



Radarlock

BUILDING THE **China Dream**

BYD & CHINA'S
GRAND STRATEGIC
OFFENSIVE

October 2019

Building the China Dream

October 2019



Radarlock

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Data-driven insight into techno-economic competition

BYD & China's Grand Strategic Offensive

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ABOUT US

Radarlock is a research organization that uses data-driven analysis to understand techno-economic dynamics in world affairs. Radarlock supports a range of private and public sector actors in diagnosing competitive environments and crafting responsive strategies. Recent research has explored transformations in international competition, China's military-civil fusion strategy, and the weaponization of cooperation in a globalized era. These analyses leverage novel data collection and analysis techniques developed by the Radarlock team. Please visit www.rlock.org for more information.

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SUMMARY



For more than a decade, Chinese Communist Party (CCP) planning has treated the new energy vehicle industry – its incubation, development, and global expansion – as a top national priority. The Strategic Emerging Industry (SEI) Initiative,¹ Made in China 2025,² and the 5th Five Year Plan for Science and Technology, as well as their corresponding calls for national projects, all emphasize as much. They outline State support for new energy vehicle development so that China can seize the “commanding heights of the competition.”³ More recently, discussion of the nascent “China Standards 2035” effort has highlighted the importance of Chinese-defined standards in new energy and vehicle networking. In short:

“China Standards 2035” highlights the importance of Chinese-defined standards in new energy and vehicle networking.

- Beijing offers explicit support and subsidies to the new energy and networked vehicle industries. Those seek to increase Chinese industries’ competitiveness on the global stage; also to encourage the exchange with foreign companies necessary to obtain cutting-edge technology and insert Chinese champions into global supply chains.
- Beijing pursues this tack not just for market dominance but also as part of its military-civil fusion (军民融合) (MCF) strategy.⁴ Its new energy and autonomous vehicle companies support its military industry. They also support its larger competitive project – Xi Jinping’s “network great power strategy.”⁵ They integrate and work with state-owned enterprises, Huawei and its ilk, and government offices to build and replace global information systems and supply chains.

BYD & CHINA'S GRAND STRATEGIC OFFENSIVE

Build Your Dreams (BYD) Co., Ltd. offers a rich case study.

- It benefits from government subsidies, incubation, and assistance – through declared and undeclared channels. That support stems both from government plans (i.e., Made in China 2025 and, more recently, China Standards 2035) and from MCF efforts.
- As a private company, BYD accesses foreign technologies, data, and markets. It then grants State-owned and military enterprises – including, for example, the China Academy of Launch Vehicle Technology – access to those technologies, data, and markets. It works alongside military affiliates in a government-directed “alliance” aggregating big data from vehicles. BYD is also part of a government-directed and -supported “innovation center” that seeks explicitly to combine “domestic and foreign resources” to build up a Chinese-dominated next-generation vehicle industry.
- Military, State-owned, and State-guided institutions in turn shape the products that BYD exports internationally. For example, a State-owned company provides in-vehicle electronic components.
- Three BYD research and development centers are in “military-civil fusion industry zones,” key hubs for the bi-directional exchange between military and civilian or commercial entities.
- BYD has been nationally recognized for its collaboration with explicitly military and MCF entities. In 2019, BYD won a coveted National State Council Progress Award for its work in battery technology. That work was pursued jointly with a University affiliated with the State Administration for Science and Technology for National Defense (SASTIND) and a partner of the military Aviation Corporation of China (AVIC).
- BYD also joins with other civilian companies in propelling China’s long-standing “Going Out” strategy: Through “strategic cooperation” with Huawei, it has developed driver less transit systems now being exported internationally along One Belt One Road (OBOR). BYD has also taken over production in Huawei’s supply chain to compensate for the departure of US partners.
- BYD’s leadership boasts direct ties to the CCP’s industrial policy apparatus and MCF project.

CCP Financial Support

By its own admission, BYD has received billions of dollars in grants and subsidies from the PRC industrial policy apparatus – and disproportionately so, as compared to other Chinese players in the field. The company’s most recent annual report acknowledges RMB 2.3 billion (approximately USD 328 million) in government financial support in 2018 alone.⁶ This includes, inter alia, RMB 600 million in “subsidies on marketing incentives” from the Xi’an Hi-tech Industries Development Zone, RMB 267 million in R&D subsidies from the Shanxi Transition and Comprehensive Reform Demonstration District, and RMB 115 million in electricity subsidies from Shenzhen Municipality.⁷ Since 2007, BYD has reported a total of RMB 9.2 billion (USD 1.3 billion) in government grants and subsidies.⁸ This figure can be thought of as a lower bound of the true magnitude of government support for the company, considering:

- This does not include consumer subsidies aimed at reducing the price of electric vehicles, which are classified as normal operating income by BYD (albeit often after a significant lag due to delays in processing these funds).⁹ CITIC Securities estimates that BYD received RMB 37.3 billion (USD 5.3 billion) of these subsidies between 2016 and 2018.¹⁰
- The potential for manipulating the self-reported value of government loans granted at below-market interest rates, which BYD defines as “the difference between the initial carrying value of the loans and the proceeds received.”¹¹
- The limited incentive to publicly report government financial support that is unlikely to come to light publicly.

Nevertheless, even when limited to self-reported government subsidies, BYD has received far more in public funding – both in absolute terms and as a share of profits – than other major domestic players in the vehicle sector in recent years.¹² This is shown clearly in the following table:¹³

CCP
Industrial Policy
in Action

Subsidies by Firm, 2014-2018

		2014	2015	2016	2017	2018
Great Wall Motors (长城汽车)	Government subsidies included in profit / loss	¥ 362,719,000	¥341,033,000	¥133,544,000	¥439,094,000	¥322,488,000
	Total profit	¥9,640,075,000	¥9,688,577,000	¥12,483,061,000	¥6,232,966,000	¥6,477,072,000
	Ratio	3.80%	3.50%	1.10%	7.00%	5.00%
Geely (吉利汽车)	Government subsidies included in profit / loss	¥898,196,000	¥847,290,000	¥802,283,000	¥905,300,000	¥992,859,000
	Total profit	¥1,943,304,000	¥2,874,805,000	¥6,203,943,000	¥12,773,961,000	¥14,858,973,000
	Ratio	46.20%	29.50%	12.90%	7.10%	6.70%
GAC Group (广汽集团)	Government subsidies included in profit / loss	¥195,591,000	¥315,657,000	¥223,283,000	¥446,432,000	¥1,169,674,000
	Total profit	¥3,053,592,000	¥4,406,927,000	¥7,050,717,000	¥11,976,494,000	¥11,867,132,000
	Ratio	6.40%	7.20%	3.20%	3.70%	9.90%
Yutong Group (宇通客车)	Government subsidies included in profit / loss	¥120,217,000	¥304,218,000	¥359,010,000	¥293,208,000	¥276,910,000
	Total profit	¥3,050,840,000	¥4,104,344,000	¥4,782,290,000	¥3,635,945,000	¥2,546,534,000
	Ratio	3.90%	7.40%	7.50%	8.10%	10.90%
CATL (宁德时代)	Government subsidies included in profit / loss			¥181,087,000	¥444,422,000	¥507,775,000
	Total profit			¥3,400,213,000	¥4,848,100,000	¥4,204,815,000
	Ratio			5%	9%	12%
BYD (比亚迪)	Government subsidies included in profit / loss	¥254,217,000	¥159,282,000	¥595,061,000	¥1,169,661,000	¥2,295,268,000
	Total profit	¥873,952,000	¥3,794,986,000	¥6,568,410,000	¥5,620,641,000	¥4,385,640,000
	Ratio	29.10%	4.20%	9.10%	20.80%	52.30%

Those subsidies tend to be affiliated with State or regional “key projects.” For example, Liaoning, Hebei, and Shaanxi Provinces all support “BYD pure electric bus production base key construction projects;”¹⁴ Shaanxi the “BYD pure electric passenger car expansion;”¹⁵ Wuhan the “BYD pure electric mining vehicle production project” and “BYD Pure New Energy Industry base.”¹⁶

State guidance and assistance flows through less obvious – or clearly publicized – channels as well. For example, BYD’s financing subsidiary, BYD Auto Finance Co. was born from a cooperative project between BYD Auto and the State-directed Xi’an Bank in 2015.¹⁷ At the time, Xi’an Bank invested 100 million RMB in the 500 million RMB project to claim a 20% stake. By the next year, BYD Auto Finance’s registered capital had reached 1.5 billion RMB, with Xi’an Bank retaining its 20% stake. BYD Auto Finance Company won the “special contribution enterprise” award of the military-civil fusion oriented Xi’an High Tech Industry Zone in both 2017 and 2018.¹⁸

BYD also has a role in the emerging “China Standards 2035” [中国标准2035] plan – the inheritor, or evolution, of Made in China 2025 – currently being crafted by the CCP. A research group for that plan was recently sent to Qinghai Province. It included representatives from the Development and Reform Commission, the Ministry of Science and Technology, the Institute of Standardization, the Chinese Academy of Sciences – and BYD Lithium Battery Company.¹⁹

Fueling the State's Offensive

As the Xi'an Bank and Military Civil Fusion zone examples begin to suggest, BYD fits neatly into Beijing's MCF system – as well as the State industrial apparatus behind it. BYD's can obtain technology, information, and positioning from the international market, then carry those back to the CCP and the People's Liberation Army (PLA). Concretely, that manifests in links to the State's industrial offensive, links to the military-civil enterprise, links with Huawei, and personal ties to the Party and PLA.



Links to the State's Industrial Offensive

BYD – and its global-facing electric bus subsidiary – is a member of the “New Energy Automobile National Big Data Alliance.”²⁰ Branded internationally as NDANEV, the alliance receives “supervision” and “guidance” from the Ministry of Industry and Information Technology (MIIT) – the State unit charged with “military-civil fusion” (MCF) and China’s larger information, or data, offensive.²¹ The Alliance is headquartered at the Beijing Institute of Technology, a University run by the State Administration for Science and Technology Industry for National Defense (SASTIND), a subordinate unit of MIIT. The Alliance’s founding members include State-owned and PLA- or MCF-affiliated FAW, Dongfeng, Chang’an Auto, SAIC, and BAIC, as well as the China Auto Industry Association, the Ministry of Communications Science Research Institute, and Chang’an University.²² A MIIT Minister declared at the Alliance’s inaugural 2018 forum that “data such as updates, fuel data, and vehicle monitoring will be shared.”²³ It is a “comprehensive platform for vehicle networking and big data...in the next step, the alliance will give full play to the role of the national monitoring and management platform for new energy vehicles...will comprehensively promote big data mining analysis, big data application model, big data standardization resources...and develop new energy vehicle data resources to provide services to governments, businesses, public.”²⁴ This might be considered the ground vehicle equivalent of the LOGINK – logistics information network – system Beijing uses to aggregate data from the global ports in which it invests. BYD is also a member of the CCP-controlled and funded “National New Energy Vehicle Technology Innovation Center.”²⁵ Established in March, 2018, the Innovation Center declares itself “an independent legal entity,” “but,” as its director explains, “has a strategic steering committee to listen to advice from,” among others, “government agencies and business representatives from the national strategic level.”²⁶ Its “initiating construction unit” is the state-owned Beijing Automotive Group (BAIC Group). It

is overseen by, and “reports” to, the Ministry of Science and Technology.²⁷ Those control a network of “industrial chain partners” – notably BYD – as well as “upstream partners such as the battery company Ningde,” partners like Baidu in intelligent driving, operators including Didi, and “cross-border vehicles such as Sinopec.” The Center also leverages research institutions – including Tsinghua University, the Chinese Academy of Sciences, and the State Council’s China Automotive Technology and Research Center – and funding from the State Development and Investment Corporation (CDIC).²⁸ The Minister of Science and Technology, Wan Gang, explained in 2018 that the purpose of the center is “conscientiously to implement the spirit of the 19th NPC.” “The Party Central Committee and the State Council attach great importance to the development of the new energy automobile industry...It is necessary to accelerate cross-disciplinary and cross-industry collaborative innovation and build a national-level industrial technology innovation platform to provide a strong driving force for the development of new energy vehicles.”²⁹ To that end, the center will “gather domestic and foreign resources to enhance the competitiveness of China’s new energy auto industry,”³⁰ while the Ministry of Science and Technology “will vigorously support its members in science and technology planning, project arrangement, platform construction, personnel training, and policy pilots” in order to create full industry ecology control. “Beijing, too, has pledged that it will “vigorously support” the center.”³¹

There are older, more legacy, and more granular examples of BYD transferring data, and information more broadly, to the State – and exporting the State’s techno-economic offensive internationally. In 2014, the State-owned West-Lake Electronics Group Company launched a joint venture with BYD in order to expand into the new energy vehicle field. Founded in 1973, West-Lake Electronics is one of the state-owned assets of the Hangzhou Municipal Government.

Links to the State's Industrial Offensive

It focuses on new energy automobile and smart transportation technologies – as well as their integration into Internet of Things applications – in order to help develop smart cities, communication systems, and information electronics.³² Effectively, it helps the State to integrate and guide the various technological arms that Beijing deploys and combines in the Network Great Power Strategy. In this case, the joint venture seeks to use “BYD to import the most cutting-edge technology and the entire industry chain of new energy vehicles into Hangzhou.”³³ Components of the cooperation have included:

1. A 1.5 billion RMB project from 2015-2016 to build 3,000 electric buses;
2. The establishment of the Central New Energy Automobile Research Institute (新能源汽车中央研究院);
3. The promise from Hangzhou's municipal government to buy at least 750 of BYD's K9 electric buses per year, 500 urban commuter vehicles per year, and 1000 of BYD's electric taxis per year;
4. The establishment of Hangzhou West Lake New Energy Vehicle Operation Co., which uses the state-owned company's information technology and network control to build a wireless, Internet of Things network on which BYD's taxis run;
5. Joint standard development, locally and nationally;
6. A one to one local subsidy for all BYD new energy vehicles produced, sold, and put on the market in Hangzhou, with active support to extending that policy throughout Zhejiang Province; and
7. In-vehicle electronics provided by the State-owned company for BYD vehicles.³⁴

West Lake's explicit goal is “radiation” – of the resultant network, standards, and electronic-component-enabled-BYD vehicles – throughout the country, and the world. It seeks “horizontal integration,” full “industrial chains,” and continuing joint ventures with companies like BYD.³⁵

Links to the Military-Civil Fusion Enterprise

As the support structure for the Alliance suggests, BYD is equally collaborative with PLA entities. In 2018, it announced “strategic cooperation” with the China Academy of Launch Vehicle Technology in materials, guidance, sensors, fasteners, testing, parts, commercial aerospace, and autonomy, among other fields. The China Academy of Launch Vehicle Technology is the largest research and production base of missile weapons and launch vehicles in China. Press releases from the time announced this cooperation as a “new step” for both entities in “military-civil fusion” (MCF).³⁶

That is by no means BYD’s first, or only, step in MCF. Its research and development centers are incubated in at least three “military-civil fusion enterprise zones:” The Beijing Daxing MCF Industrial Base, the Xi’an High Tech Industrial Development Zone (previously mentioned in discussion of subsidies), and the Baotou Equipment Manufacturing Industrial Park. As the Xi’an Zone’s website puts it, it:

Implements the Party and State guidelines to further the military industry and local economic development through the national defense science and technology industry and MCF...It is an important national defense science and technological base in China...

It is guided by military demand, taking major projects, key areas, and main directions as breakthroughs, absorbing high-quality resources from the whole society to participate in national defense construction, guiding civilian technology to expand into the military field, and promoting network information, new energy, electronic information...Focus on building advanced defense science and a technology industrial system with Chinese characteristics and enhance the strategic deterrent force of national security.³⁷

Approved by the Ministry of Industry and Information Technology (MIIT), in 2012, the Beijing Daxing Industrial Base focuses on aerospace technology, the weapons industry, new materials, and new energy. It hosts NORINCO, the Aviation Industry Corporation of China (AVIC), China Electronics Technology Group (CETGC), China Aerospace Architecture Design and Research Institute (航天科工建筑设计研究院), and the China Rocket Corporation (中国火箭股份有限公司), among others.³⁸ At the Xi’an Zone, BYD sits alongside national and private weaponry, aerospace, aviation, marine, automation, electronics, and Internet of Things developers. The Baotou zone’s members include China Weapon First Machinery Group, China National Heavy Duty Truck Company, and Norinco’s engineering machinery group.³⁹

Those zones, and others like them, support their members with funding, including “talent funding.” They also create channels for “research integration” – mechanisms for the sharing of technological and data resources.⁴⁰ For example, the Beijing Daxing Base “relies on the public service platform of the Beijing Economic and Technological Development Zone to support its enterprises;” “the scientific and technological innovation data service platform to provide data, patent inquiries, literature, and other services;” a “one-stop service platform for intellectual property rights to accelerate the transformation of S&T achievements and industrial upgrading; “and the SME service platform” to help SMEs navigate financing. “At the same time, it also actively assists enterprises in applying for support funds from relevant departments.”⁴¹

Links to the Military-Civil Fusion Enterprise

Similarly, the Xi'an Zone – which connects almost 1,000 universities and military units to its companies – has a “Xi'an Science and Technology market” for “transaction, sharing, and communication” to provide “technical exchange and equipment sharing for military-civil enterprises.” It organizes “matchmaking meetings, technical seminars, investment promotion associations, and MCF markets.” (“Focus on technology transactions, equipment sharing, policy services, cooperation and exchange, etc., integrating scientific and technological factor resources, innovative service models, and perfecting service chains, and building a market-oriented platform service system with technology transfer services as the core.”)⁴² Throughout, the Xi'an Zone highlights a focus on “creating a ‘1+3’ service mode of technology transfer.”⁴³ Derived from the model of Chinese students spending three years of their education in China and one year gathering knowhow abroad, that “1+3” term refers to Chinese companies using international exchange to acquire foreign resources.

BYD is a success story for the Xi'an Zone. In listing its accomplishments on its website, the Zone begins with having “formed pillars of the automotive industry,” with “BYD as well as Fashi Power Transmission [法士特], Union Automotive [联合汽车电子], AECC Power Aviation [航空动力], and Ou Shu buses [欧舒].”⁴⁴

BYD's work in lithium ion batteries offers a concrete example of the MCF story playing out; of BYD collaborating with national defense entities. In 2019, BYD – jointly with Shanghai Jiaotong University, Shanghai Zhongju Jiahua Battery Technology Co., Ltd. [上海中聚佳华电池科技有限公司] and Jiangsu Lenengy [江苏乐能电池股份有限公司] – won a coveted National State Council Science and Technology Progress Award for work in “key technology for manufacturing and application process of lithium battery.”⁴⁵ Shanghai Jiaotong University is a national-defense institute: It sits under the State Administration for Science and Technology Industry for National Defense (SASTIND), a subordinate agency of MIIT. And Jiangsu Lenengy is documented as supplying AVIC on its Lithium Battery Project.⁴⁶ BYD's battery expertise thus fuels a State military enterprise's technology and a SASTIND research institute.

Links with Huawei

Equally relevant is BYD's cooperation with commercial entities. On March 25, 2019, BYD and Huawei signed a "comprehensive strategic cooperation agreement" to "carry out in-depth exchanges and cooperation in automotive intelligent networking, intelligent driving, smart clouds, and smart parks; jointly to promote the innovative development and digital transformation of the automotive and rail transit industries."⁴⁷

That agreement expands on long-standing cooperation between the two firms. They have jointly built a cloud-based unmanned system, integrating BYD's rail technology with Huawei's eLTE vehicle wireless network. "BYD's unmanned driving system," declares Huawei's website, "is inseparable from Huawei's eLTE communication technology... If the unmanned system of BYD's cloud track is the decision-making system of the human brain, then Huawei's 4.5G rail transit wireless private network provides a fast and efficient transmission channel."⁴⁸ The vehicle network was piloted on BYD's Yinchuan monorail system in January, 2018.⁴⁹ BYD has signed contracts or cooperation agreements for its "Cloud Track" [云轨] technology across China (including with Guilin, Shantou, Guang'an, and Handan), and with the Philippines, Egypt, Morocco, Brazil, and Cambodia.⁵⁰ In helping to set up those agreements, the CCP has called on BYD to "Go Out"⁵¹ – a reference to the national strategy launched in the 1990s.

There are more legacy – and, today, defensive – elements to the Huawei-BYD cooperation, too.⁵² Huawei labeled BYD a "gold supplier" in 2018, when it announced its 92 "core suppliers."⁵³ And when Flextronics broke with Huawei this summer, BYD swept in to fill the gap: As of just weeks ago, Changsha BYD Electronics produces Huawei mobile phones out of the Changsha Intelligent Terminal Industrial Park that had originally been jointly planned by Huawei, Flextronics, and the Wangcheng Economic Development Zone.⁵⁴ "Without Flextronics, Huawei can also find powerful agents such as Foxconn and BYD."⁵⁵

Personal Ties

The nature of BYD's leadership suggests that this much is to be expected – and likely even more pervasive than documented here: The leadership boasts direct ties to the CCP's industrial policy apparatus and MCF project. BYD founder Wang Chuanfu (王传福) has held a number of official CCP posts, including as a delegate to the People's Congress of Shenzhen from 2000 to 2010 and in the city legislature from 2005 to 2015. Wang Zidong (王子冬), who serves as an “independent non-executive Director” of BYD,⁵⁶ is also the director of the Power Battery Laboratory (动力电池实验室) of the China North Vehicle Research Institute (中国北方车辆研究所), which is in turn part of Norinco Group (中国兵器工业集团), a large state-owned defense conglomerate.⁵⁷ Wang's biography on a Chinese-language industry news source notes that he “participated in the compilation of national military standards” and since 2001 he has served as the 863 Program's key expert on electric vehicles (863 电动车重点专项责任专家).⁵⁸ He also serves as the director of the 863 Program's Electric Vehicle Major Special Battery Test Center (国家863电动车重大专项动力电池测试中心), and as a member of the expert supervision team of the New Energy Vehicle Project associated with the “four ministries and commissions” responsible for promoting new energy vehicles: the Ministry of Finance, Ministry of Science and Technology, Ministry of Industry and Information Technology, and the National Development and Reform Commission.⁵⁹ These prominent examples are just the surface of the elite CCP interpersonal networks at work in BYD's rise.

Conclusion

BYD – through the web of state- and military-affiliated entities that it supports – allows Beijing access to and a position of leverage over global supply chains, technology flows, and, ultimately, data. Backed by State subsidies, BYD can out-compete international counterparts. Thus enabled, it secures a foothold in the larger ecosystem over which cutting-edge technology, data, and influence transit. That foothold positions it to carry all of those back to Beijing.

Beijing uses this asymmetric positioning for what it calls the “third phase” of its new energy vehicle plan. That is the phase when, “from 2025 to 2030,” it will make a bid to secure not just a market advantage or even monopoly, but rather the entire, data-driven and -collecting “ecosystem” around self-driving cars: “New energy vehicles will carry out more data exchanges with the city, infrastructure, people, and society...The smart city will be built, and the car will become a mobile intelligent module. It will be combined with the whole city network, travel network, and data network. The whole business format will change...This is the goal.”⁶⁰

In other words, the CCP positions so that it might project network power – through BYD and its counterparts, whether Huawei, CRRC, venture capital funds – outward to dominate the new energy vehicle industry as a whole, also the autonomous driving one into which it fits, the Internet of Things into which that docks, the “commanding heights” of the “fourth industrial revolution.”⁶¹ This is the crux of Xi Jinping’s “Network Great Power Strategy.”⁶² It is the goal of the “China Standards 2035” plan presently being designed to fuel that strategy.

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39. Radarlock proprietary database.
40. Xi'an High Tech Industrial Development Zone, xdz.gov.cn.
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42. Xi'an High Tech Industrial Development Zone, xdz.gov.cn.
43. Ibid.
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45. Radarlock proprietary database.
46. Other companies known to be participating include Beijing Auto Group, Yaxing Coach, [北汽福田汽车股份有限公司北京欧辉客车分公司], Chongqing Auto [重庆瑞驰汽车实业有限公司], Jiangsu Jintan Auto [江苏金坛汽车工业有限公司], China Power Investment and Financial Leasing [中电投融和融资租赁有限公司], Jiangxi Zijing Technology [江西紫宸科技有限公司], Cangzhou Mingzhu Plastic Co [沧州明珠塑料股份有限公司], Shenzhen Capchem [深圳新宙邦科技股份有限公司], Shenzhen Kedali Industry [深圳市科达利实业股份有限公司], Shenzhen Hangsheng [深圳市航盛新能源有限公司], and China Aviation Optoelectronics [中航光电科技股份有限公司]. (中航锂电举办动力电池项目二期开工暨中航锂电技术研究院有限公司揭牌仪式 [The second phase of the power battery project of AVIC Lithium and the opening ceremony of AVIC Lithium Technology Research Institute Co., Ltd.], April 28, 2017.)
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