OFFICE *of the* UNITED STATES TRADE REPRESENTATIVE
EXECUTIVE OFFICE OF THE PRESIDENT

FINDINGS OF THE INVESTIGATION INTO CHINA'S ACTS, POLICIES, AND PRACTICES RELATED TO TECHNOLOGY TRANSFER, INTELLECTUAL PROPERTY, AND INNOVATION UNDER SECTION 301 OF THE TRADE ACT OF 1974

March 22, 2018

Abbreviations and Acronyms

Acronym	Definition
3PLA	People's Liberation Army, Third Department
4WD	four-wheel drive
AAFA	American Apparel & Footwear Association
ABA	American Bar Association
ABC	Agriculture Bank of China
ABPIA	American Bridal & Prom Industry Association
ACC	American Chemistry Council
AEI	American Enterprise Institute
AGIC	Asia-Germany Industrial Promotion Capital
AI	artificial intelligence
AmCham	American Chamber of Commerce Shanghai
AML	Anti-Monopoly Law
AMSC	American Superconductor Corporation
APEC	Asia-Pacific Economic Cooperation
APT	advanced persistent threat
AQSIQ	Administration of Quality Supervision, Inspection and Quarantine
ATI	Allegheny Technologies, Inc
AVIC	Aviation Industry Corporation of China
AVICEM	ACIF Electromechanical Systems Co., Ltd
AWD	all-wheel drive
BCM	Bank of Communications
BEA	U.S. Bureau of Economic Analysis
BGI	Shenzhen Beijing Genomics Institute
BIO	Biotechnology Innovation Organization
BIS	Bureau of Industry and Security
BoC	Bank of China
BRI	Belt and Road Initiative
BRIC	Brazil, Russia, India, and China
C&C	command-and-control
CAAC	Civil Aviation Administration of China
CAIGA	China Aviation Industry General Aircraft Co.
CAST	China Association of Science and Technology
CCBC	China Construction Bank Corporation
CCC	China Compulsory Certification
CCCME	China Chamber of Commerce for Import & Export of Machinery and Electronic Products
CCOIC	China Chamber of International Commerce
CCP	Chinese Communist Party
CCXR	China Chengxin Securities Rating Company
CDB	China Development Bank
CFIUS	Committee on Foreign Investment in the United States
CG	Complete Genomics
CGCC	China General Chamber of Commerce
CIC	China Investment Corporation
CIGS	copper indium gallium selenide
CIPL	China Intellectual Property Law Society

CJV	contractual joint venture
CMG	Continental Motors Group Limited
CMOS	complementary metal-oxide semiconductor
CNOOC	China National Offshore Oil Corporation
CNY	Chinese yuan
COMAC	Commercial Aircraft Corporation of China, Ltd
CompTIA	Computing Technology Industry Association
CPPCC	Chinese People's Political Consultative Conference
CSI	Coalition of Services Industries
CSIS	Center for Strategic and International Studies
CSP	cloud service providers
CTA	Consumer Technology Association
DHH	DHH Washington Law Office
DHS	U.S. Department of Homeland Security
DOJ	U.S. Department of Justice
DRC	Development and Reform Commission
EJV	equity joint venture
EXIM	China Export-Import Bank
FADEC	full authority digital engine control
FAW	First Automotive Workers
FDI	foreign direct investment
FIE	foreign-invested entities
FYP	Five-Year Plan for National Economic and Social Development
GA	general aviation
GAC	General Administration of Customs
GDP	gross domestic product
GMO	genetically modified organism
HNA	Hainan Airlines
IaaS	infrastructure as a service
IAM	International Association of Machinists and Aerospace Workers
IATA	International Air Transport Association
IC	integrated circuit
ICBC	Industrial and Commercial Bank of China
ICT	information and communications technology
ICTSD	International Center for Trade and Sustainable Development
IDAR	introduce, digest, absorb, and re-innovate
IDC	internet data center
IDDS	innovation-driven development strategy
IGBT	insulated-gate bipolar transistors
IGCC	University of California Institute on Global Conflict and Cooperation
IMF	International Monetary Fund
iML	Integrated Memory Logic Limited
IP	intellectual property
IPIRA	Intellectual Property and Industry Research Alliances
ISS	Imaging Solutions and Services
ISSI	Integrated Silicon Solutions, Inc.
IT	information technology
ITAR	International Traffic in Arms Regulations
ITI	Information Technology Industry Council

ITIF	Information Technology & Innovation Foundation
JCCT	U.S.-China Joint Commission on Commerce and Trade
JV	joint venture
M&A	merger and acquisitions
MCF	military-civil fusion
MCM	multi-chip module
MEMA	Motor & Equipment Manufacturers Association
MEMS	micro-electromechanical systems
MERICS	Mercator Institute for China Studies
METI	Ministry of Economy, Trade, and Industry
MIIT	Ministry of Industry and Information Technology
MLP	National Medium- and Long-Term Plan for the Development of Science and Technology
MLPS	Multi-level Protection Scheme
MLR	Ministry of Land and Resources of the People's Republic of China
MNE	multinational enterprise
MOA	Ministry of Agriculture of the People's Republic of China
MOF	Ministry of Finance of the People's Republic of China
MOFCOM	Ministry of Commerce of the People's Republic of China
MOST	Ministry of Science and Technology of the People's Republic of China
MPS	managed print services
MRO	maintenance, repair, and overhaul
MSS	China's Ministry of State Security
MW	megawatt
NAM	National Association of Manufacturers
NBC	National Bureau of Statistics of the People's Republic of China
NDRC	National Development and Reform Commission
NEA	National Energy Administration
NEV	new-energy vehicle
NFTC	National Foreign Trade Council
NHI	Northern Heavy Industries Group
NPC	National People's Congress (China)
NTE	National Trade Estimate
OCTG	oil country tubular goods
ODI	overseas direct investment
OECD	Organization for Economic Cooperation and Development
OFDI	outbound foreign direct investment
PaaS	computer platform as a service
PBOC	People's Bank of China
PERC	Passivated Emitter Rear Contact
PLA	China's People's Liberation Army
PMA	parts manufacturing and authorization
PMDD	Permanent-Magnet Direct Drive
PPD-28	Presidential Policy Directive 28
PPP	private-public partnership
PRC	People's Republic of China
PWM	pulse width modulation
R&D	research and development
RMB	renminbi (official currency of China)
S&ED	U.S.-China Strategic & Economic Dialogue

S&T	science and technology
SaaS	computer software as a service
SAFE	State Administration of Foreign Exchange
SAIC	State Administration of Industry Commerce
SASAC	State-owned Assets Supervision and Administration Commission
SASTIND	State Administration for Science, Technology, and Industry for National Defense
SAT	State Administration of Taxes
SEI	strategic and emerging industries
SIA	Semiconductor Industry Association
SIGINT	Signals intelligence
SIPO	State Intellectual Property Office
SMIC	Semiconductor Manufacturing International Corporation
SNPTC	State Nuclear Power Technology Corporation
SOE	state-owned enterprise
SSLP	seamless standard line pipes
TIA	Telecommunications Industry Association
TIER	*Regulations of the PRC on Administration of Import and Export Technologies*
TRB	technical reconnaissance bureau
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UAV	unmanned aerial vehicle
UNCTAD	United Nations Conference on Trade and Development
USC	United States Constitution
USCBC	U.S.-China Business Council
USCIB	U.S. Council for International Business
USD	U.S. dollars
USITC	U.S. International Trade Commission
USPTO	U.S. Patent and Trademark Office
USW	United Steel Workers
UT	United Turbine
VAT	value-added tax
VC	venture capital
WFOE	wholly foreign-owned entity
WIPO	UN's World Intellectual Property Organization
WNA	World Nuclear Association
ZGC	Zhongguancun

CONTENTS

I. Overview

A. Core Elements of Section 301

This investigation has been brought under Section 301 of the Trade Act of 1974, as amended (the Trade Act).[1] Section 301 is a key enforcement tool that may be used to address a wide variety of unfair acts, policies, and practices of U.S. trading partners. Section 301 sets out three categories of acts, policies, or practices of a foreign country that are potentially actionable: (i) trade agreement violations; (ii) acts, policies or practices that are unjustifiable (defined as those that are inconsistent with U.S. international legal rights) and that burden or restrict U.S. Commerce; and (iii) acts, policies or practices that are unreasonable or discriminatory and that burden or restrict U.S. Commerce.[2] The third category of conduct is most relevant to this investigation.

Section 301 defines "discriminatory" to "include, when appropriate, any act, policy, and practice which denies national or most-favored nation treatment to United States goods, service, or investment."[3] An "unreasonable" act, policy, or practice is one that "while not necessarily in violation of, or inconsistent with, the international legal rights of the United States is otherwise unfair and inequitable."[4] The statute further provides that in determining if a foreign country's practices are unreasonable, reciprocal opportunities to those denied U.S. firms "shall be taken into account, to the extent appropriate."[5]

If the USTR determines that the Section 301 investigation "involves a trade agreement," and if that trade agreement includes formal dispute settlement procedures, USTR may pursue the investigation through consultations and dispute settlement under the trade agreement. Otherwise, USTR will conduct the investigation without recourse to formal dispute settlement.

Moreover, if the USTR determines that the act, policy, or practice falls within any of the three categories of actionable conduct under Section 301, the USTR must also determine what action, if any, to take.[6] For example, if the USTR determines that an act, policy or practice is unreasonable or discriminatory and that it burdens or restricts U.S. commerce,

> The Trade Representative shall take all appropriate and feasible action authorized under [Section 301(c)], subject to the specific direction, if any, of the President regarding any such action, and all other appropriate and feasible action within the power of the President that the President may

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[1] Unless otherwise specified, "Section 301" refers generally to Chapter 1 of Title III of the Trade Act of 1974 (codified as amended in 19 U.S.C. §§ 2411-2417). Furthermore, for ease of reference, full citations are used throughout this report.

[2] Trade Act of 1974, 19 U.S.C. § 2411(a)-(b).

[3] 19 U.S.C. § 2411(d)(5). Section III describes discriminatory acts, practices, and policies of the Chinese government.

[4] 19 U.S.C. § 2411(d)(3)(A).

[5] 19 U.S.C. § 2411(d)(3)(D).

[6] For example, in 2014, USTR determined that action against Ukraine was not appropriate due to the political situation. *See Notice of Determination in Section 301 Investigation of Ukraine*, 79 Fed. Reg. 14,326-27 (Mar. 13, 2014).

> direct the Trade Representative to take under this subsection, to obtain the elimination of that act, policy, or practice.[7]

Actions specifically authorized under Section 301(c) include: (i) suspending, withdrawing or preventing the application of benefits of trade agreement concessions; (ii) imposing duties, fees, or other import restrictions on the goods or services of the foreign country for such time as deemed appropriate; (iii) withdrawing or suspending preferential duty treatment under a preference program; (iv) entering into binding agreements that commit the foreign country to eliminate or phase out the offending conduct or to provide compensatory trade benefits; or (v) restricting or denying the issuance of service sector authorizations, which are federal permits or other authorizations needed to supply services in some sectors in the United States.[8] In addition to these specifically enumerated actions, the USTR may take any actions that are "within the President's power with respect to trade in goods or services, or with respect to any other area of pertinent relations with the foreign country."[9]

B. Background to the Investigation

On August 14, 2017, the President issued a Memorandum to the Trade Representative stating *inter alia* that:

> China has implemented laws, policies, and practices and has taken actions related to intellectual property, innovation, and technology that may encourage or require the transfer of American technology and intellectual property to enterprises in China or that may otherwise negatively affect American economic interests. These laws, policies, practices, and actions may inhibit United States exports, deprive United States citizens of fair remuneration for their innovations, divert American jobs to workers in China, contribute to our trade deficit with China, and otherwise undermine American manufacturing, services, and innovation.[10]

The President instructed USTR to determine under Section 301 whether to investigate China's law, policies, practices, or actions that may be unreasonable or discriminatory and that may be harming American intellectual property rights, innovation, or technology development.[11]

Concerns about a wide range of unfair practices of the Chinese government (and the Chinese Communist Party (CCP)) related to technology transfer, intellectual property, and innovation are longstanding. USTR has pursued these issues multilaterally, for example, through the WTO dispute settlement process and in WTO committees, and bilaterally through the annual Special 301 review. These issues also have been raised in bilateral dialogues with China, including the U.S.-China Joint Commission on Commerce and Trade (JCCT) and U.S.-China Strategic & Economic Dialogue (S&ED), to attempt to address some of the U.S. concerns.

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[7] 19 U.S.C. § 2411(b).
[8] In cases in which USTR determines that import restrictions are the appropriate action, preference must be given to the imposition of duties over other forms of action. 19 U.S.C. §§ 2411(c).
[9] 19 U.S.C. § 2411(b)(2).
[10] *See Addressing China's Laws, Policies, Practices, and Actions Related to Intellectual Property, Innovation, and Technology*, 82 Fed. Reg. 39,007 (Aug. 17, 2017).
[11] *Id.*

1. Initiation of the Investigation

USTR initiated this investigation on August 18, 2017 after consultation with the interagency Section 301 committee and private sector advisory committees.[12] On that same date, USTR also requested consultations with the Government of China.[13] China's Minister of Commerce responded to this letter on August 28, opposing the initiation of a Section 301 investigation.[14]

The *Federal Register Notice* described the focus of the investigation as follows:

> **First**, the Chinese government reportedly uses a variety of tools, including opaque and discretionary administrative approval processes, joint venture requirements, foreign equity limitations, procurements, and other mechanisms to regulate or intervene in U.S. companies' operations in China, in order to require or pressure the transfer of technologies and intellectual property to Chinese companies. Moreover, many U.S. companies report facing vague and unwritten rules, as well as local rules that diverge from national ones, which are applied in a selective and non-transparent manner by Chinese government officials to pressure technology transfer.
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> **Second**, the Chinese government's acts, policies and practices reportedly deprive U.S. companies of the ability to set market-based terms in licensing and other technology-related negotiations with Chinese companies and undermine U.S. companies' control over their technology in China. For example, the *Regulations on Technology Import and Export Administration* mandate particular terms for indemnities and ownership of technology improvements for imported technology, and other measures also impose non-market terms in licensing and technology contracts.
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> **Third**, the Chinese government reportedly directs and/or unfairly facilitates the systematic investment in, and/or acquisition of, U.S. companies and assets by Chinese companies to obtain cutting-edge technologies and intellectual property and generate large-scale technology transfer in industries deemed important by Chinese government industrial plans.
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> **Fourth**, the investigation will consider whether the Chinese government is conducting or supporting unauthorized intrusions into U.S. commercial computer networks or cyber-enabled theft of intellectual property, trade secrets, or confidential business information, and whether this conduct harms U.S. companies or provides competitive advantages to Chinese companies or commercial sectors.

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[12] *See Initiation of Section 301 Investigation; Hearing; and Request for Public Comments: China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation*, 82 Fed. Reg. 40,213-14 (Aug. 24, 2017) (Appendix A).

[13] *See* Appendix A.

[14] *See* Letter from Minster of Commerce Zhong Shan to Ambassador Robert Lighthizer (Aug. 28, 2017) (on file with author).

In addition to these four types of conduct, interested parties could submit for consideration information on other acts, policies and practices of China relating to technology transfer, intellectual property, and innovation for potential inclusion in this investigation or to be addressed through other applicable mechanisms.[15]

The terms "technology" and "technology transfer" are key concepts in this investigation. They are defined in Box I.1.

Box I.1: Technology and Technology Transfer Defined

Technology is defined broadly in this investigation to include knowledge and information needed to produce and deliver goods and services, as well as other methods and processes used to solve practical, technical or scientific problems. In addition to information protected by patents, copyrights, trademarks, trade secrets, and other types of intellectual property (IP) protections, the term also includes "know-how", such as production processes, management techniques, expertise, and the knowledge of personnel.

Technology and innovation are critical factors in maintaining U.S. competitiveness in the global economy. Among all major economies, the United States has the highest concentration of knowledge- and technology-intensive industries as a share of total economic activity. And in high-tech manufacturing, the United States leads the world with a global share of production of 29 percent, followed by China at 27 percent.

Technology transfers made on voluntary and mutually-agreed terms, and without government interference or distortion, are critical to the U.S. economy. In fact, U.S. companies are global leaders in the transfer of technology through legal mechanisms such as trade in high-tech goods and services; the licensing of technology to companies and persons abroad; and foreign direct investment (FDI).

Sources: OECD, *Glossary of Statistical Terms;* Keith E. Maskus, UNCTAD-ICTSD, Encouraging International Technology Transfer 9 (2004); U.S. Dept. of Commerce, Intellectual Property and the U.S. Economy 1 (2012); National Science Board, Science & Engineering Indicators 4, 4-17 (2016); OECD, *Main Science and Technology Indicators*: Technology Balance of Payments: Receipts (Current Prices), 2016; UNCTAD, World Investment Report, 2017, 14.

2. China's Bilateral Commitments to End its Technology Transfer Regime and to Refrain from State-Sponsored Cyber Intrusions and Theft

In the bilateral relationship, China repeatedly has committed to eliminate aspects of its technology transfer regime. On at least eight occasions since 2010, the Chinese government has committed not to use technology transfer as a condition for market access and to permit technology transfer decisions to be negotiated independently by businesses. China has further committed not to pressure the disclosure of trade secrets in regulatory or administrative

[15] *See* Appendix A.

proceedings. The evidence adduced in this investigation establishes that China's technology transfer regime continues, notwithstanding repeated bilateral commitments and government statements, as summarized in Table I.1, below, and discussed in the remainder of this report.

Table I.1 China's Bilateral Commitments Relating to Technology Transfer, 2010 - 2016

Year	Mechanism	Commitment
2010	S&ED	China reaffirmed that the terms and conditions of technology transfer, production processes, and other proprietary information will be determined by individual enterprises.
2011	JCCT	China confirmed that it does not and will not maintain measures that mandate the transfer of technology in the New Energy Vehicles Sector. China further clarified that "mastery of core technology" does not require technology transfer for NEVs.
2012	S&ED	China reaffirmed its commitment that technology transfer is to be decided by firms independently and not to be used by the Chinese government as a pre-condition for market access.
2012	Xi Visit Commitment	China reiterated that technology transfer and technological cooperation shall be decided by businesses independently and will not be used by the Chinese government as a pre-condition for market access.
2012	JCCT	China reaffirmed that technology transfer and technology cooperation are the autonomous decisions of enterprises. China committed that it would not make technology transfer a precondition for market access.
2014	JCCT	China committed that enterprises are free to base technology transfer decisions on business and market considerations, and are free to independently negotiate and decide whether and under what circumstances to assign or license intellectual property rights to affiliated or unaffiliated enterprises.
2014	JCCT	China confirmed that trade secrets submitted to the government in administrative or regulatory proceedings are to be protected from improper disclosure to the public and only disclosed to government officials in connection with their official duties in accordance with law.
2015	Xi Visit Commitment	China committed not to advance generally applicable policies or practices that require the transfer of intellectual property rights or technology as a condition of doing business in the Chinese market.
2015	Xi Visit Commitment	China committed to refrain from conducting or knowingly supporting cyber-enabled theft of intellectual property cyber-enabled theft of intellectual property, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors.
2016	Xi Visit Commitment	China committed not to require the transfer of intellectual property rights or technology as a condition of doing business.

Source: USTR, CATALOGUE OF JCCT AND S&ED COMMITMENTS (2016); 2016 USTR REP. TO CONG. ON CHINA'S WTO COMPLIANCE 7.

3. Input from the Public

USTR provided the public and interested persons with opportunities to present their views and perspectives on the issues highlighted in the *Federal Register Notice*, including through a public hearing on October 10, 2017.[16] Witnesses with varied interests and perspectives testified and responded to questions from the interagency Section 301 committee including representatives of U.S. companies and workers, trade and professional associations, and think tanks, as well as law firms and representatives of trade and professional associations headquartered in China.[17] Interested persons also filed approximately 70 written submissions in the public docket for this investigation.[18]

As U.S. companies have stated for more than a decade,[19] they fear that they will face retaliation or the loss of business opportunities if they come forward to complain about China's unfair trade practices. Concerns about Chinese retaliation arose in this investigation as well. Multiple submissions noted the great reluctance of U.S. companies to share information on China's technology transfer regime, given the importance of the China market to their businesses and the fact that Chinese government officials are "not shy about retaliating against critics."[20]

For example, a representative of the Commission on the Theft of American Intellectual Property testified at the hearing: "American companies are intimidated and reticent over the issue, especially in China. There they risk punishment by a powerful and opaque Chinese regulatory system."[21] In addition, according to the U.S. China Business Council, their member companies do not presently have "reliable channel[s] to report abuses and to appeal adverse decisions…without fear of retaliation."[22] Similarly, a representative of SolarWorld stated that "many other companies face the same issues of cyberhacking and technology theft that [it] has faced, but are unwilling to come forward publicly due to fear of lost sales or retaliation by China."[23]

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[16] The transcript of the hearing is available on the Federal eRulemaking Portal, https://www.regulations.gov and on USTR's website, https://ustr.gov.

[17] The following individuals participated in the public hearing: Richard Ellings, Commission on the Theft of American Intellectual Property; Stephen Ezell, Information Technology and Innovation Foundation; Erin Ennis, US-China Business Council; Owen Herrnstadt, International Association of Machinists and Aerospace Workers; Juergen Stein, SolarWorld; Daniel Patrick McGahn, American Superconductor Corporation; William Mansfield, ABRO Industries; Scott Partridge, American Bar Association Intellectual Property Law Section; Scott Kennedy, Center for Strategic and International Studies; Jin Haijun, China Intellectual Property Law Society; Chen Zhou and Liu Chao, China Chamber of International Commerce; XU Chen, China General Chamber of Commerce; John Tang, DHH Washington Law Office; Wang Guiqing, China Chamber of Commerce for Import and Export of Machinery and Export Products. *See* Appendix B.

[18] *See* Appendix C for a summary of the public submissions. The submissions can be viewed on the Federal eRulemaking Portal, https://www.regulations.gov.

[19] U.S. CHINA BUSINESS COUNCIL [*hereinafter* "USCBC"], *Submission*, *Section 301 Hearing* 4 (Sept. 28, 2017); *see also* SOLARWORLD, *Submission*, *Section 301 Hearing* 2 (Oct. 20, 2017).

[20] James Lewis, CENTER FOR STRATEGIC & INT'L. STUDIES [*hereinafter* "CSIS"], *Submission*, *Section 301 Hearing* 6 (Sept. 27, 2017); *see also* Lee Branstetter, *Submission, Section 301 Hearing* 4 (Sept. 28, 2017); Stephen Zirschky, *Submission*, *Section 301 Hearing* 2 (Sept. 28, 2017).

[21] USTR, *Hearing Transcript*, *Section 301 Hearing* 13 (Oct. 10, 2017); *see also* COMM'N. ON THE THEFT OF AM. IP [*hereinafter* "IP Commission"], *Submission*, *Section 301 Hearing* 8 (Sept. 28, 2017).

[22] USCBC, *Submission*, *Section 301 Hearing* 4 (Sept. 28, 2017).

[23] SOLARWORLD, *Submission*, *Section 301 Hearing* 2 (Oct. 20, 2017).

Because USTR self-initiated this action, no particular company or group of companies was required to step forward and file a Section 301 petition to initiate this investigation. Moreover, in making this determination, USTR and the interagency Section 301 committee took into account not just investigation submissions and testimony but also public reports, scholarly articles, and other reliable information. In addition, business confidential information has been provided and considered as part of the record in this investigation, so that companies could share sensitive information without the threat of business loss or retaliation.

C. China's Technology Drive

Official publications of the Chinese government and the CCP set out China's ambitious technology-related industrial policies. These policies are driven in large part by China's goals of dominating its domestic market and becoming a global leader in a wide range of technologies, especially advanced technologies. The industrial policies reflect a top-down, state-directed approach to technology development and are founded on concepts such as "indigenous innovation" and "re-innovation" of foreign technologies, among others. The Chinese government regards technology development as integral to its economic development and seeks to attain domestic dominance and global leadership in a wide range of technologies for economic and national security reasons.[24] China accordingly seeks to reduce its dependence on technologies from other countries and move up the value chain, advancing from low-cost manufacturing to become a "global innovation power in science and technology."[25] In pursuit of this overarching objective, China has issued a large number of industrial policies, including more than 100 five-year plans, science and technology development plans, and sectoral plans over the last decade.[26] Some of the most prominent industrial policies include the *National Medium- and Long-Term Science and Technology Development Plan Outline (2006-2020)* (*MLP*),[27] the *State Council Decision on Accelerating and Cultivating the Development of Strategic Emerging Industries* (*SEI Decision*)[28], and, more recently, the *Notice on Issuing "Made in China 2025"* (*Made in China 2025 Notice*).[29]

The *MLP*, issued in 2005 and covering the period 2006 to 2020, is the seminal document articulating China's long-term technology development strategy. The *MLP* recognizes the country's "relatively weak indigenous innovation capacity," its "weak core competitiveness of enterprises," and the fact that the country's high-technology industries "lag" those of more developed nations."[30]

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[24] *See* James Lewis, *Submission*, *Section 301 Hearing* 1 (Sept. 2017).
[25] *CCP State Council Releases the "National Innovation-Driven Development Strategy Guidelines* §2(3) [Chinese], XINHUA NEWS, May 19, 2016, http://news.xinhuanet.com/politics/2016-05/19/c_1118898033.htm.; *see also* TAI MING CHEUNG ET AL., U.S.-CHINA ECON. & SEC. REV. COMM'N, PLANNING FOR INNOVATION: UNDERSTANDING CHINA'S PLANS FOR TECHNOLOGICAL, ENERGY, INDUSTRIAL AND DEFENSE DEVELOPMENT [*hereinafter* "IGCC REPORT"] xiii (2016).
[26] IGCC REPORT at 30.
[27] *Notice on Issuing the National Medium- and Long-Term Science and Technology Development Plan Outline (2006-2020)* [*hereinafter* "MLP"] (State Council, Guo Fa [2005] No. 44, issued Dec. 26, 2005).
[28] *Decision on Accelerating the Cultivation and Development of Strategic Emerging Industries* (State Council, Guo Fa [2010] No. 32, issued Oct. 10, 2010).
[29] *Notice on Issuing "Made in China 2025"* (State Council, Guo Fa [2015] No. 28, issued May 8, 2015).
[30] *MLP* §1.

As its focus, the *MLP* identifies 11 key sectors, and 68 priority areas within these sectors, for technology development.[31] It also designates eight fields of "frontier technology," [32] within which 27 "breakthrough technologies" will be pursued, and highlights four major scientific research programs.[33] The *MLP* also establishes the cross-cutting goal of reducing the rate of dependence on foreign technologies in the identified sectors to below 30% by the year 2020.[34]

The *MLP* strategy for securing sought-after technology development includes several key elements, which continue to have a negative impact on U.S. and other foreign companies:

- A top-down national strategy, in which implementation requires the mobilization and participation of all sectors of society[35] and the integration of civil and military resources;[36]

- Prioritization of certain industries and technologies for development,[37] particularly those that can advance "sustainable development," "core competitiveness," "public service," and "national security" objectives.[38]

- Leveraging state resources and regulatory systems;[39]

- Import substitution to be achieved through "indigenous innovation"[40] and re-innovation based on assimilation and absorption of foreign technologies;[41] and

- Promoting Chinese enterprises to become dominant in the domestic market[42] and internationally competitive enterprises[43] in key industries.

The *MLP* set in motion a web of policies and practices intended to drive innovation and re-innovation. For example, Section 8(2) of the *MLP* calls for "enhancing the absorption, digestion,

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[31] The sectors include energy, water and mineral resources, environment, agriculture, manufacturing, transportation, information and services, population and health, urbanization, public security and national defense.
[32] The areas include biotech, information technology, advanced materials, advanced manufacturing, advanced energy technology, marine technology, laser technology and aerospace technology.
[33] The fields include protein science, nanotechnology, quantum physics and developmental and reproductive science.
[34] *MLP* § 2(2) ¶ 3, *Guiding Directives, Development Targets, and Comprehensive Arrangements*.
[35] *MLP* § 2(1). ("In sum, we must make enhancing indigenous innovation capacity our national strategy, and implement it in all aspects of modernization construction and in every industry, sector and region."). §8(5) also guides "all types of financial institutions and private funds to participate in science and technology development."
[36] *MLP* § 8(7).
[37] *MLP* § 3 sets out the "Key Sectors and their Priority Issues."
[38] *MLP* § 3, *Preamble*.
[39] *MLP* § 9.
[40] *MLP* § 2(1).
[41] *MLP* §§ 2(1), 8(2). The term "introduce" used throughout *MLP* refers to introduction of technology through foreign investment. This is made more explicit in the measures defining and discussing IDAR below.
[42] *MLP* § 2(2) states dependence on foreign technology should be reduced to only 30% by 2020.
[43] *See* IGCC REPORT at 157. *See also MLP* § 2.

and re-innovation of introduced technology."[44] Following the issuance of the *MLP*, China detailed these policies in the *Several Supporting Policies for Implementing the "National Medium- and Long-Term Science and Technology Development Plan Outline (2006-2020)"* (*MLP Supporting Policies*)[45] and the *Opinions on Encouraging Technology Introduction and Innovation and Promoting the Transformation of the Growth Mode in Foreign Trade* (*IDAR Opinions*),[46] which articulate the concept of **I**ntroducing,[47] **D**igesting,[48] **A**bsorbing,[49] and **R**e-innovating[50] foreign intellectual property and technology (IDAR). The IDAR approach involves four steps, each of which hinges on close collaboration between the Chinese government and Chinese industry to take full advantage of foreign technologies:

- Introduce: Chinese companies should target and acquire foreign technology. Methods of "introducing" foreign technology that are specifically referenced include: technology transfer agreements, inbound investment, technology imports, establishing foreign R&D centers, outbound investment, and the collection of market intelligence by state entities for the benefit of Chinese companies.[51] Technology to be "introduced" from overseas includes "major equipment that cannot yet be supplied domestically", as well as "advanced design and manufacturing technology";[52] conversely, the government discourages imports of technologies for which China is already deemed to "possess domestic R&D capabilities."[53]

- Digest: Following the acquisition of foreign technology, the Chinese government should collaborate with China's domestic industry to collect, analyze, and disseminate the information and technology that has been acquired.[54]

- Absorb: The Chinese government and China's domestic industry should collaborate to develop products using the technology that has been acquired. The Chinese government should provide financial assistance to develop products using technology obtained through IDAR, including foreign trade development funds, government procurement, and fiscal incentives.[55] To absorb foreign technologies, authorities have established engineering research centers, enterprise-based technology centers, state laboratories, national technology transfer centers, and high-technology service centers.[56]

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[44] *MLP* §§ 2(1), 8(2).
[45] *Several Supporting Policies for Implementing the "National Medium- and Long-Term Science and Technology Development Plan Outline (2006-2020)"* (State Council, Guo Fa [2006] No. 6, issued Feb. 7, 2006).
[46] *Several Opinions on Encouraging Technology Introduction and Innovation and Promoting the Transformation of the Growth Mode in Foreign Trade* (MOFCOM, NDRC, MOST, MOF, GAC, SAT, SIPO, SAFE, Shang Fu Mao Fa [2006] No. 13, issued July 14, 2006).
[47] English translation of Chinese term *yinjin*.
[48] English translation of Chinese term *xiaohua*.
[49] English translation of Chinese term *xishou*.
[50] English translation of Chinese term *zai chuangxin*.
[51] *IDAR Opinions* § 7-9, 11-12. *See also* IGCC REPORT at 118-119.
[52] *MLP Supporting Policies* § 28, 29.
[53] *MLP Supporting Policies* § 29.
[54] *IDAR Opinions* § 7; *MLP Supporting Policies* § 31.
[55] *IDAR Opinions* § 15, 18; *MLP Supporting Policies* § 30, 32.
[56] IGCC REPORT at 118.

- Re-innovate: At this stage, Chinese companies should "re-innovate" and improve upon the foreign technology. The ultimate objective is to develop new, home-grown products that are competitive internationally, so as to "allow enterprises to possess more indigenous intellectual property for core products and core technologies."[57]

The IDAR approach embraces a strong role for the Chinese government in guiding and assisting Chinese industry in technology development and has had profound implications, in particular, for the way in which China has sought to introduce foreign technologies into China over the last decade. It has spurred Chinese government ministries and government officials to pursue an array of aggressive implementing acts, policies, and practices, including those that are the subject of this investigation.

China has continued to emphasize the IDAR approach since it was first articulated in 2006 in broad-ranging five-year plans and technology development plans issued by China's State Council, central government ministries and provincial and municipal governments, and the CCP. The IDAR approach also has been incorporated into numerous economic development plans for specific sectors, such as integrated circuits.[58]

In 2010, the Chinese government announced another seminal technology development strategy, which calls for the accelerated development of seven so-called "strategic emerging industries" (SEIs): (1) energy efficient and environmental technologies, (2) next generation information technology, (3) biotechnology, (4) high-end equipment manufacturing, (5) new energy, (6) new materials, and (7) new energy vehicles.[59] The *12th Five-year National Strategic Emerging Industries Development Plan* (*12th Five-year SEI Plan*)[60] subsequently recommended specific fiscal and taxation policy support and set a target for SEIs to account for 8% of China's economy by 2015 and 15% by 2020. The *12th Five-year SEI Plan* also aims to foster a group of Chinese enterprises – including state-owned enterprises – into "backbone enterprises" that can become

[57] *IDAR Opinions* § 5.

[58] *E.g.*, *12th Five-year Development Plan for the Integrated Circuit Industry* (Ministry of Industry and Information Technology, published Feb. 24, 2012) § 3(1), ¶ 3: "Maintain innovation drivers. Combine implementation of national science and technology major special projects and megaprojects, using innovation in technologies, modes, mechanisms, and systems as the impetus to make breakthroughs in a group of shared core technologies. Strengthen *introduce, digest, absorb, and re-innovate*, to stride down the path of open-type innovation and internationalized development." (emphasis added).

[59] *State Council Decision on Accelerating the Development of Strategic Emerging Industries* (State Council, Guo Fa [2010], No. 32, issued Oct. 10, 2010).

[60] *Notice on Issuing the 12th Five-year National Strategic Emerging Industries Development Plan* (State Council, Guo Fa [2012] No. 28, issued July 9, 2012).

market leaders domestically and compete globally.[61] The Chinese government later reaffirmed and refined this strategy in its *13th Five-year Strategic Emerging Industries Development Plan*.[62]

Notably, support for the IDAR strategy was reiterated in the CCP's 2013 *Third Plenum Decision*[63] (*Third Plenum Decision*) released in connection with the Third Plenary Session of the 18th National Congress of the CCP. IDAR's inclusion in the *Third Plenum Decision* is significant because the document was widely seen as setting forth the priorities of President Xi Jinping's new administration with respect to China's future economic development path.[64] By reaffirming that China should "establish and perfect a mechanism to encourage original innovation, integrated innovation, and introduce, absorb, digest, and re-innovate,"[65] the *Third Plenum Decision* signaled the CCP's continued high-level support for the IDAR approach to technology innovation.

In 2015, the State Council released the *Made in China 2025 Notice*,[66] which is China's ten-year plan for targeting ten strategic advanced technology manufacturing industries for promotion and development: (1) advanced information technology; (2) robotics and automated machine tools; (3) aircraft and aircraft components; (4) maritime vessels and marine engineering equipment; (5) advanced rail equipment; (6) new energy vehicles; (7) electrical generation and transmission equipment; (8) agricultural machinery and equipment; (9) new materials; and (10) pharmaceuticals and advanced medical devices.[67]

While the *Made in China 2025 Notice* references market-oriented principles, it closely resembles China's other state-led, technology-related plans, such as the *MLP*, issued a decade earlier, in that it:

- Reaffirms the Chinese government's central role in economic planning;[68]

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[61] For example, the *12th Five-year National Economic and Social Development Plan Outline* (adopted by the NPC on Mar. 14, 2011) calls for the cultivation of a group of backbone enterprises within strategic emerging industries. Ch. 10, §2 "Fostering the Development of Strategic Emerging Industries". The *12th Five-year SEI Plan* further specifies that backbone enterprises are to have "relatively strong indigenous innovation capacity and a technological leadership effects." § 2(3), "Guiding Thoughts, Fundamental Principles, and Development Targets". At the sectoral level, the *Guidelines for the Development and Promotion of the Integrated Circuit Industry* (State Council, issued June 24, 2014) laud the fact that China has established "a group of backbone enterprises with significant international competitiveness." § 1, ¶ 1. The *Guiding Opinion on Promoting International Industrial Capacity and Equipment Manufacturing Cooperation* (State Council, Guo Fa [2015] No. 30, issued May 13, 2015) provides that a "main target" of the policy is to "establish a group of backbone enterprises that possess international competitiveness and the ability to open up markets." § 2(6).

[62] *Notice on Issuing the 13th Five-year National Strategic Emerging Industries Development Plan* (State Council, Guo Fa [2016] No. 67, issued Nov. 29, 2016).

[63] *CCP Central Committee Decision on Several Major Issues for Comprehensively Deepening Reform* (CCP Central Committee, issued Nov. 12, 2013) [*hereinafter* "*Third Plenum Decision*").

[64] Third Plenums have historically been used to announce major economic reforms, such as the adoption of reform and opening during the Third Plenary Session of the 11th National Congress of the CCP in 1978, and the endorsement of the socialist market economy following the 14th National Congress of the CCP in 1993.

[65] *Third Plenum Decision* § 13.

[66] *Decision on Issuing "China Manufacturing 2025"* (State Council, Guo Fa [2015] No. 28, issued May 8, 2015).

[67] *Made in China 2025 Notice* § 3(6).

[68] *Made in China 2025 Notice* § 2(2).

- Calls on all facets of society to mobilize behind the plan;[69]
- Seeks technological breakthroughs in key areas for economic and security purposes;
- Promotes further civil-military integration and the two-way transfer and conversion of military and civilian technologies;[70]
- Leverages state resources,[71] policy support,[72] and regulatory systems;[73]
- Continues to promote import substitution and rely on indigenous products to meet growing demand in China;[74]
- Reaffirms the leading role of backbone enterprises in technology development;[75] and
- Promotes Chinese enterprises to become dominant in the domestic market and internationally competitive in key industries.[76]

The *Made in China 2025 Notice* expressly calls for China to achieve 40% "self-sufficiency" by 2020, and 70% "self-sufficiency" by 2025, in core components and critical materials in a wide range of industries, including aerospace equipment and telecommunications equipment.[77] The *"Made in China 2025" Key Area Technology Roadmap* (*Made in China Roadmap*) sets explicit market share targets that are to be filled by Chinese producers both domestically and globally in dozens of high-tech industries.[78]

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[69] *Made in China 2025 Notice* § 1(3).
[70] *Made in China 2025 Notice* § 3(1).
[71] *Made in China 2025 Notice* § 4.
[72] *Made in China 2025 Notice* § 1(3).
[73] *See generally Made in China 2025 Notice*. This is particularly the case in quality standard regulations as described in §§ 2(1) and 3(4).
[74] *Made in China 2025 Notice* § 1(2) describes the growing demand for new equipment, consumption, and safety, while § 1(3) calls for China to "rely more on Chinese equipment and Chinese brands."
[75] *Made in China 2025 Notice* § 3(1).
[76] *Made in China 2025 Notice* § 1(3).
[77] *Made in China 2025 Notice*, Box 3.
[78] *Made in China 2025 Key Area Technology Roadmap*, (National Strategic Advisory Committee on Building a Powerful Manufacturing Nation, issued Oct. 10, 2015); *see also* U.S. CHAMBER, MADE IN CHINA 2025: GLOBAL AMBITIONS BUILT ON LOCAL PROTECTIONS 8 (2017). The *Made in China Roadmap* was released by the National Strategic Advisory Committee on Building a Powerful Manufacturing Nation (also known as the "National Manufacturing Strategy Advisory Committee") which was established pursuant to the *Made in China 2025 Notice* with responsibility to provide advice and assessments on China's major manufacturing policies. In August 2015, Vice Premier Ma Kai, who leads the Strong Manufacturing Country Leading Small Group, spoke at the Committee's first meeting and lauded its establishment as a way to "strongly promote Made in China 2025." National Strategic Advisory Committee on Building a Powerful Manufacturing Nation Established; Chaired by Ma Kai [Chinese], XINHUA (Aug. 26, 2015), *available at* http://www.xinhuanet.com/info/2015-08/26/c_134556815.htm (last visited Mar. 16, 2018). *See also Notice on the Establishment of the Strong Manufacturing Country Leading Small Group*, (General Office of the State Council, Guo Ban Fa [2015] No. 48, published June 24, 2015) (last visited March 16, 2018); and *National Strategic Advisory Committee on Building a Powerful Manufacturing Nation Established*, STATE INTELLECTUAL PROPERTY OFFICE OF THE P.R.C. (Aug. 26, 2015), *available at* http://www.sipo.gov.cn/yw/2015/201508/t20150826_1165829.html (last visited Dec. 21, 2017).

For example, indigenous new energy vehicles are to achieve an 80% domestic market share[79] with foreign sales accounting for 10% of total sales by 2025.[80] Similarly, domestically produced energy equipment is to achieve 90% domestic market share, with exports accounting for 30% of production, by 2020,[81] and renewable energy equipment with indigenous IP is to achieve 80% domestic market share by 2025.[82] In comparison to previous plans, *Made in China 2025* expands its focus to capturing global market share, not just dominance in the China market, and is part of a "broader strategy to use state resources to alter and create comparative advantage in these sectors on a global scale."[83]

The *Made in China 2025 Notice* sets forth clear principles, tasks, and tools to implement this strategy, including government intervention and substantial government, financial and other support to the targeted Chinese industries.[84] Domestic dominance and global competitiveness are to be achieved by upgrading the entire research, development, and production chain, with emphasis on localizing the output of components and finished products.[85] Foreign technology acquisition through various means remains a prime focus under Made in China 2025 because China is still catching up in many of the areas prioritized for development, and as U.S. companies are front-runners in many of these areas.[86]

China's Ministry of Industry and Information Technology (MIIT) has explained that Made in China 2025 is part of a three-step strategy for China to become a world leader in advanced manufacturing. Under the first step, by 2025, China should "approach the level of manufacturing powers Germany and Japan during the period when they realized industrialization." In the second step, China should "enter the front ranks of second tier manufacturing powers" by 2035. In the final step, China should "enter the first tier of global manufacturing powers" by 2045, at which point China will have "innovation-driving capabilities," "clear competitive advantages," and "world-leading technology systems and industrial systems."[87]

In recent years, China also issued policies specific to advanced technologies in which U.S. firms are market leaders. Information and communications technologies have been a focal point, with more and more strategies emanating from the *National Informatization Development Strategy* (2006-2020), such as the *National Integrated Circuit Industry Development Outline*, the *Internet*

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[79] *Made in China 2025 Key Area Technology Roadmap* § 6.2.2.
[80] *Made in China 2025 Key Area Technology Roadmap* § 6.2.2.
[81] *Made in China 2025 Key Area Technology Roadmap* § 7.1.2.
[82] *Made in China 2025 Key Area Technology Roadmap* § 7.1.2.
[83] U.S. CHAMBER, MADE IN CHINA 2025: GLOBAL AMBITIONS BUILT ON LOCAL PROTECTIONS 6 (2017).
[84] *See* AM. CHAMBER OF COMMERCE IN SHANGHAI, *Submission*, *Section 301 Hearing* 2 (Sept. 28, 2017); NAT'L. ASS'N OF MANUFACTURERS [*hereinafter* "NAM"], *Submission, Section 301 Hearing* 3 (Sept. 28, 2017); WILEY REIN LLP, *Submission, Section 301 Hearing* 3-4 (Sept. 28, 2017); BJÖRN CONRAD, ET AL., MERCATOR INST. FOR CHINA STUDIES [*hereinafter* "MERICS"], MADE IN CHINA 2025 7, 11 (2016); and U.S. CHAMBER OF COMMERCE, MADE IN CHINA 2025: GLOBAL AMBITIONS BUILT ON LOCAL PROTECTIONS 7, 15, 18 (2017).
[85] IGCC REPORT at 121.
[86] IGCC REPORT at 121.
[87] *Made in China 2025 Explanation 6: The Manufacturing Power 'Three-Step' Strategy*, MINISTRY OF INDUSTRY AND INFORMATION TECHNOLOGY (May 19, 2015), http://www.miit.gov.cn/n1146295/n1146562/n1146655/c3780688/content.html; *see also* IGCC REPORT at 47-48.

Plus Plan, the "Broadband China" strategy and corresponding implementation plan, and the designation of next-generation information technology as a "strategic emerging industry."[88]

In addition, China recently announced that it will pursue an "innovation-driven" development strategy[89] and that it has made breakthroughs in higher-end innovation a top priority.[90] At the 19th National Congress of the CCP, held in October 2017, President Xi Jinping's remarks specifically referenced the goal of building China into a "powerful nation [*or* power] in science and technology, quality, aerospace, the Internet, and transportation" and called for "accelerating the construction of [China as] a manufacturing power" by "accelerating the development of advanced manufacturing industry" and "promoting the deep integration of the Internet, big data, and artificial intelligence with the real economy."[91]

Like the *MLP* a decade ago, newer plans such as the *Made in China 2025 Notice* and the various plans focused on information and communications technologies call for a wide array of Chinese government intervention and financial and other support designed to transform China into a world leader in technology. While these policies and practices are not necessarily new, their actual and potential effects on foreign companies and their technologies have become much more serious. As James Lewis of CSIS explained in his submission to USTR:

> What is new is that unfair trade, security and industrial policies, tolerable in a smaller developing economy, are now combined with China's immense, government-directed investment and regulatory policies to put foreign firms at a disadvantage…China now has the wealth, commercial sophistication and technical expertise to make its pursuit of technological leadership work. The fundamental issue for the U.S. and other western nations, and the IT sector is how to respond to a managed economy with a well-financed strategy to create a domestic industry intended to displace foreign suppliers.[92]

As detailed in Sections II through VI of this report, a key part of China's technology drive involves the acquisition of foreign technologies through acts, policies, and practices by the Chinese government that are unreasonable or discriminatory and burden or restrict U.S. commerce. These acts, policies, and practices work collectively as part of a multi-faceted strategy to advance China's industrial policy objectives. They are applied across a broad range of sectors, overlap in their use of policy tools (*e.g.*, the issuance of planning documents and guidance catalogues), and are implemented through a diverse set of state and state-backed actors, including state-owned enterprises.

- Section II describes the Chinese government's use of foreign ownership restrictions, such as joint venture (JV) requirements and foreign equity limitations, other foreign

[88] IGCC REPORT at 44.
[89] IGCC REPORT at 41 ("This innovation-driven development strategy (IDDS) was officially promulgated by the Chinese authorities in May 2016 and provides a 'top-level design and systemic plan' for China's innovation over next 30 years.").
[90] IGCC REPORT at xiii-xiv.
[91] Xi Jinping, Speech at the 19th CPC National Congress: Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a New Era (Oct. 18, 2017), *available in Chinese at* http://www.gatj.gov.cn/html/6/wjjh/17/10/3257-6.html.
[92] James Lewis, CSIS, *Submission, Section 301 Hearing* 1 (Sept. 27, 2017).

investment restrictions, and the administrative licensing and approvals process to require or pressure the transfer of technology from U.S. companies to Chinese entities.

- Section III describes how U.S. companies seeking to license technologies to Chinese entities must do so on non-market-based terms that favor Chinese recipients.

- Section IV describes how the Chinese government directs and unfairly facilitates the systematic investment in, and acquisition of, U.S. companies and assets by Chinese entities, to obtain cutting-edge technologies and intellectual property and generate large-scale technology transfer in industries deemed important by state industrial plans.

- Section V describes how the Chinese government has conducted or supported cyber intrusions into U.S. commercial networks targeting confidential business information held by U.S. firms. Through these cyber intrusions, China's government has gained unauthorized access to a wide range of confidential business information, including trade secrets, technical data, negotiating positions, and sensitive and proprietary internal communications.

- Section VI describes other acts, policies, and practices of by the Chinese government to acquire foreign technologies, including measures purportedly related to national security or cybersecurity, inadequate intellectual property protection, the *Antimonopoly Law of the People's Republic of China*, the *Standardization Law of the People's Republic of China*, and talent acquisition.