

China's City of the Future: Xiong'an New Area

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Meandering waterways, Baiyang Lake, Xiong'an New Area, Hebei

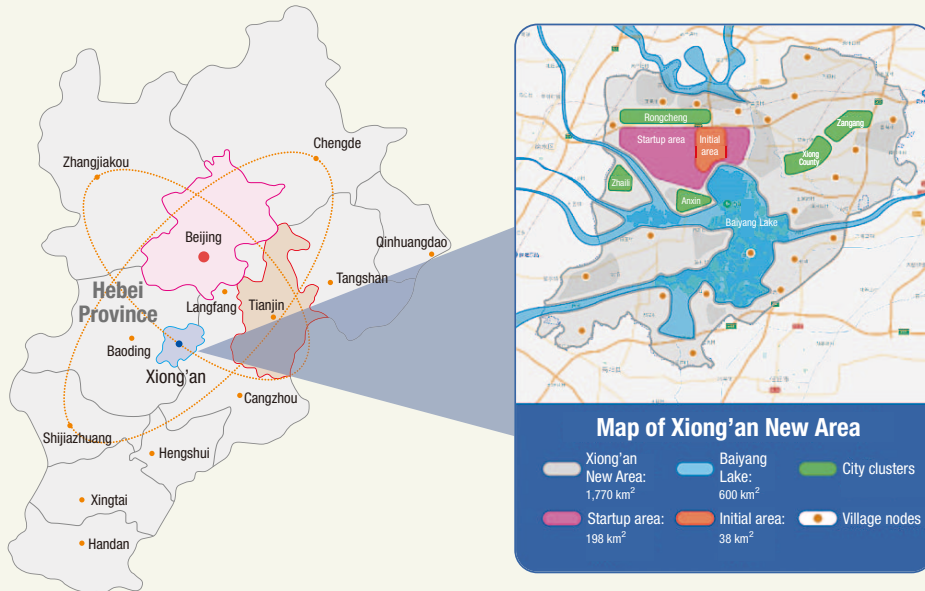
Introduction

The Central Committee of the Communist Party of China and the State Council announced the decision to establish Xiong'an New Area in Hebei Province on April 1, 2017. The Xiong'an New Area project has the support of President Xi Jinping and other top leaders in China. As a millennium plan, a project with national significance, it is the first National New Area to be established on a national scale in the 21st

century, following in the footsteps of the Shenzhen Special Economic Zone and the Pudong New Area in Shanghai. The construction of Xiong'an New Area as a model for undertaking high-quality development throughout China and a new driving force for the modern economic system has great significance in terms of national strategy. This is because Xiong'an New Area, China's city of the future, seeks to be a leading-edge city that delivers innovative intelligence, a green ecology, and wellbeing (happiness and livability) on the basis of an ultra-long-term plan that runs

Figure 1 | Map of Xiong'an New Area and Overview of Development

Located south of Beijing, Xiong'an New Area is undergoing developments that include a startup area and initial area.



Prepared by Design Office of Hitachi (China) Research & Development Corporation (HCR&D)

until 2035. Although people's values are changing as a result of COVID-19, bringing with it changes in their idea of an ideal city, the plan for Xiong'an New Area is proceeding steadily without major changes, having been informed by the study of a long history based on the wisdom of many of the world's experts (see [Figure 1](#)). After first looking back over the history of urbanization in China, this article gives an overview of the plan for Xiong'an New Area and reports on the progress of construction.

Progress of Urbanization in China and Trends in Urban Development

Urbanization has advanced rapidly in China along with economic development, with the percentage of the population living in cities rising from 36.22% in 2000 to 60.9% in 2019 (see [Figure 2](#)).

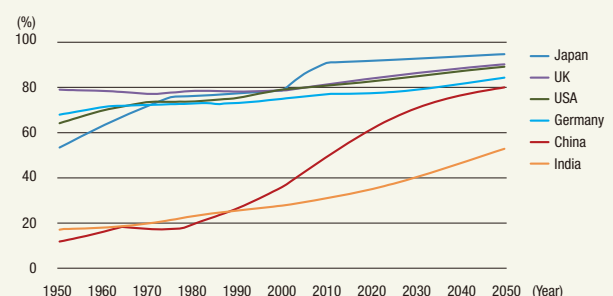
The Chinese government adopted an urbanization strategy from 2010, putting work into not only increasing the percentage of people living in cities, but also into the quality of urban development. Under government direction, urbanization in China has made progress on a wide variety of fronts, including better urban living environments, more intelligent

cities, health and safety, ease of living, and sustainable development, taking advantage of advances in technology, the growth of emerging businesses, and changes in people's needs and how they live. Government measures on the construction of model cities are playing leading roles in accelerating the urbanization strategy, such as building low-carbon eco-cities, smart cities, and other model cities across the nation to encourage improvements in city quality (see [Table 1](#)).

Urban development in China in the post-pandemic era will see a renewed awareness of the importance

Figure 2 | Trend in Percentage Urbanization in China and other Major Nations

Urbanization has increased rapidly in China over recent years in response to government policies.



Source: Prepared by author based on data from UN World Urbanization Prospects: The 2018 Revision



Table 1 | Major Model City Initiatives Being Undertaken by Chinese Government

The Chinese government is accumulating construction experience in urbanization by pursuing an urbanization strategy that fosters improvements in city quality through the construction of model cities, including low-carbon eco-cities and smart cities.

Type	Commencement date	Administering government institution	Summary	No. of model cities
Low-carbon eco-city	2010	National Development and Reform Commission	Pioneering of low-carbon development, development of low-carbon industrial systems that are low-carbon, green, energy-efficient, and resource-recycling	81
Innovation city	2010	Ministry of Science and Technology, National Development and Reform Commission	Foster motive force for development that improves urban quality through innovation in science and technology research, innovation in principles and management models for urban development, etc.	57
Smart city	2012	Ministry of Housing and Urban-Rural Development	Encourage smarter and more efficient urban planning, construction, management, and operation through the application of the IoT, cloud, and other next-generation information technologies	290
Green eco-city	2012	Ministry of Housing and Urban-Rural Development, Ministry of Finance	Encourage the planning, construction, and operation of cities and areas that are energy-efficient and friendly to the environment, improve urban environments, and establish livable environments	139
Sponge city	2015	Ministry of Finance, Ministry of Housing and Urban-Rural Development, Ministry of Water Resources	Prevent urban flood damage and improve disaster risk reduction capabilities by building sponge cities with functions for absorbing, storing, purifying, and distributing water	30

IoT: Internet of Things
Source: Prepared by authors based on data from Chinese government websites and other Internet sources

of health and safety, including the use of digital technologies to accelerate the construction of smart cities and improvements to public health management in cities. There will be an increased emphasis on quality of life (QoL) considerations such as health, safety, and livability achieved through smarter urban construction, with government investment in new infrastructure strengthening such areas as 5th-generation (5G) telecommunications, artificial intelligence (AI), and data centers. These initiatives will expand beyond major cities like Beijing, Shanghai, and Guangzhou to also include medium-sized and smaller centers, with leading-edge concepts incorporated into new urban developments from the city design stage. The Xiong'an New Area that is attracting international interest is seen in China as a city of the future and a millennium plan, being designed and built on the basis of ideas such as being green, smart, cultural, and creative that reflect trends in future cities and what it is that urban development in China has been seeking to achieve.

Objectives of Establishing Xiong'an New Area—City of the Future

At the 19th National Congress of the Chinese Communist Party held in October 2017, President

Xi Jinping spoke about the importance of relocating the non-capital functions of Beijing by proceeding with the coordinated development of the Jing-Jin-Ji economic triangle (Beijing, Tianjin, and Hebei), with Xiong'an New Area to serve as a model city established with high standards. Based on this policy, the Leading Group for Coordinated Beijing-Tianjin-Hebei Development as well as the government of Hebei Province have convened the relevant departments/committees and specialist advisory committees from central and national agencies to work jointly on an in-depth investigation of the Xiong'an New Area plan. In April 2018, the Guideline for Planning of Hebei Xiong'an New Area was ratified and released by the Central Committee and State Council, laying out the role to be played by Xiong'an New Area, the missions, objectives and the implementation plans of its planning and construction, as well as other initiatives to complete the development of the city by 2035, along with a future vision to build it into a leading international city in 2050 (see Table 2).

“1+4+26” City Planning System for Xiong'an New Area

To prepare the city plan following the announcement of the master guideline in April 2018, the government of Hebei Province adopted a system that would

Table 2 | Key Points of Plan for Xiong'an New Area

A long-term master plan that extends to 2035 has been formulated that provides the basic underpinning to guide the planning and construction of Xiong'an New Area, and also envisages a development vision for Xiong'an New Area in the mid-21st century.

Strategy	The objective is to build a national model city that will serve as a major pillar of the Jing-Jin-Ji world-class city cluster as a center for the relocation of non-capital functions from Beijing, will provide a new engine for modernized economic systems by being innovation-driven, and will accomplish high-quality development	
Role	A new area with a green ecology that is easy to live in (people and nature), an area that acts as a driving force for innovation-driven development (science and technology, innovation, and the economy), a model area for collaborative development (Jing-Jin-Ji region), and a pioneering area for open development (globalization, investment, trade, and commerce)	
City planning and construction mission	To establish scientific space design, form new-era cityscapes, create natural ecological environments, develop leading-edge advanced industries, deliver high-quality public services, build comfortable and highly efficient transportation networks, construct green/smart/new cities, establish modernized urban security, and carry out plans in a disciplined and effective manner	
Construction goals	2035 <ul style="list-style-type: none"> • Complete construction of startup area (urban area of Xiong'an) • Build a modern city that is basically green and low-carbon, incorporates information and smart technologies, is an easy place to live and work in, and features competitiveness and influence, with high standards and harmony between people and nature • Establish urban governance capabilities and the modernization of social management, with a heightened level of openness and international influence 	Mid-century (2050) <ul style="list-style-type: none"> • Serve as a major element in the Jing-Jin-Ji world-class city cluster by completing all aspects of the construction of a modern city with high quality and high standards • Achieve clear outcomes as a center for the relocation of non-capital functions from Beijing and deliver solutions for China to "big city disease" • Achieve an advanced international level of socioeconomic development indicators by becoming a national model city for high-quality development in a new era

Source: Prepared by authors based on the Guideline for Planning of Hebei Xiong'an New Area published in April 2018

ensure high-quality planning by inviting more than 1,000 experts from China and abroad, 200 teams, and more than 2,500 engineers and by establishing a number of institutions for planning, evaluation, and verification that included a working group for New Area planning, a planning consultation experts group, national-level advisory and verification institutions, and a provincial government experts committee (see [Table 3](#)). The "1+4+26" system is a series plan that is made up of a single master guideline (Guideline for Planning of Hebei Xiong'an New Area), four regional and sectorial overall plans, and 26 specialized plans for aspects such as flood prevention, disaster response, energy, and integrated transportation.

The four regional and sectorial overall plans include staged plans for spatial design and work on construction of the Xiong'an New Area. Xiong'an New Area is made up of three Hebei Province counties, Xiong, Rongcheng, and Anxin, as well as some surrounding areas and is located about 105 km from both Beijing and Tianjin. The development covers 1,770 km² in total and was planned on the concept of "one center, five auxiliaries, multiple nodes." The "center" is the 198 km² startup area of Xiong'an that will form its city proper. The five auxiliaries are Xiong county, Rongcheng county, Anxin county, Zhaili Village, and Zangang Town, which are located outside the startup area. The "multiple nodes" refer to the

many distinctive small towns and scenic villages in the region. The startup area also includes a 38-km² initial area where construction will start first and that will serve as an innovation model area for the city (see [Figure 1](#)).

Principles and Features in Future City Planning

The city plan for Xiong'an New Area as a leading-edge future city reflects the principles of innovative intelligence, green ecology, and wellbeing, as manifested in the 1+4+26 plans. The master guideline specifies 38 specific goals to be achieved by 2035 (nine for innovative intelligence, 17 for green ecology, and 12 for wellbeing), with plans also being established for goal actualization and for the route by which they are to be realized.

• Innovation city

The mission of Xiong'an New Area as an innovation city is to achieve the synergistic development of a leading international region for science and technology, innovative industries, research and development, modern finance, and human resources. Accordingly, the relocation of the non-capital functions of Beijing to Xiong'an New Area is to be undertaken primarily by relevant institutions, most of which are from the following six fields.

(1) Scientific research institutions including major



Table 3 | Overview of City Construction Planning for Xiong'an New Area

The "1+4+26" structure for planning has established a sound basis for large-scale construction in the Xiong'an New Area.

Plan	Date of announcement	Planning regime	Drafting and proposal institution	Approval institution
One master guideline	April 14, 2018	Guideline for Planning of Hebei Xiong'an New Area	Central Committee of the Communist Party of China Hebei Committee, the People's Government of Hebei Province, National Development and Reform Commission	Central Committee of the Communist Party of China, State Council
Four overall plans	December 25, 2018	Master Plan for Hebei Xiong'an New Area (2018 – 2035)	Central Committee of the Communist Party of China Hebei Committee, the People's Government of Hebei Province, National Development and Reform Commission	Central Committee of the Communist Party of China, State Council
	January 2019	Governance and Protection Plan for Baiyang Lake Ecological Environment (2018 – 2035)	Specialist Committee for Coordinated Beijing-Tianjin-Hebei Development, Central Ministries and Commissions, Hebei Province	Central Committee of the Communist Party of China, State Council
	January 2020	Controllability Plan for Startup Area, Xiong'an New Area, Hebei Province	Specialist Committee for Coordinated Beijing-Tianjin-Hebei Development, Central Ministries and Commissions, Hebei Province	State Council
	January 2020	Controllability Detailed Plan for Initial Area, Xiong'an New Area, Hebei Province	Specialist Committee for Coordinated Beijing-Tianjin-Hebei Development, Central Ministries and Commissions, Hebei Province	State Council
26 specialized plans	2019	Completed development of 16 key specialized plans in areas like energy and integrated transportation and 10 other specialized plans	Specialist Committee for Coordinated Beijing-Tianjin-Hebei Development, Central Ministries and Commissions, Hebei Province	State Council

Source: Prepared by authors based on the Xiong'an New Area Green Development Report of the Xiong'an Green Development Research Institute

universities, laboratories of national importance, and innovation centers of national importance

(2) Healthcare institutions including top-class hospital and leading medical research institutions

(3) Financial institutions including financial business headquarters

(4) Software, telecommunications, design, consulting, logistics, electronic commerce, and other corporate headquarters in advanced service businesses

(5) Central, private, and technology companies in advanced technology industries engaged in next-generation information technology, biomedicine, biohealth, energy-efficient environment, and the research and development of advanced materials

(6) Zhongguancun Science Park of Xiong'an New Area

These institutions and companies will play the main role in building the city into an innovation hub, through measures to facilitate the establishment of state-owned and private companies and the startup of venture businesses in emerging sectors, as well as measures for the recruitment and training of talent.

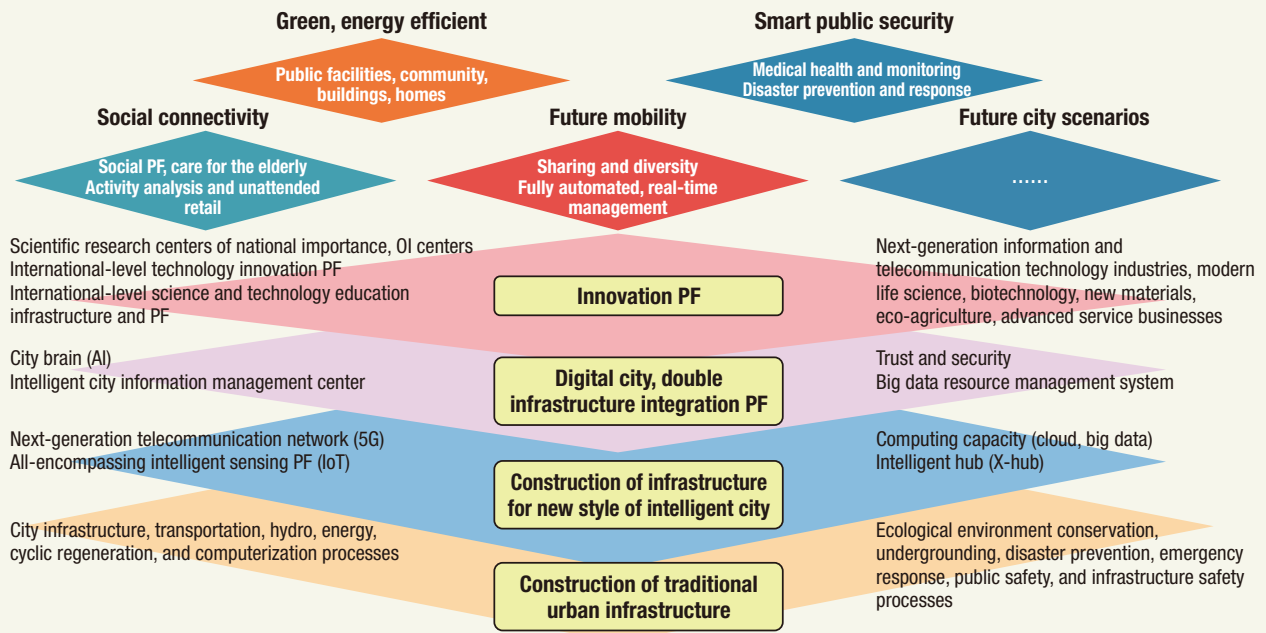
• Intelligent city

The objective of constructing an intelligent city in Xiong'an New Area is to realize the synchronized planning and construction of both a physical city and

a digital city, supported by infrastructure that is appropriate to a new style of intelligent city and traditional urban infrastructure. Infrastructure appropriate to a new style of intelligent city in Xiong'an New Area mainly refers to next-generation infrastructure such as city-wide intelligent sensing systems [the Internet of Things (IoT)], next-generation telecommunication networks (5G), urban cloud and big data platforms (PFs), urban computing capacity, and city brains (AI) (see [Figure 3](#)). Because there is no precedent anywhere in the world that can serve as a model for the construction of an intelligent city from scratch, Xiong'an New Area has undertaken pioneering exploratory and practical measures in a variety of areas based on experience of the construction of other smart cities drawn extensively from China and elsewhere. In particular, this has involved joint research into intelligent city construction standards in partnership with major universities, scientific research and design institutions, and construction companies in sectors such as information, construction, transportation, and finance, with Xiong'an New Area officially publishing the first edition of the standards regime for intelligent city construction in Xiong'an New Area in May 2020, including the issuing of an initial tranche of eight standards on such topics as

Figure 3| Overview of Work on Xiong'an New Area Intelligent City

The intelligent city will proceed on the basis of four PFs and five scenarios.



PF: platform OI: open innovation AI: artificial intelligence 5G: 5th generation

Source: Prepared by authors based on the Guideline for Planning of Hebei Xiong'an New Area published in April 2018 and the public presentation by the Xiong'an New Area experts committee

IoT device construction (roads) and 5G telecommunication construction guidelines. The intelligent city construction standards are split into three categories (the construction of infrastructure and sensing systems, intelligent applications, and information security), with plans for around 100 specific standards that encompass nine aspects of the intelligent city standards system. In the case of intelligent applications, the intention is to develop this in a way that is open to the rest of the world and involves collaborative creation on the introduction of advanced technology.

• Green city

In the context of ecological civilization development, the establishment of the Xiong'an New Area has an important mission in terms of transforming and advancing urbanization in China. One of the aims of new area construction is to establish a pattern of urban spaces that interweave the blue (wetlands) and green (forests, farmland, and grass) to integrate water and city by prioritizing the ecological environment and being rigorous about green development.

The aim is to achieve green performance indicators by 2035 that include a percentage of blue and green spaces of more than 70%, 40% forest coverage, and to have 100% availability of public space facility services within 300 meters in the startup area. Along with an ecological environment, the creation of an intelligent transportation system and intelligent city will rigorously adhere to the principles of green ecological development. To achieve green urban development, the city is putting green foundations in place through the comprehensive adoption of water-saving social construction, sponge city construction, popularization of green buildings, use of green construction materials, separation of stormwater and wastewater, cyclic wastewater and waste processing and recycling, supply of electric power generated by renewable energy, and construction of diverse and clean heating systems.

• Livable city

Reflecting people-centric concepts, the plan for Xiong'an New Area is establishing a hierarchical



Table 4 | Structuring of Public Services in Xiong'an New Area

Public activity spaces and public services are arranged hierarchically to create a rational urban living environment.

Initial area	Number	Facilities and services	Radius and area	No. of residents and centers
Community center	Six 15-minute community living zones	Hub for transferring between public transportation services, middle school, health service center, cultural activity center, community service center, public fitness center, and elderly care center	1,000 m, 3 km ²	50,000 people
District center	16 10-minute district living zones	Facilities such as an elementary school or health center	500 m, 1 km ²	15,000 to 25,000 people
Neighborhood center	35 5-minute neighborhood living zones	Early childcare service, kindergarten, residents committee workspace, community cultural activity station, small multipurpose exercise facility, in-home care (support for disabled) station	300 m	5,000 to 12,000 people

Source: Prepared by authors based on the Controllability Detailed Plan for Initial Area, Xiong'an New Area, Hebei Province

community service structure by building three levels of public service centers (community, district, and neighborhood) to provide residents with appropriate cultural education, medical care, social security, and social welfare services. The initial area community, for example, is planning six 15-minute living zones made up of 15-minute zones with a service radius of about 1 km, a coverage area of about 3 km², and servicing a population of approximately 50,000, providing facilities such as a hub for transferring between public transportation services, middle school, health service center, cultural activity center, community service center, public fitness center, and elderly care center (see [Table 4](#)).

The transportation system is designed for convenience. It will include a comfortable railway network linking the main cities in the vicinity, public transportation hubs within 300 m in the startup area, and 100% public transportation service coverage of city roads. This will create an environment in which people can live comfortable and relaxed lives by building walking and cycling greenways that connect the green spaces, parks, and single-purpose roads in the cities, city clusters, and community areas to ensure a green mobility mode of public transport + bicycles + walking.

Progress of Xiong'an New Area Construction

Construction of the new area has been progressing gradually in parallel with preparation of the various plans since the establishment of Xiong'an New Area

was decided in April 2017. Along with work on the ecological environment around Xiong'an New Area since November 2017, the Xiong'an Citizen Service Center has also commenced. The center is the first large urban construction project for Xiong'an, which commenced operation in June 2018 for providing public and living services to residents, as well as to serve as a demonstration space where people can experience the future city for themselves (see [Figure 4](#)).

Under the principle of prioritizing the ecological environment, the Qiannian Xiulin, or Millennium Forest afforestation project and water quality and ecological conservation activities in the Baiyang Lake catchment have proceeded in advance of infrastructure construction. The total area planted with forest by the Millennium Forest project had reached more than 20,000 h (200 km²) by the end of 2019, increasing forest coverage from 11% to 22.7%. Through measures that have included cleaning up waste in waterways and controlling the release of pollution by companies, water quality in the Baiyang Lake central area has improved from below class V to class IV, and the quality of surface water in the test area has improved to class III. Meanwhile, to help become a low-carbon, resource recycling city, Xiong'an is ahead of the rest of China in implementing the "coal to electricity" and "coal to gas" transition whereby clean energy sources such as electricity and natural gas are used instead of coal for home heating.

As the most important foundation for urban development, Xiong'an is building railways, expressways, and internal road networks to establish intercity and

regional links. An intercity railway line linking Beijing Daxing International Airport and Xiong'an railway station commenced operation in September 2019 in the Beijing region (from Beijing West Railway Station to Beijing Daxing International Airport), and work was completed on the main structure of Xiong'an railway station in April 2020 (see [Figure 5](#)). Meanwhile, the main road building and paving work for the Jingxiong Expressway linking Xiong'an to the outside world and the region's Rongyi highway network (between Rongcheng County and Yi County) are proceeding on schedule.

In accordance with the construction plan, Xiong'an New Area commenced its smart city construction from 2020. Through the simultaneous installation of traditional urban infrastructure and digital infrastructure, large-scale and substantive construction has started in earnest aimed at building a digital twin city that fuses the physical world and virtual space. Digital infrastructure is proceeding on the basis of a framework centered on "one center and four platforms." "One center and four platforms" refers to the urban computing center (cloud), block data platform, IoT integrated open platform, video network platform, and construction information modeling (CIM)

Figure 4 | Site of Xiong'an Citizen Service Center Before and After Construction

The photographs show the site of the Xiong'an Citizen Service Center before and after construction. Construction commenced on December 7, 2017 and was completed just 112 days later. The total construction area of 99,600 m² is made up of four areas: a public service area, administrative service area, lifestyle service area, and corporate tenant office area.



Photograph by China Construction Third Engineering Bureau Co., Ltd./ Yang Yawen, Xiongan Online

platform. For the intelligent applications that run on the platforms, which include facilities management, transportation, distribution, and energy, the Xiong'an Public Service Center is exploring scenarios for the future in the model area. This is intended to create a model for future cities, with a number of projects getting underway at the center's site, including smart lighting poles equipped with 5G telecommunications and road-vehicle integration functions, the building of a model area for use of 5G, and a vehicle-to-X (V2X) (model for coordination of vehicles and roads) project that can be scaled to various scenarios.

Following the outbreak of the COVID-19 pandemic in January 2020, Xiong'an New Area adopted an unequivocal stance of an early resumption of construction. Construction had recommenced at approximately 50% of major projects by February 24 and a 100% return to work was achieved by the end of April. The first and second central budgets for May and July of the National Development and Reform Commission specified investment of CNY3.5 billion (approximately JPY53.5 billion) for Xiong'an, including plans to accelerate work on upgrades to sewage and waste processing facilities to improve sanitation; the undergrounding of water, sewage, and gas networks; and the construction of railways and associated facilities.

Figure 5 | Completed Construction of Xiong'an Railway Station Main Structure

The installation of unfaced concrete for the Xiong'an Railway Station was largely completed on July 13, 2020, with work on the rain canopy roof and upper floor steelwork proceeding well.



Photograph by Sun Lijun, People's Daily



Conclusions

Setting the concept design, goals, and plans as a millennium plan, Xiong'an New Area is making steady progress. The city development concept reflects the dream of Chinese urban construction that looks to the future and it will inevitably have a major impact on the progress of urbanization in China. The May 2020 session of the 13th National People's Congress announced strategies for the ongoing development of the Chinese economy in FY2020 and beyond that included measures such as boosting internal demand post-pandemic, strengthening innovation to achieve economic growth, new infrastructure investment, and new urbanization. Urbanization and regional development will be significantly encouraged by the implementation of the various measures and this will serve as a driver for future economic growth in China. In terms of the key focus for urban development, along with digitalization and greening, an emphasis will also be placed on the establishment of a public health system and ensuring the health and safety of city residents as important priorities.

During the construction of Xiong'an New Area, the world's advanced technologies have been introduced to build new open platforms. As construction progresses, opportunities for global corporations to become involved will increase. On the other hand, the progress of urbanization in China requires that regional development proceed through coordination between major cities and small and medium-sized cities, involving not only the creation of new cities, as is the case with Xiong'an New Area, but also the upgrading of existing cities, and this gives rise to major business opportunities. Hitachi intends to take advantage of these opportunities and contribute to improving people's QoL in China through its businesses that deal with urban construction, in Xiong'an New Area and elsewhere.

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