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A 'China Model?' Beijing's Promotion of Alternative Global Norms and Standards

Panel III: Technological Competition and Driving New Standards

Beijing's Promotion of PRC Technical Standards

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The views expressed in this testimony are those of the author.

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The Communist Party of China (CPC) intends to promote PRC technical standards—which Beijing refers to programmatically as "China Standards [中国标准]"—though a multipronged, all-of-party-government-and-nation, domestic and international, campaign. Beijing views standards as foundational to its goals to reshape global governance and expand geostrategic power. In Beijing's strategies, "China Standards" form essential technical connective tissue for the Belt and Road Initiative (BRI) and the Digital Silk Road (DSR), expanding PRC control of global information and communication technology (ICT). Combined with the standards requirements of Military-Civil Fusion (MCF), these strategies pave the way for projection of PRC military power.

Beijing's top party state bodies—the CPC, the State Council, and the Central Military Commission (CMC) drive high-level strategic planning and policy initiatives for the promotion of the PRC's "China Standards" campaign, domestically and overseas. In keeping with CPC practice for its priority action items, Beijing assigns the lead in the "China Standards" campaign to key steward ministries, commissions, and PLA departments. These bodies also liaison with and lead influence operations targeting foreign multinational and sectoral standards setting organizations.

- Key PRC standards agencies include the Standards Administration of the PRC (SAC), and the "China Standardization Expert Committee" (CSEC).

- Staff and technical personnel of dedicated sub-ministerial units, party-state controlled enterprises, and partnerships create and revise standards, and serve in leadership roles on international multilateral and sectoral standards associations, and their committees and working groups.[1]

- SAC coordinates "China Standards" setting and revision on a dedicated website.[2] Policy directives promote PRC technical standards throughout the "Belt and Road Initiative" (BRI), and integrate technical standards with military/dual use requirements and Beijing's "Military-Civil Fusion" (MCF) campaign (see discussion of MCF further below).[3]

[1] PRC grass-roots units and partnerships implementing the "China standards" campaign include the SAC—Beijing's flagship agency for coordinating the development the PRC's industrial and commercial technical standards—the SAMR's China National Institute of Standards (CNIS [中国标准化研究院]), and the SAC's National Center of Standards Evaluation (NCSE [国家市场监督管理总局国家标准技术审评中心]). The CPC Committee Chairman of top SASAC energy SOE "China Huaneng Group" is the new 2019 president of the International Electrotechnical Commission.

[2] Standards Administration of the PRC Standards Information Center "The National Standardization Business Management Platform (Experimental Version) Is Formally Announced" [国家标准化业务管理平台（试用版） 正式发布], published Jan. 18, 2017, observed 31 January 2019 at root URL: http://home.sacinfo.org.cn/home/rc?infoId=594 ; see also the platform's login homepage at http://home.sacinfo.org.cn/

[3] The CPC's MCF Development Committee and the CMC's Equipment Development Department implement working-level MCF and mobilization.

Beijing views its campaign to create and implement PRC technical standards domestically and abroad as a foundational component of its strategies to develop the PRC and expand the CPC's geostrategic power through reshaping global governance. Speeches during 2014-2016 attributed to CPC General Secretary Xi Jinping assert that for the PRC to become a leading nation it will have to become a rule-maker, and that standards are "first chess move" of global expansion. Xi said that the CPC must strengthen its "leadership over standardization work" and "hard power of China's Standards." [4][5]

- The PRC State Council's 2015 "Plan to Deepen Reform of Standardization Work" set a 2020 goal to take a greater lead in international standards setting organizations.[6]

- Signaling Beijing's elevation of standards in its overall geostrategy, new content in the "PRC Standardization Law" updated by the NPC in 2017 explicitly aims at protecting national security and increasing the CPC's ability to influence international technology standards. The new language guides PRC enterprises and other institutions to participate in international standards formulation, cooperation, exchanges, and in the "transformation and utilization between Chinese standards and foreign standards."[7][8]

[4] Xi Jinping "Accelerating from Factor Driven, Investment Scale Driven Development to Innovation Driven Development [加快从要素驱动、投资规模驱动发展为主向以创新驱动发展为主的转变]" (June 9, 2014), Selected Works of Important Documents since the Eighteenth National Congress (centre), Central Literature Publishing House 2016 Year edition, pages 22-23.

[5] Tian Shihong, "Create a New Situation for China's Standardization Enterprise: Study and Implement Comrade Xi Jinping's Important Treatise Regarding Standardization Work (开创我国标准化事业新局面–学习贯彻习近平同志关于标准化工作的重要论述)," People's Daily, September 6, 2016, observed 11 June 2019 at root URL: http://opinion.people.com.cn/n1/2016/0906/c1003-28693193.html ; earlier at but now scrubbed from: http://theory.people.com.cn/n1/2016/0906/c40531-28693273.html.

[6] State Council of the PRC [国务院]: "State Council Notice Regarding Promulgation of the Plan to Deepen Reform of Standardization Work, State Council 2015 document number 13 [国务院关于印发深化标准化工作改革方案的通知, 国发〔2015〕13号]", posted on the official website of the PRC government, observed 14 June 2019 at root URL: http://www.gov.cn/zhengce/content/2015-03/26/content_9557.htm

[7] Official website of the State Administration for Market regulation (SAMR [国家市场监督管理总局]): "PRC Standardization Law [中华人民共和国标准化法]" posted 25 June 2019, observed 17 July 2019 at root URL: http://gkml.samr.gov.cn/nsjg/fgs/201906/t20190625_302769.html

[8] Official website of the PRC National People's Congress [全国人民代表大会]: "PRC Standardization Law [中华人民共和国标准化法]" posted 1 April 1989, observed 17 July 2019 at root URL: http://www.npc.gov.cn/wxzl/wxzl/2000- 12/05/ content_4514.html

Why is setting and control of technical standards important?

ANSI: Standards, metrics or procedures which make economic interchange possible, affect 96% of global trade. **UN ITU:** Standards make phone, satellite, Internet possible.

- Technical specifications for much of emerging technology are—or will be—determined by foundational ICT standards, and in turn shape the information technology industrial revolution to come.
- Nations that set and deliver these standards will own the IP and formation, development, and control of relevant supply chains.
- Control of key supply chains creates capabilities to access and control broad systems. For example, the PRC has built up a lead in 5G; the world's ICT and backbone networks are becoming dependent on PRC 5G technology, which will be significantly comprised of software. Hence, Beijing acquires the capability to control countries' access to technology, equipment, and services upon which their consumers and industry depend.

The "China Standards" campaign is essential technical connective tissue for the BRI, for the DSR—aimed at expanding PRC control of global ICT—and for MCF. The CPC's vision of exploiting PRC standards to gain leverage over the international community is illustrated by the PRC's action plans for "Harmonization of Standards for Construction of 'OBOR.'"[9] [10]

- The 2018-2020 action plan calls for PRC authorities to insert technical standards clauses into its diplomatic, science and technology, business, and customs inspections agreements, and advance Beijing's control over technical standards in BRI projects across many sectors.[11]

[9] National Development and Reform Commission [中华人民共和国国家发展和改革委员会]: "Harmonization of Standards for 'OBOR' Action Plan (2015-2017) [标准联通"一带一路"行动计划（2015—2017）]," posted 22 October 2015 observed 26 February 2020 at root URL: https://www.ndrc.gov.cn/fzggw/jgsj/kfs/sjdt/201510/t20151022_1085956.html

[10] State Council Information Office (SCIO) [国务院新闻办公室]: "Harmonization of Standards for Construction of 'OBOR' Action Plan (2018-2020) [标准联通共建"一带一路"行动计划(2018-2020 年)]" posted 19 January 2018, observed 25 January 2019 at root URL: http://www.scio.gov.cn/xwfbh/xwbfbh/wqfbh/37601/39274/xgzc39280/Document/1641459/1641459.htm

[11] Listed sectors include information and communications technology (ICT) and ICT infrastructure, railway construction, industrial communication, satellite navigation, roads, waterways, civil aviation links, energy (oil, gas, and nuclear) power stations, electric grids, infrastructure and construction machinery, urban IT infrastructure projects aka "smart cities", digital

- The MIIT Science and Technology Department's implementation guidance for the 2018-2020 action plan—directed at all levels of government and economy—calls on all PRC entities to exploit PRC "first mover advantage" to promote application of PRC standards in ICT infrastructure.[12]

- The guidance calls for increased cooperation and work with international and foreign nations' standards bodies including the ISO, ITU and IEC (see below for further discussion). In an example of a PRC-interagency international liaison, the NDRC National Internet Information Office and Zhejiang Province formed the "DSR Industrial Alliance" comprising foreign government officials and major PRC firms.[13][14][15]

Building dual-use capabilities into technical standards—a vital component of Beijing's Military-Civil Fusion (MCF) strategy—aims to bolster PRC technical and logistics backbone for military mobilization at home and abroad. "Standards harmonization" in the BRI and within MCF—along with Beijing's pursuit of influence over international standards-setting—together pave the technological way for projection of PRC military power. The MCF of standards—unification of industry and commercial standards with military requirements—is stewarded by SAMR, the PLA's services' respective equipment departments, and SOEs under SASAC, and other agencies.

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television services, movie theaters, building materials, textiles, steel, non-ferrous metals and new materials, explosives, agriculture, home electronics, aerospace, shipbuilding, marine transport and logistics, engineering equipment, online shopping networks, green products, media, publishing, radio, movies, television, the arts, medical equipment, pharmaceuticals, and international banking and financial services. State Council Information Office (SCIO) [国务院新闻办公室]: "Harmonization of Standards for Construction of 'OBOR' Action Plan (2018-2020) [标准联通共建"一带一路"行动计划(2018-2020 年)]" posted 19 January 2018, observed 25 January 2019 at root URL: http://www.scio.gov.cn/xwfbh/xwbfbh/wqfbh/37601/39274/xgzc39280/Document/1641459/1641459.htm

[12] Science and Technology Division of the Ministry of Industry and Information Technology (MIIT [工业和信息化部]) "MIIT Document (2018) 231 Ministry of Industry and Information Technology Opinion on the Implementation of Standardization of the Industrial Communication Industry for Construction of the 'Belt and Road' [工信部科〔2018〕231 号 工业和信息化部关于工业通信业标准化工作服务于"一带一路"建设的实施意见]," published 12 November 2018, observed 29 February 2020 at root URL: http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757016/c6480388/content.html

[13] "Digital Economy and Digital Silk Road International Conference Propose Joining Hands to Construct Digital Silk Road" [数字经济暨数字丝绸之路国际会议提出 携手共建数字丝路], General Office of the Zhejiang Provincial Government website, September 19, 2018, observed on 2 January 2019 at root URL: http://www.zj.gov.cn/art/2018/9/19/ art_41146_2291184.html

[14] "International Conference on Digital Economy and Digital Silk Road" [数字经济暨数字丝绸之路国际会议] website, observed on January 8, 2019 at root URL: http://ficdedsr. medmeeting.org/Content/103894

[15] Foreign government officials from Malaysia, Laos, Serbia, Bangladesh, Czech Republic, Cuba, Kazakhstan, and South Korea were in attendance. More than 40 companies joined the DSR Industrial Alliance including Alibaba, Tencent, WeChat, iFlytek, Sugon, Inspur, Baidu, Bilibili, China Electronic Technology Group, and Zhejiang Robot Industry Group. See "International Conference on Digital Economy and Digital Silk Road" [数字经济暨数字丝绸之路国际会议] website, observed on January 8, 2019 at http://ficdedsr. medmeeting.org/Content/103894.

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- "By 2020, military-civil standards will be compatible and dual-use," according to a 12 April 2017 joint "13th Five-Year Action Plan for the Development of MCF in Science and Technology (2016-2020)" by the MOST and the CMC Science and Technology Committee.[16]

- "The SAC has put military-civil fusion (MCF) in its annual major project work plan every year since 2011"—highlighting the attention to the standardization needs of MCF by PRC agencies.[17] National projects and forums on standardization of MCF were held in 2016 and 2018 and attended by a wide swath of ministry and other PRC organizations.[18] [19]

- 2017 State Council guidance on advancing MCF exhorts CPC organizations to encourage military industry personnel to participate in standards setting and revision, suggesting PLA personnel occupy some leadership roles in standards setting organizations.[20]

- The PLA should continually exploit the ability of PRC "civilian" companies to access the international market because "internationalization of military-civil fusion standards is advantageous for continuing the PRC's defense buildup, in terms of its international

[16] "Notice regarding the release of 'The 13th Five-Year Action Plan for the Development of Military-Civil Fusion in Science and Technology'" [关于印发'十三五科技军民融合发展专项规划'的通知], Ministry of Science and Technology (original source no longer available), April 12, 2017, observed at root URL: http://kyy.nuaa.edu.cn/2018/0109/c5794a96521/page.htm.

[17] Wu Nanning, Liu Xinjian, Zhu Hong, and Yang Tian, "Reflections on Accelerating the Advancement of Standardization in Military-Civil Fusion's Deep Development [加快推进标准化军民融合深度发展的思考]," *China Standardization*, No. 8, 2018, p. 15. For more detail on SAMR refer to "02 PRC State Council Agencies Steward All-of- Nation Standardization Campaign"

[18] The CMC Equipment Development Department and SAC October 2016 official "Military-Civil Standards Dual-Use [Universalization] Project" launch event was attended by a including the NDRC, MOST, MIIT, MOF, SASTIND, the National Weather Bureau, the National Survey and Mapping Bureau, the National Oceanic Administration, each PLA service and branch's equipment department, the relevant bureaus and offices of the CMC, the Academy of Military Science's Science Research Direction Bureau, the National Defense University Science Research Department, the National University of Defense Technology Science Research Department, the China Academy of Sciences, the China Academy of Engineering Physics, each SASAC military industry corporation, related industry associations and federations of trade unions; and related technology organizations. See: "The Project to Make Military and Civil Standards Dual-Use is Officially Launched [军民标准通用化工程正式启动]," *The Standardization Administration of the PRC*, October 13, 2016, observed at root URL: http://www.sac.gov.cn/szhywb/gzdt/201610/ t20161014_218107.htm.

[19] In December 2018, China inaugurated its first national forum on the standardization of MCF [标准化军民融合]. Held in Qingdao, the forum was attended by over 500 representatives from CPC central organizations, national ministries, national administrations, local governments, military units, the military industry, research institutes, universities, and civilian companies. Wang Wenhui and Zhang Tiannan, "Annual National Forum on the Standardization of Military-Civil Fusion Held [全国标准化军民融合年会举行)," PRC Ministry of National Defense, December 24, 2018, at root URL: http://www.mod.gov.cn/ mobilization/2018-12/24/content_4832739.htm. For a list of participating government organizations and military units see, "The 'Qingdao Consensus' for the Standardization of Military-Civil Fusion Issued on the 20th [标准化军民融合'青岛共设'20日发布)," Sina News, December 20, 2018, at https://finance. sina.com.cn/roll/2018-12-20/doc-ihqhqcir8616896.shtml.

[20] The PRC State Council "Office of the State Council Opinion on Advancing the Deep Development of Military-Civil Fusion in Science, Technology, and Industry for National Defense (国务院办公厅关于推动国防科技工业军民融合深度发展的意见)," Office of the State Council, November 23, 2017, observed at root URL: http://www.gov.cn/ zhengce/content/2017-12/04/content_5244373.htm.

compatibility and modernization", according to a 2018 article in the SAMR journal "China Standardization".[21]

Beijing's nascent action plan "China Standard 2035" likely aims to enable CPC-controlled agency and enterprise personnel to further dictate technical standards, allowing Beijing to capture broad commercial and security advantages.

"National high-level think tanks"—including entities in SAMR, SAC, the Chinese Academy of Engineering (CAE), and others—are working together to consolidate existing standardization strategies into a higher profile program of action deemed "China Standard 2035," possibly to be rolled out in early 2020.[22]

- Building on work to date, "China Standard 2035" developers planned to present it to the Central Committee of the CPC in January 2020. This suggests they had also planned public elevation of the project would follow, such as publication by the PRC State Council and mentions in top leader speeches at the National People's Congress, originally scheduled to meet March 2020.

- Disruption of government work and postponement of the NPC meeting as a consequence of the coronavirus public health emergency may delay planned rollout of "China Standard 2035" until later.

Implementing "China Standards" is an obligation for PRC enterprises—particularly those operating internationally. They depend on financial support from the state to pursue state-mandated programs.[23] Since they do not need to make a profit-based calculation, they can enter markets that other companies—such as U.S., European, or Japanese—have less interest in.

PRC SOEs are not necessarily "operating at a loss," rather they are able to take on projects without any promise of near-term financial return. Instead, they focus on gaining market share

[21] Zhu Hong, Xian Kuitong, Yang Tian, and Zhang Yurun, "An Initial Examination of China's Standardization of Military-Civil Fusion Developments [我国标准化军民融合发展初探]," *China Standardization*, No. 9, 2018, p. 145.
[22]China News Service reporter Liu Yuying, "National Standards Committee: Currently Setting 'China Standard 2035' [国家标准委：正制定"中国标准2035"]," posted on the website of Xinhua News Agency, January 10, 2018, observed 22 July 2019 at root URL: http://www.xinhuanet.com/fortune/2018-01/10/c_129787658.htm.
[23] "China Export Import Bank "One Belt, One Road" [进出口银行"一带一路"贷款余额已超万亿元] loans already exceed one trillion yuan," The State Council The People's Republic of China, (18 April 2019), observed 26 February 2020 at root URL: http://www.gov.cn/xinwen/2019-04/18/content_5384274.htm

in CPC-designated strategic sectors and regions. The majority of reported OBOR activity is in energy and transport construction.[24]

- The NDRC and China Development Bank announced on 17 September 2018 the signing of the "Comprehensive Support for Developing the Digital Economy and Developmental Finance Cooperation Agreement" [全面支持数字经济发展开发性金融合作协议] pledging over RMB 100 billion ($14. 57 billion) in investment over the next five years to support big data, IoT, cloud computing, construction of new smart cities, and overall DSR construction.[25]

- PRC enterprises meeting CPC objectives are not necessarily evaluated on accounting profit performance. In November 2018, senior researchers at MIIT's China Academy of Information and Communications Technology (CAICT) introduced a range of actions to accelerate the "going out"—international expansion—of PRC ICT firms and construction of DSR. Proposed actions include developing new assessment policies for PRC telecom companies (e.g., network layout and market share) and removing profit as a key indicator to encourage PRC firms to enter and occupy key markets as part of China's foreign strategy, especially where there is competition with Western countries to secure the dominant position in cyberspace.[26]

The PRC's large key central state-owned enterprises (SOEs) carry out the engineering, procurement, and construction work for these projects, effectively exporting Chinese construction standards in the process.

- Some notable enterprises include State-owned Assets Supervision and Administration Commission (SASAC) SOEs such as the China Communication Construction Company—known internationally through the work of its subsidiaries China Harbour Engineering and China Road and Bridge—China Railway Engineering, China Railway Construction, and Power Construction Corporation, better known through its subsidiary Sinohydro.

[24] "Chinese Global Investment Tracker", AEI, (undated), observed 26 February 2020 at root URL: https://www.aei.org/china-global-investment-tracker/.
[25] "NDRC and China Development Bank sign Comprehensive Support for Developing the Digital Economy and Developmental Finance Cooperation Agreement [国家发展和改革委员会与国家开发银行签署《支持数字经济发展开发性金融合作协议》]," PRC State Council website, (September 19, 2018), observed January 2, 2019 at http://www.gov.cn/xinwen/2018-09/19/content_5323492.htm
[26] Chen Hui and Dong Jianjun, "Accelerating the Promotion of the One Belt, One Road Information and Communication Industry Going Out [加快推进"一带一路"信息通信业走出去]," CAICT website, (November 14, 2018), observed January 9, 2018 at http://www.caict.ac.cn/kxyj/caictgd/201811/t20181114_188712.htm

Construction is the dominant mode of reported PRC involvement in BRI projects, suggesting that Chinese companies may not have final ownership control over all finished BRI projects.[27] PRC companies are portrayed as builders which will exit upon completion of the construction project. However, in large engineering projects, SOEs often linger, offering maintenance and operation services that promote the adoption of China standards.

- Within the Kenyan Standard Gauge Railway (SGR), for example—"a model project of the BRI"—the Mombasa-Nairobi SGR was constructed by China Road and Bridge Corporation (CRBC) and adopted Chinese standards and technology. China also financed 90 percent of the project."[28] Following the end of the construction, rollingstock company CRRC won a contract to provide the trains and the maintenance for the railway, effectively extending PRC presence on-site and reinforcing Chinese standards for operation in the project.[29]

[27] Derek Scissors, "China's Global Investment in 2019: Going Out Goes Small," AEI, (14 January 2020), observed 26 February 2020 at root URL: https://www.aei.org/wp-content/uploads/2020/01/Chinas-global-investment-in-2019-1.pdf.
[28] "China's train maker to provide maintenance services to Kenya railway," China Daily, (30 September 2017), observed 26 February 2020 at root URL: http://www.chinadaily.com.cn/business/2017-09/30/content_32677633.htm.
[29] "Kenya's new China-built railway carries 150,000 in two months," CRRC, (31 July 2017), observed 26 February 2020 at root URL: https://www.crrcgc.cc/en/g7389/s14333/t287289.aspx.

The PRC makes diplomatic agreements—such as memorandums of understanding—incorporating PRC technical standards extensively within the BRI realm as a major policy component of its action plans. The PRC approach to promoting its standards in major industrial economies such as the United States and Europe also includes participation in standards setting bodies and organizations, discussed further below.

A 2018 strategy briefing by the SAMR CPC Committee's China National Institute of Standardization (CNIS) on "Harmonization of Standards for Construction of 'OBOR'" touts successful inclusion of PRC technical standards in international agreements.[30]

- The CNIS briefing states that the 2018-2020 action plan will promote integration of standardization into bilateral and multilateral cooperation framework agreements on diplomacy, science and technology, commerce, and quality inspection.

- PRC bilateral and multilateral standardization cooperation has made good progress, which cites 45 cooperation documents signed with the national and regional standardization organizations of 32 nations, of which 22 cooperation documents were with countries and regions along the BRI, and 28 countries and regions signed cooperation agreements explicitly promoting mutual recognition of standards.

Target regions and countries for the PRC's standardization goals, specified by the action plan, include:

- Europe, ASEAN, BRICS (Brazil, Russia, India, China and South Africa), Northeast Asia, North America, Africa and Oceania.[31] It also aims to extend regional standardization cooperation channels to countries in Central and Eastern Europe, Central Asia, West Asia and the Middle East.

- To promote international standardization cooperation relating to broadband access and quality, e-commerce, technological skills training, and information and communications technology investment promotion, Beijing secured agreements from at least six countries—

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[30] Li Aixian [李爱仙], SAMR CPC Committee's China National Institute of Standardization (CNIS[中国标准化研究院]): "Harmonization of Standards for Construction of 'OBOR' [标准联通共建"一带一路"]" dated October 2018, observed 26 February 2020 at Google Cache URL: http://webcache.googleusercontent.com/search?q=cache:w5U6nK_n2rAJ:www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx+&cd=1&hl=en&ct=clnk&gl=us]

[31] National Development and Reform Commission [中华人民共和国国家发展和改革委员会]: "Harmonization of Standards for 'OBOR' Action Plan (2015-2017) [标准联通"一带一路"行动计划（2015—2017）]," posted 22 October 2015 observed 26 February 2020 at root URL: https://www.ndrc.gov.cn/fzggw/jgsj/kfs/sjdt/201510/t20151022_1085956.html
See also: "Harmonization of Standards for Jointly Constructing 'One Belt and One Road' Action Plan (2018-2020) [标准联通共建"一带一路" 行动计划（2018-2020年）]," Belt and Road Portal [中国一带一路网], (January 11, 2018), observed December 18, 2018 at root URL: https://www.yidaiyilu.gov.cn/zchj/qwfb/43480.Htm

Laos, Saudi Arabia, Serbia, Thailand, Turkey, and United Arab Emirates—under the "One Belt, One Road" Digital Economy International Cooperation Initiative, which was launched in December 2017.[32]

- The PRC Embassy in Rome participated in the October 2017 Silk Road Digital Connectivity Round Table that brought together diplomatic leaders from Italy and the PRC, including the PRC Ambassador to Italy Li Ruiyu [李瑞宇].[33] At the roundtable, Lu Yiji [鲁乙己] Chairman of the PRC Ministry of Civil Affairs-registered China-Europe Digital Association (ChinaEU; 中欧数字协会)[34] [35]—an organization dedicated to among other things "promoting the establishment of common standards for ICT"—stressed that China and the European Union (EU) must collaborate to promote the development of next-generation technologies. Mr. Lu highlighted that companies such as Alibaba and Huawei are actively seeking new markets in Europe and aim to not only localize operations in Italy, but also present themselves as model examples of successful Sino-Italian cooperation.[36]

In addition to the ostensible incentives of promised technological collaboration and nominally low prices, the PRC may be the only foreign party willing to do business in many BRI countries**.** Such BRI countries stand to gain from building ties to China and working with SOEs because they may be able to start on infrastructure projects otherwise altogether unavailable, or at a lower financial cost than would be possible with other partners. Although the number of BRI

[32]"7 countries jointly agreed to initiate a new chapter in 'Digital Silk Road' cooperation [7国共同发起倡议开启"数字丝绸之路"合作新篇章]," Xinhua News [新华社], (December 3, 2017), observed December 17, 2018 at http://www.xinhuanet.com/world/2017-12/03/c_1122050732.htm

[33]The meeting also convened representatives from large PRC firms such as Huawei, Tencent, and Alibaba. Ambassador Li at the October 2017 roundtable stated that China and Italy should form a strategic partnership to collaborate on the development of new technologies and expand digital economic cooperation. "People from all walks of life in China and Italy: The Sino-Italian 'Digital Silk Road' has broad prospects for construction [中意各国人士：中意"数字丝绸之路"建设前景广阔]," Economic Daily [经济日报], (October 30, 2017), observed December 12, 2018 at https://www.yidaiyilu.gov.cn/xwzx/hwxw/32098.htm; and "The Embassy in Italy hosted the 'Silk Road Digital Interconnection' Round Table [驻意大利使馆举办"丝绸之路·数字互联互通"院周会]," Ministry of Foreign Affairs of the People's Republic of China [中华人民共和国外交部], (October 26, 2017), observed December 12, 2018 at https://www.fmprc.gov.cn/web/zwbd_673032/gzhd_673042/t1504740.shtml; and "New era, new opportunities, speeding up digital interconnection [新时代，新机遇，提速数字互联互通]," Ministry of Foreign Affairs of the People's Republic of China [中华人民共和国外交部], (October 26, 2017), observed December 13, 2018 at https://www.mfa.gov.cn/web/dszlsjt_673036/ds_673038/t1504738.shtml

[34]"China-EU Digital Association (ChinaEU) [中欧数字协会]" China Internet Development Foundation [中国互联网发展基金会], (undated), observed January 15, 2019 at http://www.cidf.net/2015-11/10/c_1117090534.htm

[35]"Introduction to the China Internet Development Foundation [中国互联网发展基金会简介]," China Internet Development Foundation [中国互联网发展基金会], (undated), observed 15 January, 2019 at http://www. cidf. net/jjhjj. htm (Text: ". . . The China Internet Development Foundation (CIDF) is a national public fundraising foundation approved by the State Council and registered with the Ministry of Civil Affairs . . . ")

[36]The meeting also convened representatives from large PRC firms such as Huawei, Tencent, and Alibaba. Ambassador Li at the October 2017 roundtable stated that China and Italy should form a strategic partnership to collaborate on the development of new technologies and expand digital economic cooperation.

partners has more than doubled through the lifetime of the initiative, this hasn't translated into construction projects for every country.

Beijing has developed a long-term strategy that coopts standard-setting bodies to harness the global economy to CPC goals. Beijing action plans and programs have successfully placed PRC personnel into leadership roles in pre-existing international sectoral and technical standards-setting bodies and sectoral associations, as well as creating new entities—which Beijing portrays as having similar sectoral goals—into which it invites foreign government and corporate representatives. This strategy has also heavily recruited organizations and personnel in the U.S.' and U.S. allies' NGO and corporate sectors.

The PRC State Council's 2015 "Plan to Deepen Reform of Standardization Work" spotlights the priority that the CPC and the PRC government places on standards setting and the growing role of PRC personnel in international, national and sectoral standards setting bodies.[37] The plan:

- Calls on PRC entities to "**construct a brand around China standards**" and **mandates integration of PRC standards** into "engineering contracts abroad, major equipment and infrastructure exports, and foreign construction assistance projects…to propel the going out of China's products, technologies, equipment, and services."

- Set forth as goals for 2016 and 2020 to **increase the PRC's "ability to exercise control over international standards-setting**" and tallied PRC interim success in gaining power on international standardization bodies, while also noting that work remained to be done to achieve Beijing's objective.

- Exhorted PRC entities to "aim to play a leading role in the setting of 50% of all international standards by the end of 2016…" so that **by 2020 "the PRC will be in a leading position in more international standards setting organizations**" and "the international influence of China's standards will continually expand."

- The same PRC State Council 2015 plan states that "**China has successively become a permanent member of the ISO and IEC, and member nation in the ITU**." By 2020, PRC personnel serving in these international standards setting bodies' leadership positions

[37] State Council of the PRC [国务院]: "State Council Notice Regarding Promulgation of the Plan to Deepen Reform of Standardization Work, State Council 2015 document number 13 [国务院关于印发深化标准化工作改革方案的通知, 国发〔2015〕13号]", posted on the official website of the PRC government, observed 14 June 2019 at root URL: http://www.gov.cn/zhengce/content/2015-03/26/content_9557.htm

included the top position of each, and many secretary/chairperson person positions for committees in key emerging technologies. For example:

- An SOE vice chairman who had served as the President of the UN's International Organization for Standardization (ISO) during 2015-2017;[38] [39]

- A PRC ICT planner who serves as the Secretary General of ITU, and Huawei and MIIT personnel who serve as committee leaders at the UN International Telecommunications Union (ITU);[40] [41]

[38] The current ISO President is Kenyan Eddy Njoroge. Dr Zhang Xiaogang 张晓刚 of China served as of President of ISO during 2015-2017 according to root URL: https://isotc.iso.org/livelink/livelink/fetch/-15620321/15620323/15620665/ISO_past_Officers.pdf?nodeid=18595424&vernum=-2；Dr Zhang is/was a Vice Chair of key central SOE Ansteel (#32 SASAC SOE 鞍钢集团有限公司), and the "China Standardization Expert Committee" (CSEC), and chaired and ISO technical committee for 13 years, according to root URL: https://www.chinadaily.com.cn/m/qingdao/2017-06/23/content_29862586.htm

[39] Li Aixian [李爱仙], SAMR CPC Committee's China National Institute of Standardization (CNIS[中国标准化研究院]): "Harmonization of Standards for Construction of 'OBOR' [标准联通共建"一带一路"]" dated October 2018, observed 26 February 2020 at Google Cache URL: http://webcache.googleusercontent.com/search?q=cache:w5U6nK_n2rAJ:www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx+&cd=1&hl=en&ct=clnk&gl=us [observed 26 February 2020at root URL: http://www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx.

[40] The International Telecommunications Union (ITU) is under the UN. PRC experts in ITU key roles include:

- ITU Secretary-General Houlin Zhao [赵厚麟], an ICT engineer who previously worked at the PRC's Designing Institute of the Ministry of Posts and Telecommunications. "Biography – Houlin Zhao, ITU Secretary-General," International Telecommunications Union (ITU) official website, (undated), observed March 7, 2019 at root URL https://www.itu.int/en/osg/Pages/biography-zhao.aspx
- Huawei USA Future Networks Chief Scientist Renwei (Richard) Li is the Chairman of the ITU Focus Group on Technologies for Network 2030. "FG NET-2030," International Telecommunications Union (ITU) official website, (undated), observed March 7, 2019 at root URL: https://www.itu.int/en/ITU-T/focusgroups/net2030/Pages/ default.aspx
- Chairman of ITU-T's SG16 Noah Luo is a senior standards and strategic expert at Huawei in the UK where he concurrently serves as the Director of Huawei's Department of Industry and Standards for Western Europe. "Luo Noah," International Telecommunications Union (ITU) official website, (undated), observed March 7, 2019 at root URL https://www.itu.int/en/ITU-T/Workshops-and-Seminars/ bigdata/Pages/LUONoah.aspx
- Yang Xiaoya—who serves as the head of the World Telecommunication Standardization Assembly (WTSA) Programmes Division, as well as an ITU councilor for numerous ITU-T study groups--previously worked as a division director for Internet regulation and information security at MIIT from 1998 to 2004. "Yang Xiaoya," International Telecommunications Union (ITU) official website, (undated), observed March 7, 2019 at root URL: https://www.itu.int/en/ITU-T/Workshops-and-Seminars/ bsg/082014/Pages/YANGXiaoya.aspx

[41] Li Aixian [李爱仙], SAMR CPC Committee's China National Institute of Standardization (CNIS[中国标准化研究院]): "Harmonization of Standards for Construction of 'OBOR' [标准联通共建"一带一路"]" dated October 2018, observed 26 February 2020 at Google Cache URL: http://webcache.googleusercontent.com/search?q=cache:w5U6nK_n2rAJ:www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx+&cd=1&hl=en&ct=clnk&gl=us

  - An SOE CPC Party Committee Chairman (and CEO) was the VP—and is now the President—of the IEC.[42] [43]

- CNIS provides the "chairman, secretary and convener of 30 international technical institutions," supports 63 PRC units in their capacity as "technical counterparts" to ISO, and leads the development of 49 international ISO standards, according to the CNIS "introduction" posted on its website.[44]

- CNIS claimed in its previous—now defunct—introduction that its representatives provide services "as vice-chair, secretary, and 22 key duties in the ISO technology committee [or committees]" (see comments in footnote).[45] [46] CNIS also claimed to be involved with "36 standards projects such as energy conservation, statistics technology, human work efficiency, graphics symbology, information technology, technical terms, language training service, and emergency security" in the ISO.[47]

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[42] At the 83rd IEC conference during October 2019 in Shanghai, a Massachusetts attorney who had served as the IEC president during 2016-2019—was succeeded in that role by Shu Yinbiao [舒印彪]—the Chairman of the Communist Party Committee and CEO [党组书记 董事长] of PRC SASAC's number sixteen central state-owned enterprise (SOE) "China Huaneng Group Co., Ltd. [中国华能集团有限公司]." See: "IEC Blog" and "About the IEC –Who We Are—Officers" pages on the organization's official website, the IEC (International Electrotechnical Commission), observed 12 November 2019 at root URLs: https://blog.iec.ch/2019/10/iec-general-meeting-set-to-open-in-shanghai/ and https://www.iec.ch/about/ profile/officers.htm; and see: "About Us > Our Enterprise [关于我们 > 我们的企业]" and "About Us > Our Leadership Team [关于我们 > 我们的领导团队]" on the official website of "China Huaneng Group Co., Ltd., [中国华能集团有限公司]" in Chinese vernacular, observed 12 November 2019 at root URLs: http://www.chng. com.cn/n31529/index.html and http://www.chng.com.cn/ n31529/n31555/index.html

[43] Li Aixian [李爱仙], SAMR CPC Committee's China National Institute of Standardization (CNIS[中国标准化研究院]): "Harmonization of Standards for Construction of 'OBOR' [标准联通共建"一带一路"]" dated October 2018, observed 26 February 2020 at Google Cache URL: http://webcache.googleusercontent.com/search?q=cache:w5U6nK_n2rAJ:www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx+&cd=1&hl=en&ct=clnk&gl=us

[44]CNIS website "CNIS Introduction" [中国标准化研究院简介], China National Institute of Standardization homepage, undated, observed 31 July 2019 at root URL: https:// www.cnis. ac.cn/bygk/byjj/

[45] CNIS website "Institute Introduction" [本院介绍], China National Institute of Standardization homepage, undated, observed 31 May 2019 at root URL: http://www.cnis.gov. cn/ bzygk/byjs/ but defunct as of 31 July 2019. [Original text: "承担了国际标准化组织(ISO)的技术委员会副主席、秘书等22个关键职务，并在节能、统计技术、人类工效、图形符号、信息技术、术语、语言培训服务、应急安全等领域主持制定ISO标准36项。"].

[46]This reference did not specify which "technology committee" (or plural committees) are the ones that CNIS served in. The ISO maintains 324 technical committees, each focused on a particular type of product or service. "Technical Committees," International Organization for Standardization, undated, observed 7 July 2019 at root URL: https://www.iso.org/technical-committees.html

[47] CNIS website "Institute Introduction" [本院介绍], China National Institute of Standardization homepage, undated, observed 31 May 2019 at root URL: http://www.cnis.gov. cn/ bzygk/byjs/ but defunct as of 31 July 2019.

Pointe Bello

- According to an October 2018 strategy briefing by the CNIS on "Harmonization of Standards for Construction of 'OBOR'":[48]
  - 67 PRC personnel acted as ISO and IEC technical agencies' chairman or vice chairman.
  - 85 PRC personnel supported the ISO and IEC (including SC) secretariat.
  - The PRC published 425 ISO or IEC international standards.
  - The PRC proposed 750 ISO or IEC international standards.
  - Nearly 500 PRC personnel served as registered international standardization experts.

- Beijing also has targeted U.S. standards institutions—such as the US Department of Commerce National Institute of Standards and Technology (NIST)[49] and the U.S. public-private partnership American National Standards Institute (ANSI).[50]

- During 2009 The US Department of Commerce and AQSIQ (SAMR predecessor) signed, and in 2016 updated, a NIST-SAC collaboration protocol.[51] NIST works closely with ANSI, including on projects involving PRC institutions and persons.[52]

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[48] Li Aixian [李爱仙], SAMR CPC Committee's China National Institute of Standardization (CNIS [中国标准化研究院]): "Harmonization of Standards for Construction of 'OBOR' [标准联通共建"一带一路"]" dated October 2018, observed 26 February 2020 at Google Cache URL: http://webcache.googleusercontent.com/search?q=cache:w5U6nK_n2rAJ:www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx+&cd=1&hl=en&ct=clnk&gl=us

[49] NIST—first established in 1901 as a bureau of measurement standards or metrology—today is a U.S. Department of Commerce laboratory with a mission to promote U.S. innovation and industrial competitiveness by advancing measurement science, according to the NIST website. "NIST Mission, Vision, Core Competencies, and Core Values" observed 1 November 2019 at root URL: https://www.nist.gov/about-nist/our-organization/ mission-vision-values

[50] ANSI—originally founded in 1918 by the U.S. War Department, U.S. Navy, U.S. Commerce Department and five American engineering associations–today is the main NGO standards coordinating body in the United States, is a crossroads for public and private sectors, and represents U.S. interests in key global standards bodies, according to the ANSI website. "The ANSI Federation is comprised of government agencies, organizations, corporations, academic and international bodies, and individuals. In total, the Institute represents the interests of more than 125,000 companies and 3.5 million professionals." See ANSI official website: "About ANSI" observed 30 October 2019 at root URL: https://www.ansi.org/about_ansi/overview/overview?menuid=1

[51] NIST official website: "Department of Commerce (DOC) Metrology, Standards and Conformity Assessment Program" posted 21 July 2009 and updated 25 August 2016, observed 2 November 2019 at root URL: https://www.nist.gov/iaao/ department-commerce-doc-metrology-standards-and-conformity-assessment-program

[52] Xinhuanet: "Chinese AI teams win big in global facial recognition competition" posted 21 November 2018, observed 2 November 2019 at root URL: http://www.xinhuanet.com/ english/2018-11/21/c_137622674.htm ; and: Tom Simonite: "Why Chinese Companies Plug a US Test for Facial Recognition" posted 6 March 2019 on WIRED, observed 2 November 2019 at root URL: https://www.wired.com/story/china-earns-high-marks-us-test-facial-recognition/

- ANSI works closely with PRC entities, including a 2017 agreement with SAC to "twin"—sharing leadership of ISO Secretariat roles and chairs of working level technical committees.[53] The ANSI website maintains an English language content behind a pay/membership wall, but provides free-access to Chinese language content.

- ANSI's president/CEO and his Canadian, French, German, and UK counterparts are CPC-appointed members of the SAC's "China Standardization Expert Committee" (CSEC).[54]

- ANSI as of September 2019 has reportedly held 45 conferences in China.[55] The conferences support U.S. government initiatives and U.S. business interests. Indeed, a review of selected conference proceedings reveals that American officials and industry representatives are often sponsors, participants, and speakers.[56]

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[53] "ANSI and SAC Sign Updated MOU, Host Executive Roundtable" posted 16 June 2017 on ANSI's official website, observed 12 November 2019 at root URL: https://www.ansi.org/news_ publications/news_story?menuid=7&articleid=ec6025c2- 387a-45fe-b761-6023181de2ba

"At the conclusion of the meeting, ANSI and SAC signed two agreements. The first was an updated Memorandum of Understanding (MOU). The English version of the signed MOU can be viewed here. The last version was signed in 2002. The updates included in the 2017 version reinforce ANSI and SAC's commitment to dialogue on the sidelines of international and regional meetings, as well as regular visits to each other's countries. The MOU also includes new language on information sharing and reinforces ANSI's commitment to facilitating cooperation between ANSI members, SAC, and other Chinese standards-related entities. ANSI and SAC also signed a "twinning" agreement, in which they agreed to share the role of Secretariat for International Organization for Standardization (ISO) Technical Committee (TC) 301, Energy Management and Energy Savings. The agreement reflects a partnership that has been in place since February 2016."

[54] See http://www.aqsiq.gov.cn/zjxw/zjxw/zjftpxw/201609/ t20160914_474066.htm; and https://www.ansi.org/news_ publications/news_story?menuid=7&articleid=a94c3165- 6eed-4a77-aead-f8a9f6585859. Note also that CSEC serves as the Chinese government's highest-level expert group on standardization work, according to an authoritative source. CSEC's official mission is to "Implement the CPC's and the nation's decisions regarding standardization work...and implement China's Standardization Strategy" according to the SAMR official website, observed 15 September 2019 at root URL: http://www.aqsiq.gov.cn/zjxw/ zjxw/zjftpxw/201609/t20160914_474066.htm

[55] ANSI official website, observed 15 September 2019 at root URLs: https://standardsportal.org/usa_en/toolbox/us_chinasccp.aspx; https://standardsportal.org/usa_en/toolbox/ proceedings-news-us-china-phase-4.aspx; https://www.standardsportal.org/usa_en/toolbox/proceedings-news.aspx#Proceedings-from-Phase-III

[56]For example, see ANSI official website, observed 15 September 2019 at root URL: https://share.ansi.org/Shared%20Documents/Standards%20Activities/International%20 Standardization/Regional/Staff/LMM/SCCP%20Materials/Networking%20Workshop%20on%20Energy%20Performance%20Contracting%20(EPC)%20Proceedings.pdf; ANSI official website, observed 15 September 2019 at root URL: https://share.ansi.org/Shared%20Documents/Standards%20Activities/International%20Standardization/ Regional/Staff/LMM/SCCP%20Materials/U.S.-China%20Green%20Data%20Center%20and%20Big%20Data%20Industry%20Development%20Summit.pdf; https://share.ansi.org/Shared%20Documents/Standards%20Activities/International%20Standardization/Regional/Staff/LMM/SCCP%20Materials/U.S.-%20China%20Medical%20Devices%20 Workshop.pdf; and ANSI official website, observed 15 September 2019 at root URL: https://share.ansi.org/Shared%20Documents/Standards%20Activities/International%20 Standardization/Regional/Staff/LMM/SCCP%20Materials/Sino-U.S.%20Smart%20Green%20Infrastructure%20Cooperation%20Forum%20Proceedings%208.30.pdf

- Most (if not all) of the ANSI China conference topics fall into categories highlighted by Beijing's "Made in China 2025" strategy, the PRC Standardization Law, and China's national standardization plans.[57]

- For example, conference topics have included healthcare, environmental protection, logistics and transportation, energy, electronics, cognitive computing, hybrid micro grids, and smart infrastructure and food safety.[58]

PRC entities also participate in specific industry and sectoral associations which may contribute to the development of standards. For example, the development of the industrial Internet (II) and the industrial Internet of Things (IIoT) is taking place with a high degree of international interaction and openness on the part of participants based in the U.S. and its allies, on the assumption of a globally open market, but thereby giving the PRC entities access to the efforts and processes of U.S. and allies' government agencies, firms, and standard-setting bodies.

- The multinational association "Industrial Internet Consortium" (IIC) was founded in March 2014 "to bring together the organizations and technologies necessary to accelerate the growth of the Industrial Internet by identifying, assembling and promoting best practices," according to the IIC's "about us" webpage.[59]

- "Founding and contributing members" of the IIC include Bosch, Dell, EMC, GE, Huawei, Microsoft, and the Purdue University College of Engineering, according to the IIC's "member directory" webpage.[60] Over 200 U.S. and non-U.S. entities are listed in the association's full "Member Directory."

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[57]See "Made in China 2025 (中国制造2025)," PRC State Council, posted May 8, 2015, observed 15 September at root URL: http://www.gov.cn/zhengce/content/2015-05/19/ content_9784.htm; See "Standardization Law of the People's Republic of China (中华人民共和国标准化法)," and Standardization Administration of the People's Republic of China, November 8, 2017, at http://www.sac.gov.cn/sbgs/flfg/fl/bzhf/201711/t20171108_318652.htm; and "Office of the State Council notice regarding release of The National Standardization System Construction Development Plan (2016-2020) (国务院办公厅关于印发国家标准化体系建设发展规划（2016-2020年）的通知)," Office of the State Council, Document 89, 2015, December 17, 2015, , observed 15 September 2019 at root URL: http://www.gov.cn/xinwen/2015-12/30/content_5029624.htm.

[58]ANSI official website, observed 15 September 2019 at root URLs: https://standardsportal.org/usa_en/toolbox/us_chinasccp.aspx; https://www.standardsportal.org/usa_en/toolbox/proceedings-news-us-china-phase-4.aspx; and https://www.standardsportal.org/usa_en/toolbox/proceedings-news.aspx#Proceedings-from-Phase-III

[59] Official website of the Industrial Internet Consortium: "THE INDUSTRIAL INTERNET CONSORTIUM: A GLOBAL NOT-FOR-PROFIT PARTNERSHIP OF INDUSTRY, GOVERNMENT AND ACADEMIA", observed 7 April 2019 at root URL: https://www.iiconsortium.org/about-us.htm

[60] Official website of the Industrial Internet Consortium: "MEMBER DIRECTORY", observed 7 April 2019 at root URL: https://www.iiconsortium.org/members.htm

- The IIC Member Directory lists at least 15 PRC-headquartered entities, which include government entities such as: the PRC Ministry of Industry and Information Technology's (MIIT) strategy research think tank the China Academy of Information and Communication Technology (CAICT), the China Electronics Standardization Institute, and the China Industrial Control Systems Cyber Emergency Response Team (CICS-CERT); PRC university engineering departments; SASAC central state-owned enterprise (SOEs) telecoms such as China Mobile, China Unicom, and China telecom; and "non-state-owned" (but nevertheless CPC-controlled) firms Huawei and Wanxiang.

- At the same time, the IIC Member Directory also lists US government entities and affiliated entities such as the Space and Naval Warfare Systems Center Pacific (SPAWAR, *aka* SPAWAR Systems Center Pacific (SSC Pacific)), and the Oak Ridge National Laboratory.[61] [62]

The majority of new PRC standards appear to be PRC set, not adopted from foreigners. In line with its stated objectives, Beijing grows increasingly determined to use—and have others adopt—its own standards.

The PRC Ministry of Industry and Information Technology (MIIT) standards revision plan published in 2018 overwhelmingly favored and adopted PRC-set standards; less than 2 percent were existing international standards.[63]

- In 2018, Beijing also dedicated nearly one-quarter of its national translation budget to making PRC standards available in foreign languages.[64]

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[61] Official website of the Space and Naval Warfare Systems Command (SPAWAR) observed 14 April 2019 at root URL: https://www.public.navy.mil/spawar/NIWC-Pacific/Pages/default.aspx

[62] Official Website of the Oak Ridge National Laboratory, observed 14 April 2019 at root URL: https://www.ornl.gov/

[63]The "2018 Standard System Revision Plan for the Fifth Batch of Sectors [2018 年第五批行业标准制修订计划]"— published December 2018 by MIIT—lists the planning and management roles for specific branches within MIIT in determining or revising 158 standards in ten major economic sectors; only three of the 158 standards comprised adoption of existing international standards.

[64] According to a report on a Beijing municipal government website, Beijing Chaoyang District participated in the Action Plan II "National Standard Foreign Languages Program" which aims to promote the international recognition of the PRC's technical standards through foreign language translation of those standards. 12 standard translation projects of 5 units including China Building Materials Inspection and Certification Group Co., Ltd., China Leather Shoes Research Institute Co., Ltd. and China Building Science Research Institute Co., Ltd. in Chaoyang District were selected as the first batch of national standard foreign language plans in 2018, and accounted for 23% of the total 51 foreign language tasks in the national plan. Beijing Municipal Government Information Publicity Webpage [北京市政府信息公司专栏]：

PRC engineering enterprises are exporting standards through their construction work. Those PRC enterprises that act as investors, long-term partners, or service providers gain indefinite presence in the target country and have a lot more leeway to promote PRC standards in the long run.

- The mainstay of construction projects are transport and energy. According to the CGIT Chinese companies have won $174 billion of energy contracts and $150 in transportation contracts since October 2013. Within transportation, rail leads at $59 billion, roads and bridges follow closely at $54 billion, and ports at $24 billion. Within energy most of the contracting focuses on hydropower projects at $43 billion followed by coal-fired power plants at $35 billion.

- The sectors that draw the most PRC financing on the investment side are energy at $110 billion followed distantly by metals and transport at $42 billion and $38 billion, respectively. Within energy, coal and oil draw around $21 billion each. PRC companies have also invested in electrical grid services and in some cases, such as the State Grid's investment in the Philippines[65], this activity predates the BRI announcement.[66]

- The PRC is working towards exporting its technical standards in the telecommunications sector as through DSR. Pointe Bello's data shows that Chinese companies are engaged in building fiber optic cables overseas and exporting surveillance technology through initiatives like Huawei's safe cities. [67] [68]

Beijing views its progress in promoting "China Standards" as promising, but likely fears that the window of opportunity may be closing.

"Chaoyang District actively participates in the foreign language work for "Harmonization of Standards for Jointly Constructing 'One Belt and One Road' Action Plan' [朝阳区积极参与国家标准外文版工作助力标准联通共建"一带一路。]" observed 25 January 2019 at root URL: http://zfxxgk.beijing.gov.cn/11E028/zwxw52j/2018-08/24/content_2ffd43229fc04d8eb073509e0669e 699.shtml

[65] http://www.sgcc.com.cn/html/sgcc_main_en/col2017112406/2019-12/24/20191224113952191413189_1.shtml
[66] "State Grid Corporation of China Granted 25 Years-Franchise of National Grid of the Philippines," State Grid Corporation of China, (18 January 2009), observed 26 February 2020 at root URL: http://www.sgcc.com.cn/ywlm/gsyw-e/183534.shtml.
[67] "Cambodia grants rights to Chinese firm to build submarine cables, landing station," People's Daily, (2 March 2016), observed 26 February 2020 at root URL: http://en.people.cn/n3/2016/0302/c90883-9024154.html.
[68] "New Safe City Technology Safeguards the Colón Free Trade Zone in Panama," Huawei, (undated), observed 26 February 2020 at root URL: https://e.huawei.com/us/case-studies/industries/2019/new-safe-city-technology-safeguards-colons-free-trade-zone-in-panama.

Beijing's standards campaign advances the IDDS and related policies to acquire and control technology further by giving Beijing control over the technical standards which ultimately govern key markets. Beijing appears to be encouraged by the sometimes successes of its IDDS in acquiring and expropriating ICT and other emerging technologies and applications from the U.S. and its allies.

- The director of SAC's Industrial Standards Second Department, Dai Hong [戴红], stated that international technology R&D and patents arrangements are "incomplete" and that globalized technology standards are still being settled upon, according to the China News Service (CNS) report "China Standard 2035." [69] Dai said "this presents China with an opportunity to have its industries and technology standards maneuver around and race ahead of competitors."

- "5G critical components" are among the target areas particularly promising for China "to realize transcendence"—along with artificial intelligence, big data, cloud computing, integrated circuits, artificial reality, smart health and elderly care, logistics networks, Internet of Things, and solar photovoltaic technology—according to the CNS report."

- The PRC has built up a lead in 5G, capturing large shares of the global infrastructure market and the related patents. 5G lies at the center of the future technological and industrial world, in which ICT and networks will no longer merely be for communication, but will increasingly become the central nervous systems of all of the information technology industrial revolution to come. As the world's ICT and networks become dependent on PRC technology, Beijing acquires the capability to shut countries off from technology and equipment upon which their consumers and industry depend. The same can be said for the flow of communications, goods and other services, including scientific and medical developments.[70]

- U.S. power exercised today through its sponsorship of consensual global economic governance as well as sanctions and global financial systems will pale by comparison to the leverage the PRC's technical standards-controlled capabilities could exercise in this future,

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[69]China News Service reporter Liu Yuying, "National Standards Committee: Currently Setting 'China Standard 2035' [国家标准委：正制定"中国标准2035"]," posted on the website of Xinhua News Agency, January 10, 2018, observed 22 July 2019 at root URL: http://www.xinhuanet.com/fortune/2018-01/10/c_129787658.htm. China News Service (CNS also sometimes referred to as China News Agency CNA [中国新闻社，简称"中新社"]) is a Beijing-based state-run news agency in China charged by Beijing with broadcasting to Chinese language audiences both domestically in the PRC and worldwide as its main task, according to its "about us" observed 22 July 2019 at root URL: http://www.chinanews.com/common/footer/aboutus.shtml

[70] William Barr, U.S. Attorney General: "China Initiative Conference Keynote Address" *Center for Strategic & International Studies*, posted and observed 6 February 2020 at root URL: https://csis-prod.s3.amazonaws.com/s3fs-public/event/200206_Keynote_Address_William_Barr.pdf?R0G7Wa05hL6kbqX1kEtOrjp2udfcK8id

with the ability to access technologies and infrastructures worldwide wired or programmed into PRC-provided or processed equipment and technologies worldwide.

- The issue is not just one of cybertechnology, however, but extends to most realms of the economy because IT is increasing pervasive in goods and services, not only in the consumer sector but in industrial goods, services and commerce across the board. Consider the railway industry—an apparently traditional heavy industrial good but one we still rely heavily on. Beijing already promotes state-controlled railway enterprises through subsidies, as well as through trade barriers, allowing CCCC, CRRC and other PRC companies to underbid others overseas. If the PRC also determined technical standards for railway rolling stock and rail infrastructure globally—both physical hardware and ICT—it would significantly increase Beijing's ability to monopolize relevant markets—as "Made in China 2025" calls for—by either denying other suppliers access to physical equipment and technologies or by charging high premiums for access.[71]

- The threat extends beyond the U.S. and its allies' companies, however. Monopoly also becomes a national security matter when sectors such as rail are integrated into smart manufacturing and logistics infrastructure. Violations of U.S. company IPR, and the security of supply chains and information are guaranteed by Beijing's cybersecurity and counterespionage laws, which require all firms operating in or with connections to the PRC to share any information with the PRC government when requested and to share source codes with Beijing security authorities. These threats apply generally across information and communications technology, sectors.[72]

Beijing is aware of these national security implications and is concerned that the United States and its allies are growing wary of its strategy and tactics. For these reasons, Beijing is likely concerned that the PRC's window of opportunity to utilize standards setting to steal the technology lead from Washington and its allies may be closing.

- "The 'China standards threat theory' becomes more obvious by the day" and "presents one of the PRC's key challenges" warns the 2018 strategy briefing by the SAMR CPC Committee's China National Institute of Standardization (CNIS) on "Harmonization of Standards for Construction of 'OBOR'".[73]

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[71] Pointe Bello: "PB Insights: China Standard 2035: Beijing's plan to dictate global market, IT through *standards*" posted 24 December 2019, observed 20200303 at root URL: https://www.pointebello.com/briefs/china-standard-2035/
[72] Pointe Bello: "PB Insights: China Standard 2035: Beijing's plan to dictate global market, IT through *standards*" posted 24 December 2019, observed 20200303 at root URL: https://www.pointebello.com/briefs/china-standard-2035/
[73] Li Aixian [李爱仙], SAMR CPC Committee's China National Institute of Standardization (CNIS[中国标准化研究院]): "Harmonization of Standards for Construction of 'OBOR' [标准联通共建"一带一路"]" dated October 2018, observed 26 February 2020 at Google Cache URL: http://webcache.googleusercontent.com/search?q=cache:w5U6nK_n2rAJ:www.china-cas.org/u/cms/www/201811/08213922tqdp.pptx+&cd=1&hl=en&ct=clnk&gl=us

Pointe Bello

Alphabetic Glossary of Acronyms: PRC

BRI	*Belt and Road Initiative* [一带一路][74]
CAE	*Chinese Academy of Engineering* [中国工程院]
CAICT	*China Academy of Information and Communications Technology* [中国信息通信研究院], subordinate to the MIIT
CMC	*Central Military Commission* [中央军事委员会][75]
CNIS	*China National Institute of Standards* [中国标准化研究院][76]
CPC	*The Communist Party of China* [中国共产党][77]
CRBC	*China Road and Bridge Corporation* [中国路桥工程有限责任公司]
CRRC	*CRRC Corporation Limited* [中国中车股份有限公司]
CSEC	*China Standardization Expert Committee* [中国标准化专家委员会] [78]
DSR	*Digital Silk Road* [数字丝绸之路]
IDDS	*Innovation Driven Development Strategy* [创新驱动发展战略][79]

[74] Beijing originally deemed the BRI the "One Belt One Road" (OBOR) strategy. OBOR is a more literal translation of the Mandarin Chinese vernacular [一带一路] than is BRI.

[75] The military commission of the CPC Central Committee.

[76] CNIS is subordinate to SAMR.

[77] The English appellation "Communist Party of China" is the grammatically accurate translation—as well as the official PRC translation—of 中国共产党, which is the vernacular Mandarin Chinese name for the political party that controls the PRC. The unfortunately common misusage "Chinese Communist Party" reflected by "CCP" is neither an accurate translation nor the PRC party's self-designated name in English.)

[78] "China Standardization Expert Committee" (CSEC [中国标准化专家委员会]). CSEC serves as the Chinese government's highest-level expert group on standardization work. The committee's official mission is to "Implement the CPC's and the nation's decisions regarding standardization work...and implement China's Standardization Strategy" according to the SAMR official website, observed 15 September 2019 at root URL: http://www.aqsiq.gov.cn/zjxw/zjxw/zjftpxw/201609/t20160914_474066.htm

[79] Innovation Driven Development Strategy (IDDS [创新驱动发展战略]); Xinhua News Agency [新华社]: "The Central Committee of the Communist Party of China and the State Council Issue the 'Outline of the National Innovation Driven Development Strategy' [中共中央 国务院印发《国家创新驱动发展战略纲要》]," posted 19 May 2016, observed 2 March 2020 at root URL: http://www.xinhuanet.com//politics/2016-05/19/c_1118898033.htm

MCF	*Military-Civil Fusion* [军民融合] [80]
MIC2025	*Made in China 2025* [中国制造2025] [81]
MIIT	*Ministry of Industry and Information Technology* [工业和信息化部]
MOST	*Ministry of Science and Technology* [中华人民共和国科学技术部英语][82]
NPC	*National People's Congress* [全国人民代表大会]
OBOR	*One Belt One Road* [一带一路][83]
PLA	*People's Liberation Army* [中华人民共和国解放军]
PRC	*People's Republic of China* [中华人民共和国]
SAC	*Standards Administration of the PRC* [国家标准化管理委员会][84]
SAMR	*State Administration for Market Regulation* [国家市场监督管理总局]
SASAC	*State-owned Assets Supervision and Administration Commission* [国有资产监督管理委员会], subordinate to the State Council
SOE	*State-owned enterprise* [国有企业]

[80] Qiushi Magazine [求是杂志]: "What does Xi Jinping say about 'MCF' [关于"军民融合"，习近平怎么说]" posted 16 March 2018, observed 3 March 2020 at root URL: http://www.qstheory.cn/zhuanqu/rdjj/2018-03/16/c_1122547199.htm Note that MCF is one of the "Seven major strategies for building a well-off society in an all-around manner."

[81] "Made in China 2025:" is the program of action for the first decade of Beijing's' implementation of its "manufacturing power strategy [制造强国战略]." See "Made in China 2025 [中国制造2025]," PRC State Council, posted May 8, 2015, observed 15 September at root URL: http://www.gov.cn/zhengce/content/2015-05/19/content_9784.htm

[82] http://www.most.gov.cn/

[83] Beijing originally deemed the BRI the "One Belt One Road" (OBOR) strategy. OBOR is a more literal translation of the Mandarin Chinese vernacular [一带一路] than is BRI.

[84]The Standards Administration of the PRC (SAC; [国家标准化管理委员会]) serves as the flagship for coordinating the development of the PRC's industrial and commercial standards and representing Beijing's interests in standards internationally. According to SAC's official website, "…the SAMR has retained SAC's brand. In the name of SAC, the National Standards Plan will be issued, national standards will be approved, and important documents such as standardization policies, management systems, plans, and announcements will be reviewed and issued; external reporting of mandatory national standards will be carried out; coordination, guidance, and supervision will be conducted for industry, localities, and group and enterprise standards work; [SAC will] participate in the International Organization for Standardization, International Electrotechnical Commission and other international or regional standardization organizations on behalf of the state; undertake the signing of relevant international cooperation agreements; and undertake the daily work of the State Council standardization and coordination mechanism." Official SAC website in vernacular Chinese: "Organization Responsibilities [机构职责]," observed 30 July 2019 at root URL: http://www.sac.gov.cn/zzjg/jgzz/

Alphabetic Glossary of Acronyms: Technical and Non-PRC

ANSI	*American National Standards Institute*[85]
ASEAN	*Association of South East Asian Nations*
BRICS	*Brazil, Russia, India, China and South Africa*
CGIT	*China Global Investment Tracker* [American Enterprise Institute and Heritage Foundation joint endeavor]
ICT	*information and communication technology*
IEC	*International Electrotechnical Commission* [86]
IP(R)	*intellectual property (rights)*
ISO	*International Organization for Standardization*[87]
ITU	*International Telecommunications Union, a UN organization*[88]

[85]ANSI-administered and sponsored website StandardsLearn. Org: "Introduction to Standards" online course, observed 1 November 2019 posted at root URL: https://www.standardslearn.org/introtostandards.aspx
More than 100 years ago, the US government established the standards agencies which evolved into the public-private partnerships which set and accredit standards of concern to the U.S. today. According to ANSI training materials, today there are more than 100,000 recognized standards in the US alone, including voluntary, de facto, consortia, regulatory, and other types of standards. Among voluntary standards there are product-based, performance-based, management system, and personnel certification standards.

[86] According to the "About the IEC" page on the organization's official website, the IEC (International Electrotechnical Commission)— founded in 1906—is the "world's leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies. These are known collectively as "electrotechnology". IEC provides a platform to companies, industries and governments for meeting, discussing and developing the International Standards they require. All IEC International Standards are fully consensus-based and represent the needs of key stakeholders of every nation participating in IEC work. Every member country, no matter how large or small, has one vote and a say in what goes into an IEC International Standard. The IEC is also the world's leading organization that prepares and publishes International Standards for all electrical, electronic and related technologies. Close to 20 000 experts from industry, commerce, government, test and research labs, academia and consumer groups participate in IEC Standardization work. . . . The IEC is one of three global sister organizations (IEC, ISO, ITU) that develop International Standards for the world. When appropriate, IEC cooperates with ISO (International Organization for Standardization) or ITU (International Telecommunication Union) to ensure that International Standards fit together seamlessly and complement each other. Joint committees ensure that International Standards combine all relevant knowledge of experts working in related areas." Observed 31 July 2019 at root URL: https://www.iec.ch/about/?ref=menu

[87] According to the "All about ISO" description on the organization's official website, the Geneva, Switzerland-based International Organization for Standardization (ISO) is "an independent, non-governmental international organization with a membership of 164 national standards bodies," observed 31 July 2019 at root URL: https://www.iso.org/ about-us.html.

[88] According to the "About the ITU" page on the organization's official website, the International Telecommunications Union (ITU) ". . . is the United Nations specialized agency for information and communication technologies – ICTs. Founded in 1865 to facilitate international connectivity in communications networks, we allocate global radio spectrum and satellite orbits, develop the technical standards that ensure networks and technologies seamlessly interconnect, and strive to improve access to ICTs to underserved communities worldwide. Every time you make a phone call via the mobile, access the Internet or send an email, you are benefitting from the work of ITU. ITU is committed to connecting all the world's people – wherever they live and

SGR *Standard gauge railway*

whatever their means. Through our work, we protect and support everyone's right to communicate," observed 15 February 2020 at root URL: https://www.itu.int/en/about/Pages/default.aspx

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