

Application Scenarios of China's Carbon Neutrality Pilot Project

(Challenge 1)

Background and working mechanism

The International Business Hub (IBH) under Sino-Nordic Promotion Association for Green Sustainable Development (SNPA), in partnership with the Center for International Economic and Technological Cooperation (CIETC) of Chinese Ministry of Industry and Information Technology (MIIT), have jointly established the China-EU Carbon Neutrality Cooperation Office (CECCO) and initiated the China's carbon neutral initiative (*SNPARK initiative*), to organize a group of pilot projects by cities and industrial sectors. The first batch of pilot projects will focus on Yangtze River Delta, the Greater Bay Area, Yangtze River Economic Belt and other regions, and will gradually expand to the whole country. Pilot projects and participating companies will receive all-around support including policy, funding, taxation, international cooperation and supply chains.

Typical pilot projects and application scenarios

Under the framework of *SNPARK Initiative*, taking China's key cities striving to achieve carbon neutral and sustainable development as the application scenario, two projects - among the first batch of pilot projects - have been selected, to collect global digital and carbon neutral solutions. After completion, it will set an example for other urban renewal projects, as a pilot under *SNPARK Initiative* and a test bed for the renewal of cities towards sustainable development.

Challenge 1: Digital solutions to redesign an old industrial area into a sustainable landmark and community

Cities contribute 80% of global carbon emissions with 5% of land area. In 2030, China's urbanization rate will reach 70%, with over 1 billion people living in cities. The life-cycle carbon emission reduction of China's buildings is 10% higher than the world's average. So urban areas and building model upgrading is key to the reduction of carbon emissions. According to statistics, 170,000 old residential communities and 12,000 old factories need to be renovated across China, cover more than 660 cities. Digitalization provides the best way for urban renewal.

Taking the renewal of an old industrial area as an example. It is located in the central business district of one of China's megacities, with a convenient location, but it is facing problems including:

1. Industry structure needs to be updated

Only old factory with out-dated manufacturing equipment in the area, lacking community services.

2. Infrastructure needs to be improved

A low level of digitalization, and a high carbon emissions of buildings in the area.

3. Out of touch with communities around

A lack of connections with residential communities around, failing to serve as a social centre for the city.

This area hopes to achieve low-carbon economic development and green lifestyles through digital solutions. Through renovation, it would become a test bed for the renewal of cities towards sustainable development, which is part of *SNPARK Initiative* and will set an example for other urban renewal projects. Potential digital solutions we are looking for may include:

1. Digital planning and design

to make it a mixed area with both sustainable production and green lifestyle, by using advanced tools in planning and design, such as digital twins;

2. Clean energy system

to improve energy efficiency and carbon emissions reduction for existing buildings, by digitalized solutions in integrated energy management;

3. Smart infrastructure

to upgrade infrastructure in the area including parking lots and street lights, by digital technologies e.g. cloud computing, Internet of Things, etc.;

4. Green lifestyle

to promote a green lifestyle by providing digital experience in sustainable culture, tourism, education, health, etc.;

5. Sustainable community

to create a sustainable community and urban landmark that integrates housing, work, education, health, and culture, all covered by a fifteen-minute living circle.

Frequently Asked Questions

Challenge 1: Digital solutions to redesign an old industrial area into a sustainable landmark and community

1. Can you share more about the industrial area mentioned in Challenge 1?

The industrial area is located in the central business district of China's first-tier city, less than 5 kilometers from the CBD core area. The area is about 30,000 square meters with a construction area of about 9,000 square meters. There are two office buildings, one production building and several warehouses.

2. How many similar old factories are there in China's cities?

There are currently 3 billion square meters of remaining space resources in China's industrial sector, according to the *2019 White Paper on Reuse Paths and Typical Cases of China's Industrial Relics*.

3. Why does the industrial area need to be redesigned?

Industrial area renovation is a key project listed in the local government's carbon neutral action plan. The owner hopes to take this opportunity to build a benchmark for carbon neutral renovation of old factories in China.

4. What does the industrial area want to be after renovation?

The owner hopes to achieve low-carbon economic development and a green lifestyle in the industrial area, and become a new landmark and demonstration community for the sustainable development of the city.

5. What is the expectation of local government for this area?

Local government hopes to develop modern service industries in this old industrial area by building new infrastructure, supporting regional education, medical, cultural, sports and other public service facilities, and making it a venue for tourism, entertainment, health and other new service consumption projects.

6. What are the potential marketing and promotion opportunities?

Through renovation, it would become a test bed for the renewal of cities towards sustainable development, which is part of *SNPARK Initiative* and will set an example for other urban renewal projects.

7. Are there any detailed requirements for the solution?

The solution should have high innovation and feasibility in terms of technology and mode, so please introduce the application of the solution in related fields in the plan; in terms of content, it should include but not limited to the six directions shown in previous text.

8. What's expected specifically in the six directions?

1) Digital planning and design: using digital twins and other technical means to plan and design the park, making it a comprehensive ecological park with both green production and green lifestyle

2) Carbon neutral green energy: Digital energy efficiency management for existing buildings, parks, etc., to improve comprehensive energy utilization efficiency, or provide more efficient comprehensive energy service solutions.

3) Intelligent infrastructure: using cloud computing, Internet of Things and other digital technologies to transform and upgrade park parking lots, street lights and other infrastructure

4) Experiential smart life: digital experience in culture, tourism, education, health, etc., advocating a green lifestyle

5) Sustainable industrial upgrading: a digital transformation and upgrading plan that can promote existing industries (mainly equipment manufacturing)

6) Comprehensive overall plan: a package solution including the above directions.

9. What is the target audience in this area?

According to the results of the seventh national census in June 2021, there are 28,245 households surrounding the location of the park, with a population of 98,100, and a population density of 24,525 people/km². The regional population base is large, the population density is high, and it is dominated by middle and high-income groups, with strong consumption power.

10. What's the piloting opportunity for winners?

The winning plan will be piloted and applied in the area first, and will be promoted on a larger scale when tested.