

Green Manufacturing in China

Policy Synopsis | October 2021

This policy synopsis provides a chronological overview of green manufacturing policies in China with two primary purposes. Firstly, it outlines China's green manufacturing policy milestones. Secondly, it aims to summarise key green manufacturing strategies and initiatives from the Ministry of Industry and Information Technology (MIIT). More information on the Ecological Civilisation concept, green manufacturing instruments, focus areas and selected company cases can be found in the annexes.

Timeline for China's Key Industrial Policies for Green Manufacturing



In 2015, the [Made in China 2025](#) initiative denominated green manufacturing as one of five national development priorities. Since joining the Paris Climate Agreement in 2016, China's industrial plans and strategies have become increasingly intertwined with its climate goals. In the same year, the [13th Five-Year Plan](#) (FYP) promoted the ideological framework of an "Ecological Civilisation", placing environmental sustainability at the core of China's socio-economic development.¹ In 2021, the [14th FYP](#)² urged for a comprehensive green development policy framework and the use of digital technologies to improve the overall resource efficiency of China's industries. The [2021 State Council Guideline](#) sets out the national strategy to accelerate the establishment of a circular and low-carbon manufacturing ecosystem in China. Furthermore, the government continues to promote green finance. In the first half of 2019, green bonds with a total volume of 143.9 billion CNY (approx. 19.5 billion EUR) were issued by banks and corporations, an increase of 62% compared to the previous year.³

¹ For more information on the concept of "Ecological Civilisation", please refer to Annex 1.

² For the related policy update on the 14th Five Year Plan, please refer to Annex 2.

³ Climate Bonds Initiative. (2019). China Green Bond Market Newsletter H1 2019. Accessed on 17th September 2021. Available at

<https://www.chinabond.com.cn/resource/1472/1488/1505/18472/41498/63390/152211092/1564719263167150491373.pdf?n=%E4%B8%AD%E5%9B%BD%E7%BB%BF%E8%89%B2%E5%80%BA%E5%88%B8%E5%B8%82%E5%9C%BA2019%E4%B8%8A%E5%8D%8A%E5%B9%B4%E6%8A%A5.pdf>

MIIT's Green Manufacturing Strategies and Initiatives (2015-2021)

MIIT has played a key role in developing China's green manufacturing agenda and programs to implement its long-term green industrial policy goals. The synopsis lists out the key strategies and initiatives below. Worth mentioning, there are still few public government sources available about whether the domestic manufacturing sector has met MIIT's industrial policy targets.

MIIT Green Manufacturing Engineering Implementation Guideline (2016-2020)

The Guideline sets the foundation for China's green manufacturing system through three objectives:

- Low-carbon, circular, resource efficient and clean transformation of traditional manufacturers.
- Development of green manufacturing technologies and intelligent management systems.
- The selection of leading green manufacturing use cases surrounding four areas is covered in the "Annual Green Manufacturing System Program".

Annual Green Manufacturing System Program (since 2017)

This program implements the action plans set out by *Made in China 2025* and the aforementioned *Implementation Guideline*. Since 2017, the program has published yearly calls for company recommendations to promote leading green manufacturing practices in four different green manufacturing focus areas, namely green factories, green industrial designs, green industrial parks and green supply chains.⁴ The goals of this program are to set up third-party green manufacturing evaluation bodies, green manufacturing service platforms, and a green manufacturing ecosystem, consisting of the four focus areas.⁵ While China has exceeded its goals to create green industrial parks and green factories, the development of eco-friendly products has been lagging behind.⁶

High-End Intelligent Remanufacturing Action Plan (2018-2020)

The Action Plan has the objective to strengthen China's electro-mechanical production and intelligent remanufacturing capabilities. Firstly, this plan was designed to enhance domestic techniques in dismantling, testing and forming processes. Secondly, it aimed to set up quality infrastructure for remanufacturing technologies, products and management. Finally, the Action Plan called for the establishment of the remanufacturing research and development centres, information-sharing service platforms and financial services.

Annual Green Industrial Design Demonstration Program (since 2019)

The Green Industrial Design Demonstration Program promotes manufacturers with advanced eco-friendly technologies. This program has issued annual calls for application to select companies with leading green industrial designs since 2019. The first call for application in 2019 followed the goals of the 2017 [MIIT Promotion on the Demonstration of Enterprises with Green Industrial Designs](#).⁷ The 2021 call for application tries to contribute to the actions stated in the *2021 State Council Guideline* to accelerate the establishment of a circular and low-carbon ecosystem.

⁴ For more details on the four green manufacturing areas, please refer to Annex 3.

⁵ For examples of selected companies for the annual Green Manufacturing System Program, please refer to Annex 4.

⁶ MERICS. (2021). "Greening" China: An analysis of Beijing's sustainable development strategies" Accessed on 17th September 2021. Available at <https://merics.org/en/report/greening-china-analysis-beijings-sustainable-development-strategies>

⁷ For the related policy briefing on annual Green Industrial Design Demonstration Program, please refer to Annex 6.

1. Ecological Civilisation

The concept of “Ecological Civilisation” was officially addressed at the 17th national congress of the Communist Party of China (CPC) in 2007. A [Comprehensive Implementation Plan of Ecological Civilisation](#) was issued by the State Council in 2017. The Ecological Civilisation concept describes the CPC’s view on the traditional dimensions of sustainable development – economic, environmental, and social – with distinct features of China’s development strategy. The concept emphasises the need for harmony between humans and nature. It is increasingly connected to officially propagated visions of China, such as the “Chinese Dream” or “Beautiful China”. The concept of “Ecological Civilization” is likely to shape China’s manufacturing development trajectory for years to come. A more detailed description of the concept (in Chinese) can be found by clicking [here](#).

2. A Policy Update about the Manufacturing Development in the 14th FYP can be found on the Sino-German project’s website in the download area [here](#).

3. China’s Green Manufacturing Focus Areas

Since 2016, the *MIIT Annual Green Manufacturing System Program* has been selecting companies based on the following four green manufacturing focus areas.

➤ Green Factories

China treats green factories as the backbone of green manufacturing. Green factories refer to factories that optimise land utilisation, waste recycling and energy-supply decarbonisation. Metal, construction materials and information technology industries are considered crucial for constructing green factories.

➤ Green Industrial Designs

Green industrial designs cover the green transformation of the product life cycle (e.g., selecting materials, production process, sales, usage, recycling and final sorting). Industrial green design favours light-weighted, modularised, integrated, and intelligent products.

➤ Green Industrial Parks

Green industrial parks involve the planning and management of industrial clusters in an environmentally sustainable way. These green industrial parks focus on land utilisation and integration rates.

➤ Green Supply Chains

The green supply chain focuses on optimising the resource efficiency of both upstream and downstream suppliers. It includes the establishment of digital platforms for managing green supply chains.

4. Selected Use Cases in the Green Manufacturing System Program

The use cases shown below are few examples from the MIIT Annual Green Manufacturing System Program List since 2017⁸. They indicate which companies / types of projects were awarded as benchmarks in different industry sectors.

➤ Automotive Industry

Green factories: BAIC Motor factories have adopted automated, digitalised, and intelligent applications

⁸ 2017 Program List (visit [here](#)); 2018 Program List (visit [here](#)), 2019 Program List (visit [here](#)); 2020 Program List (visit [here](#)).

to create traceable quality control systems and enhance energy efficiency and product safety. For example, the factories are installed with roof heat recovery systems and photovoltaic power generators. The company also built a centralised inspection system to maintain the factory energy consumption and environmental protection standards.

➤ **Machinery Industry**

Green supply chains: Esurging (Tianjin) Technology has established a green supply-chain management group and annual green industrial target plans to carry out the green transformation of its supply chains. Esurging also built storage space for reusable resources and introduced Industrial Internet technology to monitor the manufacturing process and predict any machine damages. As a result, the whole supply chain has become more resource efficient.

➤ **Electronics Industry**

Green industrial designs: CHILWEE produces lead-acid batteries and established a technology centre to facilitate cleaner production of batteries. To introduce circularity into its production line, the company built up an ecosystem to recycle waste lead batteries. For instance, an Industrial Internet platform was set up to trace and manage the entire lifecycle of the lead batteries, thereby preventing the wrong and unqualified disposal of lead battery waste.

5. China's green manufacturing financial stimuli and outlook

The People's Bank of China (PBoC) announced that it will consider incorporating green credit and bond performance into banks' Macroprudential Assessment (MPA). The latest related official publication in Chinese can be found [here](#). Green bonds and green credits will become eligible collateral for the banks' lending facilities. Preferential interest rates shall also be issued for green manufacturing projects. These stimuli will likely come with the following prospects:

- **Access to green financial stimuli** might be subjected to additional compliance requirements for manufacturers (e.g., Environmental Social and Governance Disclosure rules).
- The Chinese government aims to **further attract foreign investment** for its green assets by gradually aligning its green finance standards and ESG disclosure regulations with international ones ([More Information on China's ESG Disclosure Status](#)).
- Most resource-efficient, low-carbon and circular manufacturing technologies in China are still at an initial stage. **Governmental green finance measures** are used to support the development of these green manufacturing technologies ([Further information](#)).

6. A Policy Briefing on the Annual Green Industrial Design Demonstration Program can be found on the Sino-German project's website in the download area [here](#).

We hope you have enjoyed reading this Policy Synopsis and welcome your comments and suggestions. Your feedback to info@i40-china.org is highly appreciated. More policy products are available in our [Download Area](#). More information about the Sino-German Industrie 4.0 Cooperation can be found on our Project Website www.industrie40-china.org.