide policy feedback to the government.

The Qingdao International City Strategy Promotion Centre, composed of talents with global vision, has been set up to undertake the day-to-day work of formulating programmes, the action plan and related policy measures. An expert advisory committee was also set up, composed of senior diplomats, internationally renowned scholars, and senior officials of multinational corporations, to provide suggestions for the development of Qingdao.

Innovative Aspects

The initiative should be considered as revolutionary. Qingdao is the first city in China to establish an “internationalization” strategy designed to fully implement the Global Agendas at the urban level. Besides the usual stakeholders, which include public and private entities and organizations, Qingdao has also established an interactive platform designed to facilitate the participation and engagement of city inhabitants in providing their suggestions for actions at the neighbourhood and community levels, ensuring the initiative is people-centered. It built an expert advisory committee and mechanism to receive suggestions from domestic and foreign experts to promote the city’s development.

In addition to implementing the Sustainable Development Goals and the New Urban Agenda, Qingdao has actively drawn on international experience to guide its urban transformation. It used a wide range of tools and 30 indicators to monitor its process towards internationalization and constructed a modern international metropolis index system covering six dimensions: (i) shipping and trade, (ii) local economic development, (iii) talent hub, (iv) vitality and livability; (v) entrepreneurial innovation; (vi) fashion innovation.



Desired Change Or Outcome

Through the implementation of the international city strategy, Qingdao's global influence has been significantly enhanced. Qingdao jumped from 193rd place in 2012 to 155th place on the list of the world's cities released in 2022 by the Globalization and World Cities Study Group and Network, from “high sufficiency” level to “Gamma+” .

Qingdao’s economic, cultural, social, and ecological civilization and the quality of urban development have improved remarkably, making the city more livable, resilient and comfortable. Qingdao’s inhabitants, visitors and a wide range of investors will continue to benefit from the initiative’s implementation in the future.



The Application of Urban Renewal Strategy



 Shijiazhuang, China



Correcting errors of the past is not an easy task by any means. Shijiazhuang, a small village in the 19th century, became the capital of Hebei province in 1968. With the liberalization of the Chinese economy in the 1980s, Shijiazhuang's population and economic development grew exponentially. The blind pursuit of GDP led the city planners and administrators to commit a lot of mistakes. A major piece of infrastructure – the urban expressway – and misguided urban planning, led to the fragmentation of the city. This not only led to unnecessary transport and mobility, it also segregated the city's main social, economic, commercial and recreational spaces. This initiative represents a bold attempt at correcting mistakes of the past and to redress urban fragmentation, segregation and social exclusion by re-configuring the urban expressway and re-allocating "no-man's" land to place making to improve urban coherence and social cohesion.



Basic City Data

Population size: 11,224,000

Population Growth Rate(%): 0.22

Surface Area (sq.km): 14530

Population Density (people/sq.km): 772.5

GDP Per Capita (U.S.\$): 7910

GINI Index:

Main Source of Prosperity: industry, agriculture, finance industry, transportation industry

SHIJIAZHUANG, CHINA

Abstract

As the capital city of Hebei Province and a vital pillar of the coordinated development of Beijing-Tianjin-Hebei Region, Shijiazhuang has been catching up and making every effort to promote urban development. It became the victim of its own success due to rapid economic development which sacrificed the city's quality of life and living environment. China has witnessed unprecedented economic growth over a four-decade period, resulting in rapid population growth and urbanization. Like many other cities in China, the focus was on urban infrastructure and real estate development. Many of the short-sighted decisions led to current day problems of congestion, pollution, segregation, and mal-development.

The City of Shijiazhuang decided in early 2021 to change the course of its urban development and expansion by taking the implementation of an urban expressway as an opportunity to transform the urban landscape.

Shijiazhuang, which literally means "village of the Shi family", belying its rural history, decided to implement an urban renewal strategy as the basis of its urban expressway project, to revitalize, renew and restore a balance between urban construction, quality of life and livelihoods, environmental protection and greening. The main objective was to effectively eliminate urban fragmentation and to foster a socially more inclusive, economically more dynamic and greener and more resilient city.

Background & Origins

Along with the boom of China's reform and opening-up, Shijiazhuang also witnessed accelerated urbanization and very rapid economic development. Over the last four decades, its population has more than quadrupled to over 11 million inhabitants today. It has become a major metropolis with a thriving economy based on trade and commerce. Many errors, however, were made in its urban development. Rapid urbanization and economic growth led to hasty realization of urban infrastructure and industrial development that constitute, today, major urban "illnesses" such as congestion, pollution, segregation, social exclusion, spatial segmentation and environmental degradation plus a lack of long-term planning in urban development. To overcome these "illnesses", the City of Shijiazhuang decided to embark on an innovative approach to urban infrastructure development, one that embraces the principles of urban renewal and urban regeneration.

The original city expressway built in 1997 runs through the downtown area of Shijiazhuang. As Shijiazhuang aims to build a modern, international and sustainable provincial capital city, the original urban highway seriously restricts the overall planning and development of the city.

It was designed in such a way that it segregated spaces of urban production, commerce, residential and recreational areas. This led to a poorly integrated urban fabric causing unnecessary traffic and transport as well as a lot of idle land (nearly 121 km²). Quality of life was seriously affected not to mention damage to the natural environment. Both factors, in turn, have hampered social cohesion and economic dynamism.

Shijiazhuang aims to become by 2024 a regionally integrated metropolis. The initiative has, in a short two years and during the COVID pandemic, improved efficiency of urban traffic, eliminating congestion and pollution. Meanwhile, the conversion of 121 km² of "no man's land" along the expressway route provides a unique opportunity to improve the overall cohesion and dynamism of the city. This land, of which 11.84 square kilometers, is planned for industrial incubators, commercial centers and private enterprises. Another 7.81 square kilometers is destined to become wetland parks, green amusement parks and playgrounds.



Desired Change Or Outcome

Up to now, five of the 14 sub-projects have been completed. Under the guidance of urban renewal strategy, Fuxing Street-North Third Ring Road urban transformation project will form a traffic road network system facilitating smooth connection with the intersecting roads along the route, efficient conversion, and interval integration. The land value of the corridor is therefore lifted, the industrial layout optimized, and the environmental quality improved.

After the completion of this initiative, the travel distance of the main urban area will be shortened from one hour to 35 minutes, mobilizing more than 30,000 jobs, including more than 13,000 for women and more than 17,000 for men. The per capita disposable income of urban and rural residents in Shijiazhuang will rise from 35,000 yuan to 50,000 yuan. Land resources, totalling 11.84 square kilometers along the route will be utilized more efficiently. This will include 0.4 square kilometers for public service, 0.6 square kilometers for commercial services, 1.6 square kilometers for residential land, 0.9 square kilometers for industrial use, and 7.81 square kilometers for public welfare (green space and recreational areas). An ecological corridor along Fuxing Street-North Third Ring Road has already been created, which effectively promotes the transformation and upgrading of the surrounding areas. Among them, 2.54 square kilometers of green spaces and squares and 1.2 square kilometers of parks and scenic spots were added.

This practice is applied in the urban transformation project of a city expressway, which is a powerful exploration into the expressway transformation and involves more than 200 villages, towns, and communities along the route directly. It is estimated that 5.2 million people will benefit from it directly, including 4.65 million urban residents and 550,000 rural inhabitants (49.9% male and 50.1% female), and the number of indirect beneficiaries will reach 5.8 million.

SHIJIAZHUANG, CHINA

Key Innovative Aspects

This practice is innovative in that it is very much an experiment. It is an attempt to apply the principles of urban renewal to the transformation of city expressways – how they are designed, how they are planned and how they are implemented.

The initiative has, to date, benefited more than 11 million people, and once it is completed (2024), it will become a reference point for other urban development initiatives in Shijiazhuang as well as for other cities in China, many of which have committed similar errors in their pursuit of rapid development and urbanization. It will serve as a beneficial reference for other cities.



Implementation

The practice is led by the local government with a wide range of partnership arrangements. An inter-department linkage mechanism was established by the municipality at the inception of the initiative to bridge “silos” and rationalize project approval procedures. These silos were largely responsible for the fragmented and segregated development of the city over the past four decades. Other partners that are playing a key role in this initiative include the private sector (developers, construction companies, etc.), media houses, trade unions, experts, researchers, academia and, last but not least, the citizens of Shijiazhuang.

Previously, engineers and planners decided what was technically most efficient, not necessarily what should be socially and environmentally sustainable. At present, the project has, for the first time, systematically put forward the concept of “building road, bridge and tunnel to satisfy local needs” . This approach aims to reduce the requisition of farmland and adjacent land, restore and rebuild green space, and improve the comprehensive utilization of space surrounding urban infrastructure including land under bridges and above tunnels. It has obtained the special policy support of Hebei Provincial Government in terms of fund-raising, and established a series of financial guarantee systems and standards for implementing green projects.

The municipality played the role of overall guidance and raised the funding of about 2.2 billion dollars for construction in close collaboration with China Communications Construction, the Fortune Global 500 involved in design and construction and 20 private enterprises covering technical consultation, civil construction, contract management. A total of 12 academicians and design masters of the Chinese Academy of Engineering, 52 university professors and planning experts from 13 colleges and universities, nearly 200 professional designers and thousands of experts in various fields were invited to participate in the planning and design of the project. The government has

openly solicited the suggestions of the people, and has communicated and consulted with various democratic parties and citizens regularly. All stakeholders and citizens were invited to participate in the construction. Every month, citizens were organized to check the progress on site. The news media regularly update the construction process. More than 90 departments and enterprises throughout the city participated in this project. A total of 1174 effective feedback was received from all sides. 71% of the feedback were adopted in the design.

The application of urban renewal strategy in the municipal renovation of urban expressways has enabled Shijiazhuang to move from urban fragmentation to integration, driving coordinated development of regional economy, improvement of road network capacity, and integration of land resources. Practice has proven that government leadership and public participation in the construction process are more conducive to project implementation. As an important pole of China's world-class urban agglomeration in the Beijing Tianjin Hebei region, Shijiazhuang will continue to make efforts in urban renewal and share experience and achievements in building a green, harmonious, and beautiful city.





Building Ecological Resilience of an Urban Lagoon Against the Backdrop of Rapid Urbanization



 Xiamen, China



Yundang lagoon used to be a good natural harbor rich in fish and shrimp. However, in the 80s of the last century, due to the construction of embankments and land reclamation, Yundang lagoon became a closed inner water. In the past decades, the quick urbanization brought about a sharp deterioration of the lagoon water ecology, where a large amount of garbage and sewage were directly discharged into the waters and surrounding areas. Consequently, Yundang lagoon became a repellent stinky waters. Through years of lagoon water renovation and area upgrading, Yundang lagoon has gradually become a "Reception Room" of Xiamen City. The ecological restoration of Yundang lagoon provides an excellent example of how cities can simultaneously make a difference for SDG 14: Life below water, SDG 15: Life on land, and SDG 11: inclusive, safe, resilient and sustainable cities through participatory, integrated and sustainable human settlement planning and management.



Fig.2 The Extensive Consultation and Joint Governance Management Model



Fig.6 Technical Roadmap for the Improvement of the Yundang Lagoon

BASIC CITY DATA

Population size: 5,280,000

Surface Area (sq. km): 1698.78

Population Density (people/sq.km): 3108

GDP Per Capita (U.S.\$): 20,342

Main Source of Prosperity: secondary and service industries

XIAMEN, CHINA

Abstract

The Yundang lagoon is an urban water located in the downtown area of Xiamen City. In the 1980s, the Lagoon deteriorated, with its ecological system ruined due to rapid urbanization and population explosion in Xiamen, as in most coastal cities in China. Since then, the local authority has been working with the public through extensive consultation and a joint governance model, crafting an innovative solution for lagoon management. A combination of measures were employed to enhance the ecological resilience of the Lagoon. These measures include establishing new legislation, building community-based alliances around the area, engaging civic supervisors/chiefs for all four lagoon sections and seven surrounding parks, bringing in tidal water to rejuvenate the Lagoon, intercepting sewage, planting mangroves, etc. After years of sustained efforts, the ecological environment in and around the Yundang Lagoon has been significantly improved, exemplifying a novel lagoon management model featuring a proper balance between economic development, social inclusion and environmental conservation.



Background & Origins

In the 1980s, rapid urbanization and population spike in Xiamen brought about impressive economic development; they also caused various bottleneck problems, such as a severe shortage of water environmental carrying capacity and poor ecological resilience of Yundang Lagoon. The local authorities promulgated the “Measures for the Management of Yundang Lagoon” in 1989, which afterwards has been revised three times. Regional economic and social development strategies were formulated, providing a blueprint for the legalization and lasting construction of lagoon protection.

The Yundang Lagoon is located in the downtown area of Xiamen, spanning two administrative districts. The Lagoon watershed area is 37 square kilometres, consists of four lagoon sections and seven parks, and closely 1.13 million inhabitants live in the surrounding area. The initiative is a cross-regional government project which aims to solve the bottleneck problems caused by rapid urban development and population growth, such as insufficient environmental carrying capacity of urban Lagoons, poor ecological resilience, and people cannot fully enjoy the fruits of economic and social development. The initiative is trying to tackle the challenges by creating a new governance model that fosters a proper balance between economic growth, social inclusion and environmental conservation to build and protect the resilience of the Yundang Lagoon ecosystem, improve the living environment of the citizens, enhance the business environment, and promote sustainable urban development.

Key Measures and Innovative Aspects

This initiative should be considered a revolutionary exploration. To enhance the resilience of the Yundang Lagoon ecosystem, Xiamen established ecological protection lines (i.e. “blue line”) for its surface water bodies and incorporated it into a “multi-plan integration” management platform for all rivers and lagoons in Xiamen; this practice is one of the firsts China. A regional blueprint has been created to manage all river and lagoon systems in Xiamen. In the case of Yundang Lagoon, institutions dedicated to Lagoon management and law enforcement have been set up, and the Lagoon ecosystem restoration initiative has been embedded into Xiamen’ s strategy for economic and social development.

The initiative is innovative in the following aspects:

1) Bringing together multiple stakeholders for soliciting ideas, defining roles and responsibilities, implementing projects and ensuring responsible management; thereby, a framework of extensive consultation and joint governance between the government and the public was established. The local communities and various social forces around the lagoon area are invited to participate in lagoon management through measures such as establishing community-based alliances around the lagoon area, recruiting civic supervisors/chiefs for all the lagoon sections and the surrounding parks, and providing alternative perspectives and expertise in lagoon management. The governance of the lagoon area has expanded from the treatment of terminal water bodies to cross-regional and cross-departmental cooperation with social consultation and governance.

Civic park supervisors and lagoon chiefs are volunteers recruited openly from the public who are passionate about volunteerism. Currently, there are 3 civic park supervisors and 3 civic lagoon chiefs. They are entrusted with the responsibilities of collecting feedback from the public, conducting supervision to help spot areas that need improvement, providing suggestions for lagoon management and setting an example to bring more public participation.

2) Innovation in mechanisms. In 1988, the local government revised and promulgated the “Measures for Protecting the Yundang Lagoon Area” , which provides legislative support for strengthening the construction and management of the lagoon area. The initiative facilitated the building of community-based alliances around the area. It closely linked the local government, service departments, technology enterprises, scientific research institutions, non-governmental organizations and community groups while effectively connecting the districts, various governmental departments and local residents in the surrounding area. For example, civil organizations such as the Xiamen Birdwatching Society were invited to participate in lagoon district governance. Xiamen University faculties and students planted mangrove forests in the lagoon area together. These actors have been playing a supervisory role in the Lagoon management. Their contributions, albeit not in cash, are equally valuable and significant.

The local government attaches great importance to the construction of governance institutions in the lagoon area, has set up special management and protection and law enforcement agencies, and encourages social forces to participate in the governance and protection of the lagoon area. In addition, the local government continues to formulate local economic and social development strategies according to the needs of the construction and urban development of the lagoon area, effectively ensuring the continuation of the lagoon management work and the alignment of management measures.

3) Technological innovation. A whole-process end-to-end pollution control and ecological restoration strategy has been rolled out. Technology innovation has empowered various measures, such as bringing in tidal water to

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reinvigorate the Lagoon (BTRL), intercepting sewage water, planting mangroves and building living habitats for all types of species. It is noteworthy that the BTRL practice, whereby water exchange was achieved through constructing diversion channels and utilizing tidal ranges, is the first of its kind in the world and was constructed at the suggestion of the local villagers. It is an exemplary model of using the force of nature while significantly improving the environmental and ecological resilience of the lagoon area.

Lessons

As urbanization accelerates, the urban water ecosystem and the environment face great challenges, and it requires continuous efforts to manage and repair. Legislation should be made to set up rules and regulations to guide actions regarding mechanisms, funding resources and technology while engaging the public to participate. At the same time, adopt new scientific and technological tools to create a comprehensive management system to utilize lagoon management technology and empower information sharing with the public.

The environmental and ecological reconstruction of the lagoon has been closely integrated with urban construction, economic development, urban business environment and the living environment for the citizens, and it has become the center for public administration, business, tourism and residential areas. As a typical case, it has been promoted in China and internationally for many times, and has been praised as a "Demonstration Project of Prevention and Management of Marine Pollution in the East Asian Seas" and "Practice example of harmonious development between human and nature in cities", and helped Xiamen to win honours such as "International Garden City" and "United Nations Habitat Award".





Taking Photo of the Canton Tower in the Flower Sea

