

“Made in China 2025” and Industrial Technology Innovation Cooperation between China and Japan

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At present, China has been accelerating economic structural adjustment, implementing the innovative development strategy in deep and promoting “made in China 2025” strategy in a solid way. Japan is an innovative and manufacturing powerhouse. Both sides have obvious opportunities of complementary cooperation in the areas as smart technology, smart manufacturing, energy conservation and environmental protection, and the prospects of cooperation are vast. Deepening industrial and technological innovation cooperation between China and Japan, which will continue to extend industrial cooperation to the high end of the global industrial chain and value chain, promoting economic development of the two countries.

Key words: Made in China 2025; Technology Innovation Cooperation; China and Japan

1. “Made in China 2025” strategy

1.1 Guiding ideology of “Made in China 2025”

What is the guiding ideology of “Made in China 2025”? We will keep the new path of industrialization with Chinese characteristics, and regard promoting innovation development as the theme, improving quality and efficiency as the center, speeding up the deep integration of information technology and manufacturing as the main line, promoting the intelligent manufacturing as the main direction, which is to meet economic and social development and the demand of major technical equipment in the construction of national defense, to strengthen the ability of industrial base, to improve the level of comprehensive integration and perfect multi-level multi-type cultivation system, to promote the transformation and upgrading of the industry and cultivate manufacturing culture with Chinese characteristics, finally to implement Chinese manufacturing from big to strong.

1.2 Key tasks of “Made in China 2025”

The five key projects of “Made in China 2025” are :(1) manufacturing innovation center (industrial technology research base) construction project; (2) intelligent manufacturing engineering; (3) industrial strong foundation engineering; (4) green manufacturing engineering; (5) high-end equipment innovation project.

“Made in China 2025” has defined ten key areas of intelligent manufacturing, they are new-generation information technology industry, high-end CNC machine tools and robots, aerospace equipment, Marine engineering equipment and high-tech ships, energy-saving and new energy vehicles, power equipment, agricultural machinery equipment, new materials,

biomedicine and high-performance medical equipment.

2. Possibility and prospect of China-Japan industrial technology innovation cooperation

Chinese and Japanese companies and industries are highly complementary to each other. In the areas of high-end manufacturing and technological innovation which related to the "made in China 2025" strategy, the prospect of cooperation is very broad.

2.1 Excellent cooperation conditions

After 40 years of reform and opening up, China's economic and technological innovation capabilities have improved significantly. The demand for high-end products in consumer goods and industrial products has great potential. In particular, China is now strongly demanding new technologies under the premise of actively promoting high-quality development, it has strong absorption and market digestion capabilities. For example, the data show that the market size of China's intelligent manufacturing system solutions will expand from 100 billion yuan in 2016 to more than 200 billion yuan in 2020. In 2017, the scale of China's artificial intelligence market was 21.69 billion yuan, an increase of 52.8% compared with 2016. It is expected to reach 70.1 billion yuan in 2020. Japan is the traditional technology of power, with long accumulation of technology, efficient scientific research system, abundant scientific research investment and experienced R&D team. Japanese companies and research institutions have very strong competitiveness in many aspects like basic research, application, technology research and new product development, etc. Its advantage is embodied in various disciplines and almost all kinds of high technology industry new frontier. While building a world-class technology system, Japan has also become a major exporter of patented technology. Therefore, in terms of industrial technology cooperation innovation and market transformation, China and Japan already have very good basic conditions.

2.2 Strong cooperation and complementarity

China's manufacturing industry is large in scale, well-organized, and it has certain cost advantages. Japanese manufacturing has strong technical strength and a strong quality competitiveness. Especially when Chinese manufacturing industries try to transform to digital, intelligent, green, with new technologies to upgrade traditional industries, develop emerging industries, and improve the quality and efficiency of made in China, and provide the higher quality products and services around the world. However, in Japan, during the obvious technology and industrial advantages of some areas like digital technology, new material, robot, precision machine tool and automobile energy saving technology, the two countries both have strong complementarily cooperation advantages and opportunities for common development. Such like robots, in 2016, the sales volume of industrial robots in China reached 87,000 units, up 26.9% year-on-year, accounting for about 30% of global sales. In 2017, the growth rate of

robot sales continued to increase significantly, reaching 131,100 units, up 68.10% year-on-year, with the average monthly sales exceeding 10,000 units.

2.3 Opportunities for cooperation increase

With the deepening of scientific and technological innovation and industrialization, modern industrial technology has become more comprehensive and complex, and transnational scientific and technological cooperation has become an important strategic choice for modern enterprises. On one hand, in the process of implementing the national strategy of scientific and technological innovation, Japan's practical innovation in cooperation between industry, universities and research institutes has created the advantage of developed industrial technology and entrepreneurship talents. On the other hand, since the reform and opening up in China, the ability of country training talents is increasing, innovation policy is strengthening, the innovation environment of the Chinese business improved increasingly, and the policy is more excellent, legal system is more perfect and the international appeal has more enhanced. In a series areas of new technologies and industries, China's ability of innovate is in a sharp increase. At the same time, China also has a large number of Japanese scholars and students. Therefore, a new round of technological and industrial changes is developing rapidly, the new technologies, new business forms, new models and new industries are emerging one after another. With the new economy of both China and Japan developing rapidly, China and Japan will also have huge potential and space for cooperation, in developing international markets, such as new technologies, new business forms, new models and new industries.

3.Countermeasures for Promoting Sino-Japanese Industrial Technology Innovation Cooperation

3.1 Carry out innovative cooperation in key industry technology fields.

In frontier fields, such as artificial intelligence, biotechnology, new material, and high-end medical technology . China and Japan should explore diverse and flexible forms of cooperation, including the establishment of Sino-Japanese industrial and technological alliance, co-founding new companies, cooperating between companies and universities in related industries. To this end, we must actively establish a communication platform between Chinese and Japanese universities, research institutes, enterprises and technology transfer agencies to create conditions for cooperation in products, technology, markets and talents.

3.2Promote the transformation of technological achievements and industrialization cooperation.

At present, China actively creates a good policy and market environment for the transformation of technological achievements and industrialization, and has introduced a series of policies from the central to the local governments, such as the Law of the PRC on Promoting the

Transformation of Scientific and Technological Achievements, and the scientific and technological achievements transfer and transformation action plan, etc., so the conditions in China are increasingly mature. Facing China's strong industrial and market digestibility of new products, it's good for Japan's superior technologies transfer and industrialization in China. To this end, it is necessary to strengthen the interface between China's industrial technology and Japan's innovation resources.

3.3 Promote Sino-Japanese innovation and entrepreneurship cooperation.

Through analysis, we found that Japan's innovation has undergone tremendous changes. It has long abandoned the low-end manufacturing industries, and turned into emerging areas, such as new materials, artificial intelligence, medical, biological, new energy, Internet of Things, robots, High-tech hardware, environmental protection and resource reuse. This overlaps with the ten key areas of smart manufacturing advocated by "Made in China 2025". Therefore, it is possible to build a platform, introducing investment and financing and high-tech.

3.4 Promote cooperation between China and Japan industrial value chain. The Industrial Value Chain Initiative (IVI) is based on the existing foundation of Japanese manufacturing. On December 8, 2016, the basic structure of the smart factory was introduced. Industrial Value Chain Reference Architecture (IVRA), which is the industrial value chain initiative, received the support of the Ministry of Economy, Trade and Industry (METI) and many companies, and is based on intelligent manufacturing and industrial internet. So excellent enterprises in related fields can carry out in-depth exploration and cooperation in the "industrial value chain" .

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