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Sino-European joint ventures and the risk of technology transfers

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Introduction[1]

In early 2022, the European Union filed a case against China at the World Trade Organisation. The EU complained that China was restricting European companies from protecting their high-tech patents. According to the EU, Chinese courts are using the threat of heavy fines to deter European and other foreign high-tech companies from going to court anywhere in the world if their patents are used illegally by Chinese competitors. In the EU's view, China is using the power it derives from having a huge market to provide its high-tech companies with unfair competitive advantages. At the same time, European tech companies are keen to preserve access to China's market. Beijing's threats are obviously a factor that companies take into account, as they cannot easily afford to withdraw from the large Chinese market. Meanwhile, the European Commission wants to protect Europe's capacity to develop, produce and use advanced technology, which is a prerequisite for European 'strategic autonomy'. As it

1 The authors are grateful to Maaike Okano-Heijmans for reviewing this publication.

turns out, China is also capturing European advanced technology in another way.

The aim of this report is to highlight the strategic significance of high-tech joint ventures for EU–China relations. Joint ventures can serve as conduits for technology transfers from Europe to China, and vice versa. For decades, foreign firms have shared advanced technology with Chinese counterparts through joint ventures. In many instances, the Chinese government requires foreign companies that engage in direct investment in China to work with a Chinese joint venture partner. European companies and governments have long complained that this requirement often amounts to forced technology transfers. European countries used to regard this primarily as a business risk, not a strategic one. Today, however, high-tech plays a central role in the growing geopolitical competition among the world's great powers. The Chinese government, especially through its 'Made in China 2025' strategy, has made it clear that it regards as a strategic priority the rapid development of its high-tech capabilities in a broad range of fields. This has contributed to European concerns that the Chinese government is systematically seeking technology transfers from the EU to China. One of the channels through which China can access European technology is through joint ventures.[2] Of course, not all joint ventures are vehicles for technology transfers, but some are; and some of those technology transfers involve technologies that are relevant to the security and geopolitical interests of the EU.

Recently, the European Union and its member states developed new tools to scrutinise inward investment from China into the EU. An investment screening mechanism and a level playing-field instrument have been created to prevent undesired Chinese influence in European strategic economic sectors. However, scrutiny of outward investment – and the issue of technology transfers through the use of joint ventures – remains underdeveloped. This Alert offers an initial exploration of how Sino-European high-tech joint ventures relate to the Made in China 2025 strategy, and the challenges it raises for the EU.

This report is a joint effort by the Clingendael Institute and Datenna, and is based on Datenna's extensive research into 13,000 EU-China joint ventures in China. This research project mapped all European joint ventures and wholly foreign owned entities in China in an informative and interactive online EU–China Joint Venture Radar.

Made in China, strategic for Europe?

Made in China 2025 (中国制造 2025), issued by the Chinese State Council in 2015 and still relevant today, is a Chinese national strategy for the development of China's economy.[3] According to the strategy, China's industrialisation and modernisation since the late 1970s have enabled the country to increase its global economic and political influence. Its ambitions now are to develop a world-leading high-tech manufacturing sector by 2025 to cement further its position as a great power. The strategy outlines that:

> *Building an internationally competitive manufacturing industry is the only way for our country to enhance its comprehensive national strength, ensure national security, and build a world power.*

The Made in China 2025 plan focuses on ten sectors: 1) information technology; 2) computer numerical control machines and robotics; 3) aerospace equipment; 4) ocean engineering and high-tech ships; 5) railway equipment; 6) energy saving and green vehicles; 7) electrical equipment; 8) agricultural machinery; 9) new materials; and 10) biomedicine and medical devices.

In order to develop these strategic sectors, the Chinese government uses several

2 See: Clingendael Report, 'Technologische samenwerking met China', November 2021.

3 See: Clingendael Report, 'Technologische samenwerking met China', November 2021, 17.

instruments, including importing technology and expertise from abroad. According to a study undertaken for the US Congress, the Chinese government uses tax, trade and investment measures, government subsidies, foreign acquisitions, technology licensing, equipment and talent acquisition, as well as joint ventures and partnerships.

The focus on joint ventures is part of the Chinese government's policy to realise the goals set in Made in China 2025 by systematically importing advanced technology. The Chinese government encourages Chinese companies to import or develop technology through cooperation with foreign partners.[4] The EU would do well to understand better the role that joint ventures play in this process.

In March 2019, the European Commission published 'EU–China – A strategic outlook'. In this strategic outlook, China is described as a *partner*, 'an economic *competitor* in the pursuit of technological leadership' and a systemic *rival*. The sectors that the Chinese government deems strategically important are often equally important to the EU and individual European countries. Technology can be 'strategically important' in at least two different ways. Either the technology is sensitive for reasons of national security, such as military and dual-use goods. Or the technology is important to preserve Europe's economic competitiveness. The European Commission is currently focused on building European 'strategic autonomy' by developing an assertive industrial policy and reducing its strategic economic dependencies.[5] This means that Europe risks sharing – or even losing – key technologies to a 'competitor' and a 'rival', thus creating one-sided dependencies with Beijing. In this light, the issues of technology transfers and joint ventures deserve more attention.

Our sample of Sino-European joint ventures

We sampled a group of twenty Sino-European joint ventures from a database compiled by Datenna of *EU-China* Joint Ventures and wholly foreign owned entities in China. For each of the ten sectors on which Made in China 2025 focuses, we identified two joint ventures that we considered insightful examples. Based on publicly available information, we studied the nationality of the parent companies, the ownership structure and the degree to which the Chinese state – including a state-owned or state-operated enterprise (SOE), or provincial or municipal-level government entity – is involved. We also assessed – to the degree possible – whether technology transfer occurs according to the joint venture's own business description. A summary table of the most important findings is published on the next page.

A number of observations follow from this sample:
- there are Sino-European joint ventures active in each of the ten Made in China 2025 technological sectors;
- In 80 per cent of the joint ventures in the sample, the European parent company has a minority stake;
- In one-quarter of the cases, the involvement of the Chinese state in the joint venture is considered to be 'high';
- In one-quarter of the cases, technology transfer is considered to be a 'likely' element of the joint venture's activities.

Our sample illustrates that Sino-European joint ventures are involved in Made in China 2025 sectors; that the Chinese state sometimes has a high degree of involvement over a joint venture; and that technology transfer is sometimes part of a joint venture's explicit objective. In this way, joint ventures can have a negative impact on European 'economic sovereignty' and 'strategic autonomy'.

Yet the characteristics mentioned above do not hold for every Sino-European joint venture and European policymakers should be cautious not to jump to conclusions. Our sample also shows that more research is

4 See: Clingendael Report, 'Technologische samenwerking met China', November 2021.

5 See: European Commission, 'Strategic dependencies and capacities', 5 May 2021, in which the European Commission maps Europe's specific strategic dependencies.

Table 1 Sample of Sino-European joint ventures

MiC2025 sector	Joint venture name	European parent company, nationality	European parent company share*	Involvement Chinese state/SOE	Does technology transfer happen?**
Information technology	Arm Technology (China) Co., Ltd		Minority	High	Unknown
	Husong Internet of Things Technology (Taicang) Co., Ltd		Minority	Medium	Likely
CNC machine tools and robots	Jiangsu Weimar Yueda Intelligent Equipment Co., Ltd		Minority	Medium	Somewhat likely
	Omiri (Guangdong) Intelligent Manufacturing Co., Ltd		Minority	Medium	Likely
Aerospace equipment	Beijing Sinorobin Radar Technology. Co., Ltd		Minority	Low	Likely
	Airbus Helicopters (Qingdao) Co., Ltd		Majority	High	Unknown
Ocean engineering and high-tech ships	Wuhu Divex Diving System Ltd		Minority	High	Somewhat likely
	Jibaida Marine Engineering (Shanghai) Co., Ltd		Majority	Low	Unknown
Railway equipment	Shandong SRCC Rail Transit Technology Co., Ltd		Minority	High	Unknown
	Olida Rail Transit Investment Co., Ltd		Equal	Low	Unknown
Energy saving and green vehicles	Shandong Zhongying Tianxia New Material Technology Co., Ltd		Minority	Low	Likely
	Zhongshan Biwei New Energy Vehicle Charging Technology Co., Ltd		Minority	Low	Unknown
Electrical equipment	Wesa Power Technology (Nanjing) Co., Ltd		Minority	Low	Somewhat likely
	Shanghai Fudi Power Transmission Co., Ltd		Majority	Low	Somewhat likely
Agricultural machinery	Changzhou Shepherd Breeding Machinery Co., Ltd		Minority	Low	Unknown
	Guangdong Youyue Agricultural Technology Co., Ltd		Minority	Low	Likely
New materials	Zhuhai Wanli New Material Technology Co.		Minority	High	Unknown
	Jinyi Arteo (Suzhou) Lithium Battery Material Technology Co., Ltd		Minority	Medium	Unknown
Biomedicine and medical devices	Lida Kang Life Science (Shanghai) Co., Ltd		Minority	Low	Somewhat likely
	Mackay Gene Technology Co., Ltd		Minority	Low	Unknown

* The presence of a Chinese shareholder does not automatically imply that this shareholder is a state-owned firm or directly linked to the Chinese government. The Chinese counterpart could refer to a privately owned firm or a private individual with no direct government links. Refer to the "Involvement of Chinese state/SOE" column to gain insights into the level of potential state influence. Percentages of shareholdership can be subject to change. The percentages presented in the report are based on data gathered in December 2021.

** This column is based on the business descriptions provided by the joint ventures and their parent companies. 'Likely' means that the joint venture description includes the term 'technology transfer'; 'somewhat likely' means that one or more of the parent companies' descriptions of the joint venture includes 'technology transfer'; and 'unknown' means that 'technology transfer' was not mentioned in the descriptions. The business descriptions considered in this report are official business descriptions published in the source language by each respective company about the company and its activities, derived from Chinese official corporate registries.

needed to understand better to what extent technology transfer does, or does not, take place per joint venture and, if so, what type.

A number of conclusions emerge from this initial exploration about the role that joint ventures play in facilitating technology transfer from Europe to China.

Implications

Sino-European joint ventures play a role in enabling the Made in China 2025 strategy. This implies that high-tech joint ventures are likely to be strategically important not only for China, but also for the EU. If such joint ventures are a relevant channel through which advanced technology flows from the EU to China, then this raises at least three important issues that the EU needs to address:

1. *How do technology transfers to China via joint ventures affect EU strategic interests?*

The fact that there are joint ventures in each of the ten Made in China 2025 sectors, combined with the fact that commercial joint ventures are one of the mechanisms that the Chinese government uses to attract foreign technology, suggests their strategic relevance for China. It remains to be established to what extent technology transfers via joint ventures are strategically important also for the EU, and what EU interests exactly are at stake.

One way to think about the potential sensitivities associated with joint ventures is through this simple categorisation:

The least sensitive Sino-European joint ventures are those that do not operate in Made in China 2025 sectors. 'Somewhat sensitive' are those joint ventures that are active in Made in China 2025 sectors but where technology transfer is not mentioned. 'Sensitive' are those joint ventures active in Made in China 2025 sectors and where technology transfer is the purpose of the corporate vehicle, regardless of the ownership structure. 'Highly sensitive' joint ventures are those that are active in China's strategic sectors, in which the Chinese state has a majority role, and where technology transfer is a key objective. If it is unknown to what extent intellectual property is transferred as part of the joint venture, but there is a strong degree of Chinese state involvement in a strategic sector, the joint venture should also be classified as 'highly sensitive', pending further research.

Table 2 Overview of the degree of sensitivity of joint ventures

Type of joint venture	Highly sensitive	Sensitive	Somewhat sensitive	Not sensitive
Involved in a Made in China 2025 sector	✔	✔	✔	✖
Chinese state / SOE majority stake	✔	?	?	?
Technology transfer	✔	✔	✖	?

Which policy instruments should be developed to deal with these different profiles – and whether these joint ventures present risks to European economic sovereignty – should be topics for further research, as well as discussion and coordination between the European Commission and EU member states, including with key third countries such as Switzerland and the UK.

2. *How do the risks of technology transfers to China relate to the benefits of Sino-European joint ventures in China?*

China-based joint ventures between European and Chinese companies may result in European technology being transferred to China, in Chinese technology being transferred to the EU, or in new technologies being co-created. In each of these instances, it is important to assess not only potential risks but also the benefits, at the strategic level, for the EU. China is not merely an importer of foreign technologies, but also a major and growing source of innovation.

3. *Are existing EU policy instruments sufficient to address potential risks?*

The European Commission and EU member states have several instruments at their disposal to prevent unwanted technology transfers to China via companies. One important instrument is the EU's export control system. The EU and its member states control the 'export, transit, brokering and technical assistance' of dual-use items with the aim of contributing to 'international peace and security and prevent[ing] the proliferation of Weapons of Mass Destruction'. Dual-use items are 'goods, software and technology that can be used for both civilian and military applications'. Another major tool is foreign direct investment screening. In most EU member states, governments can potentially block Chinese investment in, or takeovers of, certain companies deemed to be strategically important. Relevant criteria vary for each country, but are usually related to national security. Since October 2020, an EU-wide framework for screening foreign direct investment has been operational, which enhances coordination between EU member states and the European Commission.

Despite the existence of these and other instruments, it is unclear whether they allow for the effective monitoring and controlling of technology transfers via Sino-European joint ventures that are located within China.

Before the above-mentioned issues can be addressed, it is necessary to have better insight into the joint ventures themselves. This Alert offers a first exploration of the topic, but follow-up research is important. Particular focus areas for follow-up are:

- The nature and strategic relevance of technology transfers via joint ventures from the EU to China and vice versa;
- The scale of such transfers in terms of numbers of relevant joint ventures, also compared to other (commercial and scientific) channels of technology transfers;
- The identity and nature of involvement of both European and Chinese parent companies in high-tech joint ventures;
- Our sample only explored Sino-European joint ventures in China. The scale and relevance of Sino-European joint ventures located in the EU or in third countries remains to be understood.

Appendix Full table

MiC2025 sector	Joint venture	European parent company	Chinese parent company	European share	Involvement Chinese state/SOE	Core elements
Information technology	Arm Technology (China) Co., Ltd 安谋科技(中国)有限公司	Artificial Intelligence Enhanced Computing (UK) (ARM) Limited (UK)	Largest: Amber Leading (Hong Kong) Limited	47%	High	Intellectual property development
	Husong Internet of Things Technology (Taicang) Co., Ltd 琥崧物联网技术(太仓)有限公司	Karl-Josef Scholz Hausgeräte (DE)	Husong Intelligent Equipment	30%	Medium	Technology development and transfer
CNC machine tools and robots	Jiangsu Weimar Yueda Intelligent Equipment Co., Ltd 江苏威马悦达智能装备有限公司	WEMA Vogtland Technology GmbH (DE)	Jangsu Yueda Investment Co.	35%	Medium	Research & development, manufacturing and sales
	Omiri (Guangdong) Intelligent Manufacturing Co., Ltd 欧米瑞(广东)智能制造有限公司	Omniroll AG (CH)	Guangdong Smart Cloud Manufacturing Co., Ltd	25%	Medium	Technology development and transfer, manufacturing
Aerospace equipment	Beijing Sinorobin Radar Technology. Co., Ltd 北京中科罗宾雷达技术有限公司	Robin Radar Systems BV (NL)	Largest: Beijing Sinotech Going Sci & Tech. Co., Ltd.	30%	Low	Technology development and transfer, sales
	Airbus Helicopters (Qingdao) Co., Ltd 空中客车直升机(青岛)有限公司	Airbus Helicopter Deutschland GmbH (DE)	Qingdao United General Aviation Co., Ltd.	51%	High	Technology import and export, assembly of parts
Ocean engineering and high-tech ships	Wuhu Divex Diving System Ltd 芜湖戴维克斯潜水系统有限公司	James Fisher & Sons (UK)	Shanghai Salvage Bureau Wuhu Diving Equipment Factory	49%	High	Manufacturing equipment
	Jibaida Marine Engineering (Shanghai) Co., Ltd 吉佰达船舶工程(上海)有限公司	Gabadi SL (ES)	Xin Bo of Shanghai Aojiheng Offshore Engineering Technology Service Co., Ltd.	51%	Low	Design, installation, maintenance of equipment

MiC2025 sector	Joint venture	European parent company	Chinese parent company	European share	Involvement Chinese state/SOE	Core elements
Railway equipment	Shandong SRCC Rail Transit Technology Co. Ltd 山东施泰克轨道交通有限公司	Strukton Rolling Stock BV (NL)	Jinan Railway Transit Group Asset Management	45%	High	Production and sales
	Olida Rail Transit Investment Co., Ltd 奥利达轨道交通投资有限公司	Voestalpine Vae GMBH (AT)	Zhongyuan Lida Railway Track Technology Development Co., Ltd.	50%	Low	Investment and consulting
Energy saving and green vehicles	Shandong Zhongying Tianxia New Material Technology Co., Ltd 山东忠赢天下新材料科技有限公司	FAR-UK Ltd (UK)	Hebei Zhongying Tianxia Technology Co., Ltd.	20%	Low	Import and export, research & development, production and sales of technology
	Zhongshan Biwei New Energy Vehicle Charging Technology Co. Ltd 中山碧为新能源汽车充电科技有限公司	Largest: Borne Recharge Service (FR)	Justwe (Guangdong) Sino-European Green Initiative Investment Co., Ltd.	32%	Low	Development, manufacturing, of technology, import and export
Electrical equipment	Wesa Power Technology (Nanjing) Co., Ltd 韦萨动力科技(南京)有限公司	VSSAR Maschinen (DE)	Vmtt Industry Co., Ltd.	25%	Low	Mechanical technology, manufacturing and sales
	Shanghai Fudi Power Transmission Co., Ltd 上海福滴动力传动有限公司	FD-GROUPS (FR)	Shanghai Binhao HYDRAULIC Technology Co., Ltd	65%	Low	Development, technology transfer, consulting, and services
Agricultural machinery	Changzhou Shepherd Breeding Machinery Co., Ltd 常州牧羊人养殖机械有限 公司	Eurogan SL (ES)	JiangSu HuaLi Co., Ltd.	25%	Low	Research & development, manufacturing and installation
	Guangdong Youyue Agricultural Technology Co., Ltd 广东优悦农业科技有限公司	Amani Switzerland (Cyprus) Ltd (CY)	Largest: Dongguan Dihao Group Group Co., Ltd.	30%	Low	Development, technology transfer, investment, import and export

MiC2025 sector	Joint venture	European parent company	Chinese parent company	European share	Involvement Chinese state/SOE	Core elements
New materials	Zhuhai Wanli New Material Technology Co. 珠海万力新材料科技有限公司	ECOAT (FR)	Guangdong Pearl River Chemical Industry Coating Co., Ltd	27.93%	High	Sales, research & development
	Jinyi Arteo (Suzhou) Lithium Battery Material Technology Co., Ltd 锦艺阿泰欧(苏州)锂电池材料科技有限公司	Alteo Holding SAS (FR)	Suzhou Ginet New Material Technology Co., Ltd	49%	Medium	Research & development sales, consultation, technology transfer, import and export
Biomedicine and medical devices	Lida Kang Life Science (Shanghai) Co., Ltd 力妲康生命科学(上海)有限公司	Nidacon International AB (CH)	Largest: Shanghai Kehua Medical Laboratory Science Products Co., Ltd	30%	Low	Production, sales, import and export, development, consultation
	Mackay Gene Technology Co. Ltd 迈凯基因科技有限公司	QIAGEN N.V. (DE/NL)	Maccura Biotechnology Co., Ltd / Mike Bio Co., Ltd	40%	Low	Promotion services, consulting

Clingendael & Datenna Initiative on Sino-European Strategic Dependencies (SESD)

The 'Clingendael & Datenna Initiative on Sino-European Strategic Dependencies (SESD)' is a research initiative on Sino-European joint ventures in high-tech. Its aim is to provide economic data and geopolitical analysis that enables the European Union, its member states and third countries to limit risks and maximise benefits, at the strategic level, of Sino-European commercial cooperation in high-tech through joint ventures. The initiative is a partnership between Datenna and the Clingendael Institute. Datenna builds data-driven China intelligence platforms for China-related economic intelligence-gathering and decision-making, which are exclusively used by governments worldwide (https://www.datenna.com/). Clingendael is an independent think tank on international affairs (www.clingendael.org). For more information, please contact Demi Donninger (demi@datenna.com) or Rem Korteweg (rkorteweg@clingendael.org).

About the Clingendael Institute
Clingendael – the Netherlands Institute of International Relations – is a leading think tank and academy on international affairs. Through our analyses, training and public debate we aim to inspire and equip governments, businesses, and civil society in order to contribute to a secure, sustainable and just world.

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Datenna has conducted in-depth research into all 13,000 EU-China joint ventures set up in China. By analysing all these datapoints, the research showed that of the top 500 largest EU-China joint ventures about 32% is under significant influence of the Chinese government. Additionally, in 71% of the cases, the European shareholder has a minority share in the Joint Venture, leaving the firm effectively under the control of the Chinese counterpart.
For the full mapping of all EU-China Joint Ventures in a interactive Radar, and more research findings, visit Datenna's EU-China Joint Venture Radar.