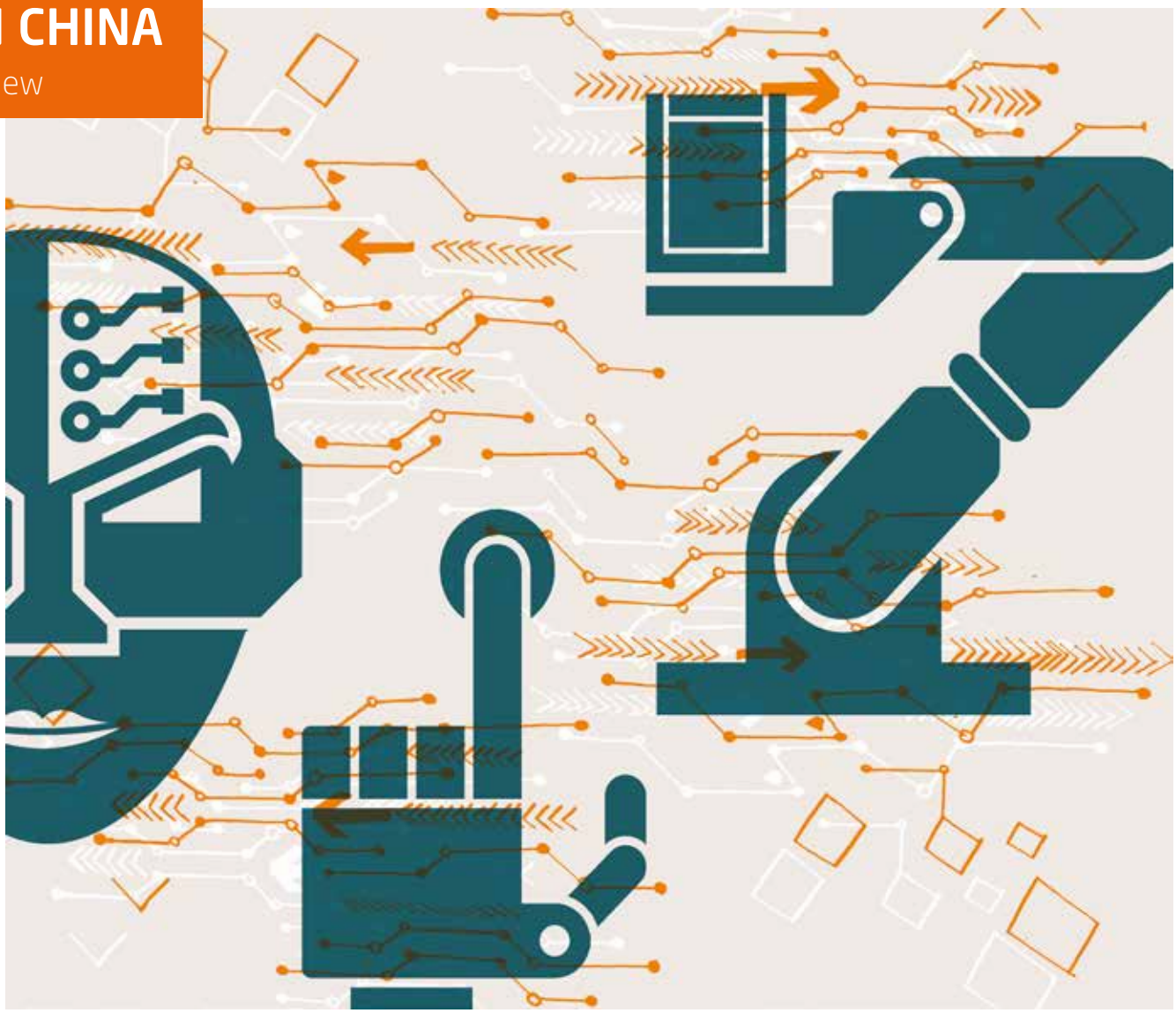
MERICS
PAPERS ON CHINA
Preview



EVOLVING MADE IN CHINA 2025

Priority adjustments and implications for Europe's innovation capacity

Max J. Zenglein | **Anna Holzmann**

merics
Mercator Institute
for China Studies

Evolving Made in China 2025: Priority adjustments and implications for Europe's innovation capacity

by Max J. Zenglein and Anna Holzmann

KEY POINTS

- In the first three years after its release, China's industrial masterplan Made in China 2025 has been repeatedly adapted to fit a changing internal and external environment.
- Against the backdrop of an escalating trade conflict with the United States and growing pushback against ambitious industrial policies, China has toned down its assertive rhetoric. In practice, the roll-out of Made in China 2025 is in full swing.
- The strategy is part of a sophisticated industrial policy scheme aimed at propelling China towards global tech leadership.
- Chinese authorities have identified engagement with emerging industries as great opportunities to get ahead of advanced economies.
- Europe's innovation landscape is already subject to Chinese pressure stemming from its advances to spearhead future technologies such as batteries for electric vehicles (EVs) and Artificial Intelligence (AI).

Made in China 2025 promotes greater independence and, ultimately, global leadership in future technologies

A lot has happened since the release of the Made in China 2025 strategy in 2015. The plan defines ten core industries that China wants to upgrade to compete on a global scale. These include new-generation information technology, high-end computerized machines and robots, aviation and space equipment, energy-saving and new energy vehicles, and new materials. However, over the course of the past three years, it has become evident that the ambitions and impact of the industrial policy go far beyond these core industries.

Made in China 2025 is part of a comprehensive, state-led endeavor to turn China into a modernized country by 2049. The initiative defines strategic priorities as well as support mechanisms and is a main driver for China's revamp of the whole economy. Most prominently, Made in China 2025 promotes greater independence and, ultimately, global leadership in future technologies. Chinese efforts concentrate on those fields that are crucial to achieving the overarching national goal of becoming a high-tech superpower. Such areas of high priority include:

- Digitization (incl. smart manufacturing)
- EV batteries
- New materials
- Semiconductors
- Artificial Intelligence

Despite tuned-down rhetoric, the implementation of China's industrial policy is proceeding at full speed. This has already greatly impacted the evolution of key technologies such as AI and on emerging industries such as EVs – even at a global scale. China has not yet achieved global leadership in core technologies. But Europe is already feeling the heat.

MADE IN CHINA 2025 IS REPEATEDLY UPDATED, AND PRIORITIES ARE BEING ADJUSTED

With the top-level policies for Made in China 2025 set out by February 2017, the strategy's implementation is now in full swing. In the course of rolling-out the plan, the Chinese government is taking changes in both the internal and the external environment into account. It evaluated the strengths and weaknesses of China's industrial setup and adapted the implementation priorities accordingly.

Early last year for instance, the Ministry of Industry and Information Technology (MIIT) released guidelines for local Made in China 2025 adaptations. These guidelines tackle the issue of overambitious local governments and inefficiencies resulting from a lack in inter-regional coordination by defining which province and municipality are to focus on which industries.

The Chinese government has also placed great emphasis on creating a favorable innovation ecosystem and on encouraging enablers of sustainable growth. Currently, efforts concentrate on realizing five major projects:

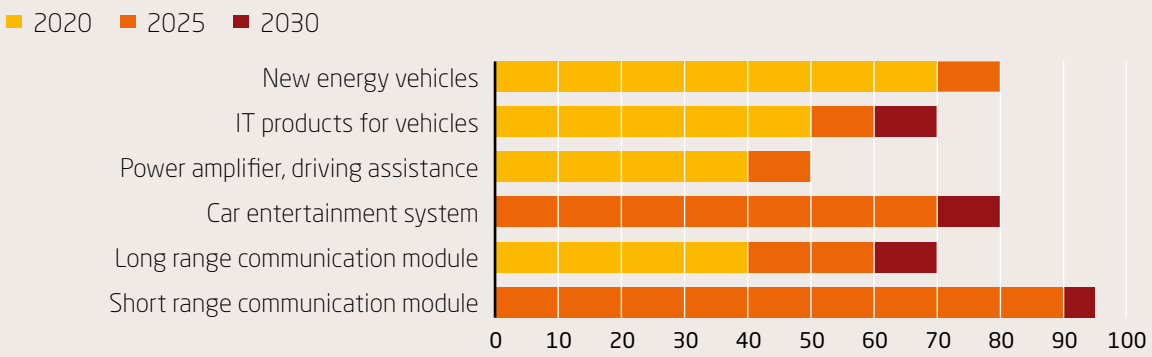
- Manufacturing innovation centers (制造业创新中心)
- Strong industry foundations (工业强基)
- Smart manufacturing (智能制造)
- Green manufacturing (绿色制造)
- High-end equipment innovations (高端装备创新)

These implementation priorities are complemented by a stronger focus on the creation of high-class industry clusters, the establishment of Made in China 2025 National Demonstration Zones, and the launch of a series of pilot projects that aim, for example, at optimizing supply chain management or establishing industrial champions in targeted industries.

The update of the Made in China 2025 Technology Roadmap is a case in point for corrections made by the Chinese government in the course of implementing its industrial policy. A revised version of the initial 2015 plan was published at the beginning of 2018. In light of recent technological developments and growing international resistance, priority areas were refined to streamline efforts according to actual needs. Stronger emphasis was placed on areas which were identified as vital for the pursuit of greater tech autonomy. Such areas of critical constraint include developments in the field of new materials and the overdependence on semiconductor imports. In areas where China sees itself already well positioned to lead the global competition, such as EVs, market share targets were further increased (see following figures).

Roadmap 2015

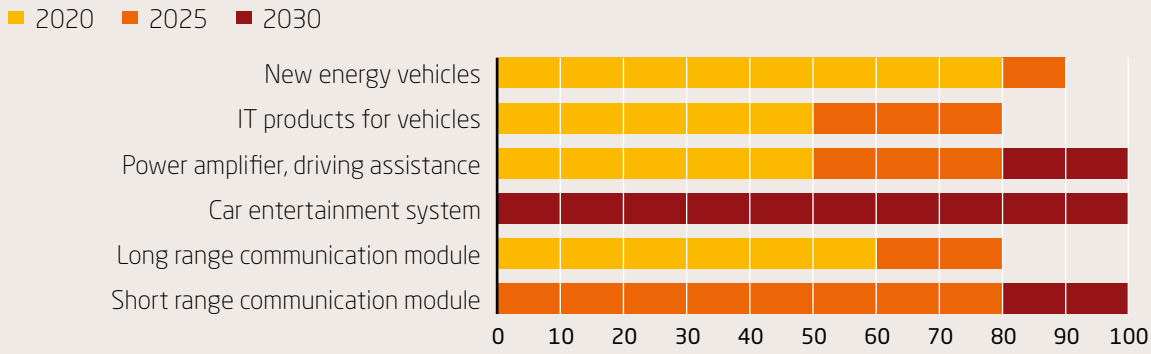
New energy vehicle industry, domestic market share (in percent)



Source: National Manufacturing Strategy Advisory Committee

Roadmap 2017

New energy vehicle industry, domestic market share (in percent)



Source: National Manufacturing Strategy Advisory Committee

CHINA IS FINE-TUNING ITS INDUSTRIAL POLICY FOR MORE EFFICIENCY

Initially, Made in China 2025 set out to reduce the gap between China and the world's leading tech nations by focusing on established industries. This ambition has been at the heart of China's industrial policy for decades. However, not least due to heavy reliance on foreign know-how, however, this approach has proven costly and highly inefficient. For example, China failed to develop an internationally competitive automotive industry for combustion engines despite long-standing joint-venture requirements that – presumably – entailed technology transfers from foreign partners.

The Chinese government has not given up on its ambitions to catch up with advanced economies in 'traditional' industries. But policy-makers are adjusting priorities in order to become more efficient in reaching their national strategic targets. The aim is now to overcome existing technology gaps by creating sufficiently capable domestic capabilities rather than by leapfrogging important stages of indigenous industrial development. In the near future, high-end machinery and wide-body passenger jets of not necessarily leading, yet highly competitive 'Made in China' quality will be found on international markets.

CHINA WANTS TO GAIN TECHNOLOGICAL LEADERSHIP IN EMERGING INDUSTRIES

China's leadership is applying an increasingly aggressive approach to emerging industries. In contrast to the situation in already established industries described above, the virtual absence of technology gaps in emerging industries provide China with the unique opportunity to assume a leading position right from the start. Backed by powerful industrial policies including financial support and artificially created demand, China has already secured for itself a strong position in areas such as AI and new energy vehicles. The Chinese government strategically supports emerging technologies and leverages China's market size to quickly introduce niche industries into mass markets.

China has already secured for itself a strong position in areas such as AI and new energy vehicles

The EV battery market serves as a powerful example of how quickly such dynamics may unfold. In 2017, seven out of the top ten EV battery companies were Chinese, accounting for 53 per cent of the global market share. Further expansions of China's battery manufacturing capacities are in the pipeline. The risk of supply outstripping demand is subordinate. After all, rapidly built-up (over)capacities allow Chinese companies to gain a dominant foothold in, firstly, the domestic and, secondly, the global market. The tables have clearly turned: China does not seek to close the technology gap in EV batteries by running after advanced economies. Instead it is setting the pace itself and watching the world try to keep up.

THE CHINA PARADOX: PULLING AHEAD IN EMERGING INDUSTRIES, BUT LACKING ENABLING TECHNOLOGIES

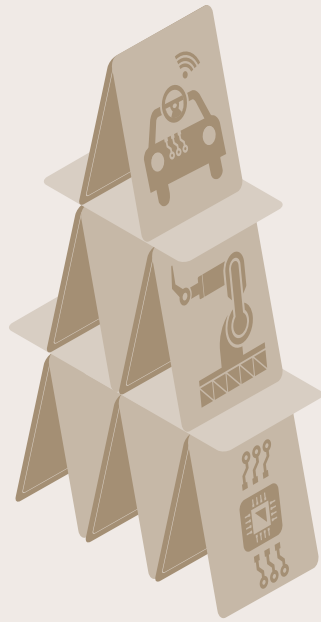
The recent examples of China unleashing its power to quickly move into emerging industries have contributed to the perception that the country is now a global technology leader. China is indeed an early innovator when it comes to seminal areas such as digitization or autonomous driving. China's technological and innovative capabilities have certainly made tremendous advances. By now, Chinese companies hold strong positions in some areas of core technology that are essential to the industries of the future. These central technologies include the often-cited fields of AI, EV batteries, robotics, and information technology, including the upcoming 5G standard.

China is an early innovator when it comes to seminal areas such as digitization or autonomous driving

Even though China is particularly strong in the application of future technologies to emerging industries, it still suffers from considerable weaknesses in mastering enabling technologies and certain aspects of basic research (see figure below). This becomes particularly obvious in the case of new materials, semiconductors and other key components for advanced machinery. The recent incident of the United States threatening to cut off Chinese telecommunications behemoth ZTE from the supply of advanced semiconductors painfully exposed this vulnerability. Enabling technology is an indispensable precondition for the advancement of emerging industries, and this is exactly where China is facing serious challenges.

House of Cards: China's future ambitions stand on shaky ground

Dependence on foreign high-tech know-how remains high



Future technologies
Autonomous driving, smart cities, facial recognition

Core technologies
EV batteries, industrial robots, Artificial Intelligence (AI)

Technological fundamentals
Semiconductors, new materials, basic research

High

China's level of strength

Low

IMPLICATIONS FOR EUROPE'S INNOVATION CAPACITY ARE ALREADY BEING FELT

Emerging industries serve as a powerful reminder that China's industrial policies have a global impact. Companies operating under market principles are at a severe disadvantage compared to their Chinese competitors. In the battle for market share as well as market viability, Chinese companies can move much faster and, due to governmental backing, they are also faced with a different set of risks. In sectors such as EVs and EV batteries this has already resulted in a shift in global value chains. Know-how is now generated in China and foreign companies must be locally present in order to benefit from it. If they fail to participate in the dynamics of the Chinese market, they will soon face competition on international markets in areas where China

sets the technological standards. By strategically promoting emerging industries and enabling quick advances in certain fields, China's industrial policies are already reshaping the innovation landscape in Europe.

In the past, the example of the solar industry showed how Europe lost out to China despite strong technological fundamentals. This might happen again with emerging industries: backed by comprehensive industrial policies such as Made in China 2025, Chinese companies are again quickly pulling ahead in key sectors. So far, the impact is being felt only in a few areas, but Europe has to brace itself for more innovative competition from China.

Forthcoming:
'MERICS Paper on China' on the evolution of Made in China 2025

This short analysis is an extract from a 'MERICS Paper on China' that will be published in the first half of 2019. Through in-depth analysis of Chinese primary sources complemented by field work, MERICS experts have tracked the development of China's ambitious industrial policy. The report will present an up-to-date assessment of the implementation of Made in China 2025 and a wider array of measures for industrial upgrading currently employed by the Chinese government. The study will also provide insights into the impacts on Europe and give recommendations to European decision makers at all levels on how to best deal with the challenge of China's industrial policy approach.

The authors

Max J. Zenglein, Head of Program Economic Research at MERICS, is an expert in China's macroeconomic development, international trade and industrial policies. He analyses China's evolving economic system and the economic conditions in Hong Kong, Macau, and Taiwan. Before joining MERICS, Max worked as an economic analyst for the German Chamber of Commerce in China.

Anna Holzmann, Junior Research Associate at MERICS, focuses on China's industrial policies, especially with regard to emerging technologies. Prior to joining MERICS, she worked as a research assistant at the Vienna University of Economics and Business and gained professional experience in Austria's information & communications technology (ICT) industry.

About MERICS

The Mercator Institute for China Studies (MERICS) is a Stiftung Mercator initiative. Established in 2013, MERICS is a Berlin-based institute providing information and analysis on China to political and economic decision-makers as well as the media and the general public. Employing almost 30 people, MERICS has grown into one of the largest international think tanks for policy-oriented research into and knowledge of contemporary China.

Imprint
MERICS | Mercator Institute for China Studies
Klosterstraße 64, 10179 Berlin, Germany
Tel.: +49 30 3440 999 0
Mail: info@merics.de
www.merics.de

Editor
Claudia Wessling, Head of Publications, MERICS
claudia.wessling@merics.de

Layout /Design
Alexandra Hinrichs, MERICS