



VOLUME 21 • ISSUE 15 • JULY 30, 2021

IN THIS ISSUE:

Historic Chinese Flooding Highlights Outstanding Infrastructure Problems

By Elizabeth Chen.....pp. 1-5

Xi Jinping Issues Tough Warnings to Enemies Within the Party

By Willy Wo-Lap Lam.....pp. 6-10

What the 2020 Chinese Census Tells Us About Progress in Hukou Reform

By Kam Wing Chan.....pp. 11-17

Recent Trends in Sino-Israeli Relations Bely Lasting Warm Ties

By William Figueroa.....pp. 18-23

China's Hypersonic Missiles: Methods and Motives

By Richard Weitz.....pp. 24-29

Historic Chinese Flooding Highlights Outstanding Infrastructure Problems

By Elizabeth Chen

Beginning on July 18, Henan Province saw record levels of flooding that state officials described as a “once in 5,000 year event,” ([PRC Ministry of Water Resources](#), July 21). Road tunnels and subways flooded in the provincial capital of Zhengzhou (郑州), which also experienced Internet, power and water shortages as well as disruptions to air and rail transit links. Smaller cities such as Weihui (卫辉), Xinxiang (新乡), Hebi (鹤壁) and Anyang (安阳) also faced historic mudslides and flooding ([Yicai](#), July 26). The heavy rains followed flooding in central and southern China during June and early July that displaced thousands ([South China Morning Post](#), July 11; [PRC Ministry of Emergency Management](#), July 12). Chinese Communist Party (CCP) General Secretary Xi Jinping issued “important instructions” (重要指示, *zhongyao zhishi*) for flood prevention and disaster relief work on July 21 ([Xinhua](#), July 21), and Premier Li Keqiang hosted a video conference to coordinate flood relief and prevention efforts on July 26 ([Gov.cn](#), July 26).

As Typhoon In-fa (烟花, *yanhua*) made landfall in China on July 26, the National Development and Reform Commission (NDRC) issued an “Emergency Notice on Strengthening the Safety Protection of Important Urban Infrastructure” ([关于加强城市重要基础设施安全防护工作的紧急通知], *Guanyu jiaqiang chengshi zhongyao jichu sheshi Anquan fanghu gongzuo de jinji tongzhi*) ([Beijing Evening News](#), July 27). On July 26, the Ministry of Water Resources warned that “the flood control and flood fighting situation is grim” along the Yangtze River as In-fa was anticipated to move south from China’s northeast provinces over the weekend, sparking concerns that the heavy rainfall that has now affected 27 of China’s 31 provinces could lead to a “black swan” disaster ([Mwr.gov.cn](#), July 26; [SupChina](#), July 27).

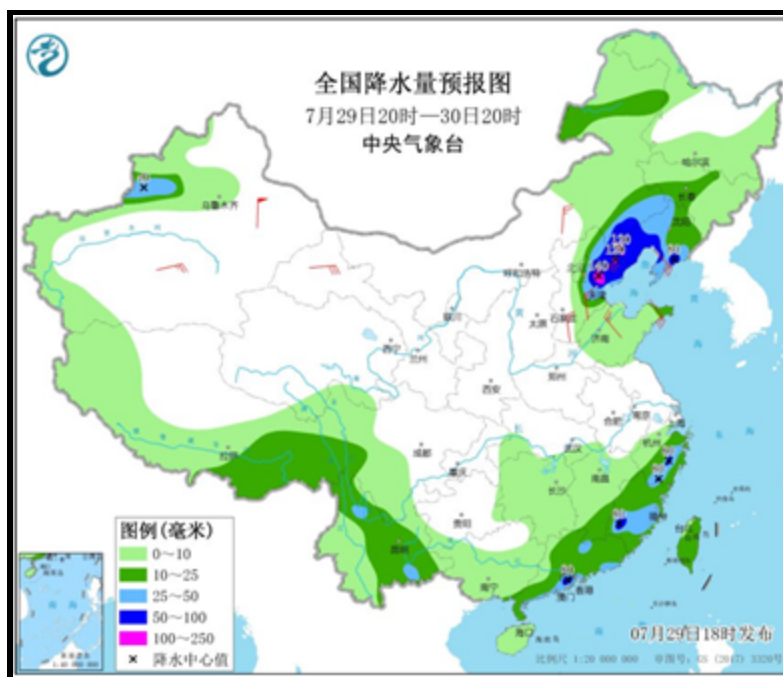


Image: A precipitation forecast for July 29-30, 2021 predicts heavy rainfall (blue/purple) across northeastern China as Typhoon In-fa makes land. 27 out of 31 provinces have suffered from record-breaking floods, leading to worries about water and food security as well as infrastructure concerns (Source: [PRC National Meteorological Center](#)).

On July 29, state media reported that more than 13.9 million people across 150 counties in Henan had been affected. Ninety-nine people were reported killed in the ongoing disaster, with more still missing as of the time of writing. At least 1.47 million people were resettled and the area of affected crops grew to 1.05 million hectares (2.6 million acres). Estimated direct economic losses reached 91 billion RMB (\$14 billion) ([Chinanews.com](#), July 29). Experts worried that the historic flooding could affect corn and vegetable harvests (but not grain harvests, which were already completed), as well as impacting pig farming in the heavily agricultural region, although Chinese analysts remained sanguine that consumer prices would remain stable in the long run ([South China Morning Post](#), July 27). Some also raised concerns about the possibility of

disease outbreak after the rains killed more than a million animals across 1,678 large scale farms throughout Henan Province ([Agriculture.com](https://www.agriculture.com), July 29).

Response

In what has now become a familiar playbook for disaster response, state propagandists took pains to emphasize the leading role of the CCP and especially Xi Jinping in coordinating flood prevention and relief efforts ([People's Daily Online](https://www.peoplesdaily.com), July 28; [China Youth Daily](https://www.chinayouthdaily.com), July 29). David Bandurski of the China Media Project observed that early party-state media coverage of flood response reporting tended to foreground Xi's "important instructions" (重要指示, *zhongyao zhishi*), and almost entirely sidelined Li Keqiang's "written comments" (批示, *pishi*), marking a potentially significant break from tradition that underscores Xi's growing centralization of power ([China Media Project](https://chinamedia.org), July 21).

By July 20, the Central Theater Command had dispatched 3,200 troops, including armed police and militia, to aid in emergency relief efforts across 10 locations throughout Henan Province ([Global Times](https://www.globaltimes.com), July 21). As of July 28, a total of 46,000 personnel from the People's Liberation Army and the People's Armed Police had been mobilized, along with 61,000 militia members. An additional 4,000 firefighters and other rescue personnel from 12 provinces had arrived in Henan to assist in disaster relief efforts, along with more than 1,800 personnel from state-owned enterprises such as China Aneng and China Power Construction ([Global Times](https://www.globaltimes.com), July 29). The Ministry of Finance announced that it would allocate 3 billion RMB (\$464.2 million) from central government funds for recovery and reconstruction efforts ([Gov.cn](http://gov.cn), July 28). Private enterprises—including technology companies such as Alibaba, Tencent, ByteDance and Meituan—also rushed to donate more than 1.5 billion RMB (\$232.1 million) to aid disaster relief efforts in Henan ([Cppcc.china.com.cn](https://www.cppcc.china.com.cn), July 22).

Both foreign and domestic media documented the creative grassroots responses to flooding in Zhengzhou. A Tencent Docs spreadsheet that allowed users to post the locations of those in need of aid went viral and quickly evolved to provide information about emergency shelter locations as well as safety tips and a section where netizens could share encouragements ([Tencent](https://www.tencent.com), accessed July 29). State media also emphasized the novel use of technology in rescue efforts, in particular noting how emergency pontoon bridges and amphibious rescue vehicles; satellites phones; and drones aided disaster relief efforts. Following power outages in Mihe (米河) town, which was severely affected by flooding, the Wing Loong 2-H (翼龙-2H) emergency relief drone manufactured by the Aviation Industry Corporation of China (AICC) were used to temporarily restore 4G and 5G telecommunications services ([Protocol](https://www.protocol.com), July 22; [Xinhua](https://www.xinhua.com), July 27).

'Urban Waterlogging'

Discussions in the wake of the week's disasters quickly zeroed in on the growing risks of "urban waterlogging" (城市内涝, *chengshi neilao*), in which cities with insufficient drainage systems or too much

underground construction are particularly susceptible to flood risks ([Xinhua](#), July 1). To combat this, China piloted so-called “sponge cities” (海绵城市, *haimian chengshi*) that could theoretically absorb more water and ameliorate flood risks. Following the development of a “Zhengzhou Sponge City Special Plan (2017-2030)” ([郑州市海绵城市专项规划 (2017-2030年)], *Zhengzhou shi haimian chengshi zhuanxiang guihua*) the city aimed to invest 53.4 billion RMB (\$8.26 billion) to improve water absorption, storage, purification and release capabilities ([RFA](#), July 26). However, after the heavy rainfall last week, one emergency management expert concluded that in Zhengzhou, “underground spaces not only failed to absorb the excess water, they were also among the biggest sources of casualties and property damage” ([Sixth Tone](#), July 23). Flood prevention smart city projects in Zhengzhou also came under criticism after they failed to work as expected ([South China Morning Post](#), July 28). Investigations found that nationally mandated early warning systems either failed or were outright ignored, leading experts to conclude that sponge city programs absent unified urban management and emergency alert systems cannot adequately address the “waterlogging” problem ([Caixin](#), July 27).

Threats to Water Infrastructure

The flood damages were not restricted to Henan Province. On July 1, severe rainfall overflowed first the Yongan (永安) Dam and then the downstream Xinfa (新发) Dam in Morin Dawa Daur, Inner Mongolia, causing more than 16,000 people to be evacuated ([Mwr.gov.cn](#), July 19). The dams had last been reinforced in 2016 ([Sixth Tone](#), July 19). Yihetan (伊何滩) Dam in Luoyang, Henan Province was breached on July 20; state media reported that 75 personnel and 15 vehicles from the 83rd Group Army were dispatched to blast the structure and safely divert the water flow ([Global Times](#), July 21). Five hundred officers and soldiers along with 28 vehicles and 9 emergency flood prevention vessels from the Henan People’s Armed Police were also dispatched to aid dam reinforcements and rescue efforts near Zhongmou County (中牟县), Henan Province, after a tributary of the Yellow River overflowed on the afternoon of July 20 ([Xinhua](#), July 21).

On July 21, state media reported that the reservoirs at Changzhuang (常庄) and Guojiazui (郭家咀) experienced dangerously high conditions but did not collapse ([People’s Daily Online](#), July 21). Notably, Guojiazui sits on the central route of China’s massive South-to-North Water Transfer project; while the Ministry of Water Resources reported that the main canal was safe, it added that it had sent warnings to Beijing, Tianjin and Hebei Province, anticipating additional heavy rainfall to come across northeastern, central, southern, and southwestern China ([South China Morning Post](#), July 21; [Xinhua](#), July 21). An embankment along the Weihe river (卫河) in the Haihe (海河) river system collapsed on July 22 and was not repaired until July 26 ([Xinhua](#), July 26). As of July 28, provincial authorities reported that 4 large reservoirs and 27 medium-sized reservoirs had overflowed ([Chinanews.com](#), July 29). In order to protect downstream areas, Henan Province opened 7 out of 9 flood storage and detention areas (蓄滞洪区, *xu zhi hong qu*), using a strategy that one expert describe as “sacrificing local interests [to] preserve the overall situation” ([Yicai](#), July 26).

Some of these rivers and reservoirs were included in the 150 water conservancy projects due to be improved in the 2020-2022 period with state investments of 1.29 trillion RMB ([Xinhua](#), July 29, 2020). Shen Jixian (申继先), a local water management leader, told reporters that although the regional flood prevention system had been improved in recent years, it had not yet been completed, and thus “the expected standard [of flood prevention] has not yet been reached” ([Yicai](#), July 26). A commentary in the state tabloid *Global Times* was a little blunter, arguing, “we cannot build super infrastructure for every city to get prepared for a so-called ‘once in a thousand years’ flood,” and that cities should instead focus on improving their preventive response and disaster relief efforts ([Global Times](#), July 21). Much of China’s water management infrastructure is more than four decades old, and the Ministry of Water Resources said earlier this year that updated safety assessments had not been completed on nearly a third of the nation’s 98,000 flood management reservoirs due to a lack of funding ([South China Morning Post](#), July 19).

Conclusion

Scientists predict that China—and especially its key urban centers—will face growing risks of both summer heatwaves and rainy season floods as climate change continues ([Aljazeera](#), July 14). This year’s flooding has already exceeded the damages from 2020’s historic rainy season ([China Brief](#), July 29, 2020), and it is likely that it will continue to worsen in the coming days. The widespread disasters exposed major issues in local early warning systems and flood prevention measures, as well as raising concerns about the sustainability of older water conservation projects and new urban infrastructure that were never built to withstand floods “unseen in a millennium.” The Zhengzhou tragedy also underscored that costly technological solutions alone are insufficient to solve this and other developmental problems—they must also be coordinated with robust preventative warning and emergency response systems, which are hindered by China’s restrictive information controls and top-down system of centralized power.

Research and editing support for this brief was provided by China Brief Program Assistant Anouk Wear.

Elizabeth Chen is the editor of China Brief. For any comments, queries, or submissions, feel free to reach out to her at: cbeditor@jamestown.org.

Xi Jinping Issues Tough Warnings to Enemies Within the Party

By Willy Wo-Lap Lam

Introduction

While President Xi Jinping's position as the most powerful politician in China seems beyond doubt, he has been busy quashing apparently growing dissent within the mid- to upper echelons of the Chinese Communist Party (CCP). Widely recognized as the CCP's "leadership core for life," Xi, who is also CCP General Secretary and chairman of the Central Military Commission (CMC), has issued a series of unusually tough warnings against real and potential foes. This is despite the fact that although the party is riven with rival factions that may either disagree with Xi's policies or his overweening personal ambitions ([Liberty Times](#), February 19; [Rfi.fr](#), June 30), there does not seem to be a unified movement against his iron rule.

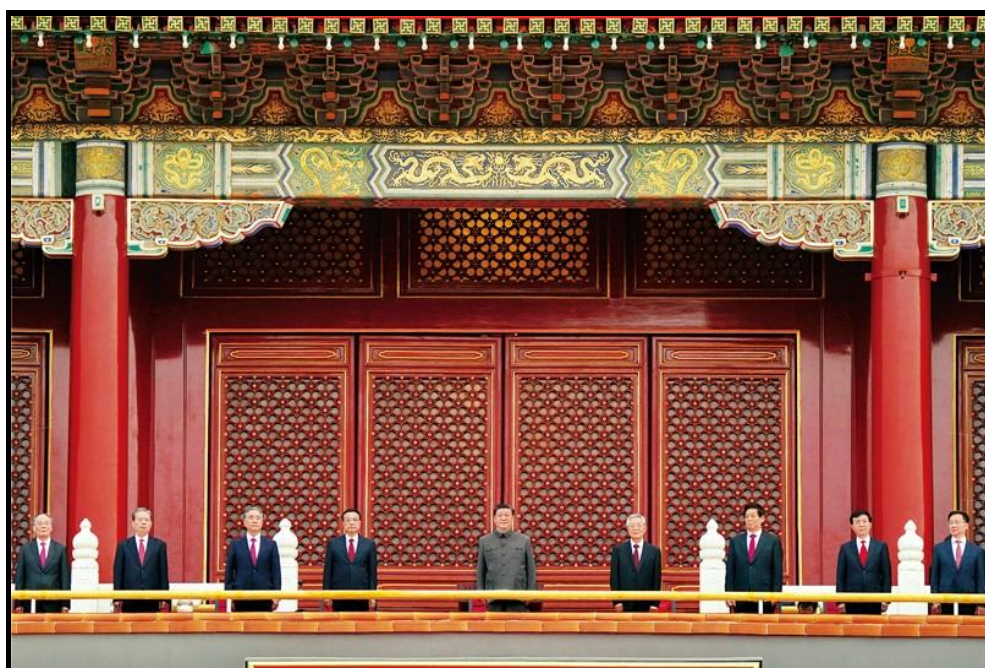


Image: Party-state leaders attended the celebration of the 100th anniversary of the founding of the Chinese Communist Party, including Xi Jinping (center), Li Keqiang, Li Zhanshu, Wang Yang, Wang Huning, Zhao Leji, Han Zheng, Wang Qishan, and Hu Jintao (Source: [Xinhua](#)).

Calling Out “Discordant and Cacophonous Voices”

In the recently published 2021 edition of *Xi Jinping's Selected Discourses on Comprehensively Ruling the Party with Severity* (习近平关于全面从严治党论述摘编, *Xi Jinping guanyu quanmian cong yan zhi dang lun zhaibian*), Xi zeroed in on what he called “discordant and cacophonous voices” in the party. He cited unnamed cadres saying that, “we have for the past five years sufficiently stressed concentration [of powers] and unity in the party... [and] from now on we must put the emphasis on developing democracy within the

party (党内民主, *dangnei minzhu*)." The supreme leader ascribed such "strange and weird theories to political obfuscation and mental obtuseness... as well as efforts by people with ulterior motives to push through [evil] agendas" ([Radio Free Asia](#), July 16; [Gov.cn](#), June 28).

Some of Xi's barbs seemed aimed at ex-president Hu Jintao and his relatively moderate followers. After all, *dangnei minzhu* was the main point of reference for limited institutional liberation during the tenure of Hu (2002-2012), and it was one of the major reformist initiatives contained in Hu's 2007 Report to the 17th Party Congress, titled "Hold High the Great Banner of Socialism With Chinese Characteristics and Strive for New Victories in Building a Moderately Prosperous Society in All Respects," (高举中国特色社会主义伟大旗帜 为夺取全面建设小康社会新胜利而奋斗, *Gaoju zhongguo tese shehui zhuyi weida qizhi wei duoqu quanmian jianshe xiaokang shehui xin shengli er fendou*) ([Wenming.cn](#), November 8, 2012; [People's Daily](#), October 15, 2007). However, although the frail-looking Hu (born in 1942) joined other party elders and President Xi in Beijing to mark the CCP's centenary on July 1, the erstwhile head of the Communist Youth League Faction is widely thought to have no more political ambitions.

Two extraordinary articles published in June by the website of the CCP Central Commission for Disciplinary Inspection (CCDI, 中央纪律检查委员会, *Zhongyang jilü jiancha weiyuanhui*), which is the party's highest organ charge with enforcing internal rules and combating corruption, reference well-disguised "traitors" in the party plotting against the "core." These articles raised the Maoist standard of the "four types of obedience" (四个服从, *si ge fucong*). Mao Zedong said in 1938 that "the individual obeys the organization; the minority obeys the majority; cadres of an inferior rank obey their superiors; and the entire party obeys the center [lit. *zhongyang*, meaning the top leadership]" ([CCDI.gov.cn](#), June 24; [Beijing Daily](#), June 24).[1] In Chinese political terminology, the "center" (中央, *zhongyang*) refers to whoever can sustain his authority as the undisputed leader of the party.

One article cited the examples of two "traitors" who reportedly challenged Mao: Zhang Guotao (张国焘, 1897-1979) and Wang Ming (王明, 1904-1974). Zhang was a founding member of the CCP and a gifted military strategist who at one point controlled an army (the 4th Red Army) at least twice the size of Mao's. In early 1938, Zhang was purged from the CCP and apparently defected to the Kuomintang (KMT, 国民党, *Guomindang*, also known as the Nationalist Party). In early 1949, as the CCP was preparing to establish the People's Republic of China (PRC), Mao is said to have referred to Zhang as a "former CCP Central Committee member, traitor, defector, and renegade." [2] Zhang went into exile in Hong Kong in 1949 and later travelled to Canada. Wang Ming, another early CCP member who was trained in Moscow, was appointed acting general secretary of the CCP with the support of the Communist International (Comintern) in 1931. Wang and the other Moscow-affiliated early CCP leaders reportedly looked down on Mao, whom they despised as a peasant hero without much education. But Wang lost the power struggle against Mao in 1937, who later dismissed his influence as an error of "leftist adventurism" (左倾冒险主义, *zuozheng maoxian zhuyi*). Although Wang remained in the party, he was sidelined and given a relatively lightweight position after 1949 ([HK01.com](#), June 28; [163.com](#), December 28, 2020).

In another commentary released by the CCDI on June 19, entitled “‘Never betray the party’ is not an empty oath” ([永不叛党不仅仅是一句誓言], *Yong bu pandang bu jinjin shi yi ju shiyan*), the disciplinary commissars cited one of the party’s first spy chiefs, Gu Shunzhang (顾顺章, 1903-1934). An early participant in the Shanghai worker’s movement, Gu received spy training in Moscow and became head of the CCP’s security service in addition to serving as an alternate member of the CCP Politburo. Gu defected to the KMT in 1931 and, because of his deep knowledge of the underground party cells in different cities, his confessions led to the death and imprisonment of dozens of party operatives. On personal orders from Mao, Zhou Enlai, Gu’s former direct superior, led a team of assassins to Gu’s house in Shanghai in 1931 and killed sixteen of Gu’s relatives and close friends in retribution. The brutal murders, which were widely reported in the Shanghai media at the time, cast a shadow on the CCP’s reputation. Gu lost favor in the KMT soon after and was executed in 1935. In raising Gu’s history, the CCDI commentary noted that the line “never betray the party” has not only always been included in the CCP’s membership oath throughout its history, but also represents the “political bottom line” (政治底线, *zhengzhi dixian*) of the CCP. Those who—like Gu—oppose the party, the CCDI warns, have sold their souls and will face a dismal end ([Radio Free Asia](#), June 25; [CCDI.Gov.cn](#), June 19).

The message of these two articles was obvious: betraying the party through ideological heterodoxy, failure to abide by the instructions of the supreme leader, or defection to the party’s enemies will not be tolerated, and traitors who do so will be subjected to the harshest of punishments. It is rare for the party leadership to mention sensitive figures such as Zhang, Wang or Gu, and the CCDI articles have raised speculation that individuals or factions with the CCP may have indeed betrayed Xi’s trust ([VOAChinese](#), June 24).

Guarding the Core

Nevertheless, Xi seems confident that as long as he controls the People’s Liberation Army (PLA) and the state security apparatus, few can stage a credible challenge against him. Confidence in Xi’s control over the security forces was signaled in a commentary published by the *People’s Liberation Army Daily* in the run-up to Army Day on August 1. Entitled “Dare to Struggle, Dare to Win,” (敢于斗争 敢于胜利, *ganyu douzheng ganyu shengli*), the commentary recalled how Mao had succeeded in overcoming all obstacles—including opposition from inter-party rivals—to snatch ultimate victory in 1949 and beyond. It quoted Chairman Xi saying that, “we are in the process of waging great struggles which are characterized by many new historical characteristics,” and asserted that the PLA under the leadership of Xi as the “core” had always “dared to engage in struggle and dared to win” ([PLA Daily](#), July 12).

Xi has in the past few years completed a reshuffle of the PLA top brass by promoting dozens of his protégés to key slots. Recently, he replaced the head of the Central Security Bureau (CSB, 中央警卫局, *Zhongyang jingwei ju*, also known as the Central Guard Regiment), which is responsible for the safety of top-level cadres including Politburo members and former members of the Politburo Standing Committee. According to reports

in Hong Kong and overseas Chinese news outlets, Major General Zhou Hongxu (周洪许), who formerly served as Vice Chief of Staff of the Ground Forces of the Northern Theatre Command, has replaced Lieutenant General Wang Shaojun (王少军) as Director of the Central Security Bureau. A protégé of Xi's, Zhou made history by being the first CSB chief who was brought in from the provinces instead of rising up through the ranks of the quasi-secret service apparatus ([Ming Pao](#), July 15; [Dwnnews.com](#), July 15).

Xi has also recently doubled down on a large number of private enterprises, particularly Internet firms including Alibaba, Tencent and most recently Didi Chuxing, which have grown so big and fast that they are deemed to pose potential threats to the party-state's authority ([Caixin](#), July 4; [Human Rights Watch](#), April 8). Since late 2020, these conglomerates have been subjected to investigations by units such as the State Administration for Market Regulation and the Cyberspace Administration of China, as well as the taxation, police and public security authorities. Regulators suspended the initial public offering (IPO) of Alibaba's financial technology subsidiary Ant Group a few days before it was expected to list on the Hong Kong stock market in late 2020 ([Caixin](#), November 9, 2020). In early July, Beijing suspended operations of the Chinese ride-sharing app Didi Chuxing just days after the tech giant raised over \$4 billion on the New York Stock Exchange ([Gov.cn](#), July 16; [SCMP](#), July 4). Now, party-state units can shut down or penalize tech firms based on any of the following transgressions: monopolistic practices; engaging in more than one core business at the same time; or risking the possible leakage of Chinese citizens' personal data to foreign countries, which the state views as a national security resource. A Didi subsidiary unit called Chengxin Youxuan (橙心优选) was fined 1.5 million RMB (\$232,000) in March for "deceptive pricing" practices ([163.com](#), March 3).

In a strong signal of the government's tightening oversight of private industry, regulators from seven different departments including the cyberspace administration, public security officers, and regulators from the State Administration of Market Supervision were dispatched to conduct a comprehensive cybersecurity review of Didi's operations ([VoaChinese](#), July 16; [Radio Free Asia](#), July 7; [CCTV.com](#), February 8). Didi's leadership is politically well-connected, but even it has had to, in the words of one industry commentator, "step outside the comfort zone of barbaric growth" and "pay its debts" of compliance to state regulators' demands ([Global Times](#), July 6). Clearly, no private enterprise can avoid swearing allegiance to the party leadership with Xi as its "core."

Conclusion

In the run-up to next year's 20th Party Congress, Xi and his supporters are tipped to promulgate more internal and public regulations affirming the imperative of the leadership core staying in power as long as his health permits. A late 2020 edition of the party theoretical journal Qiushi (求是) noted that the evaluation of cadres must be based on their "performance on the front line of major struggles." This is an oblique reference to the fact that when policy or personnel controversies arise within the party, all cadres must studiously toe the party line in response ([Qiushi](#), December 2, 2020). China is beset with tough challenges both in the

economy and foreign affairs. The country is struggling to maintain a minimum growth rate of 6 percent this year in order to pay down its debt (which grew in response to anti-pandemic stimulus measures) and boost a still-recovering jobs market. On the diplomatic front, the PRC faces a growing “anti-China” coalition organized by the Joe Biden administration with support by major groups including NATO, the Five Eyes coalition and the Quad, as well as increasing bilateral ties between the U.S. and Chinese neighbors such as India and Japan that appear to be bolstered by shared concerns over China. Despite his tight control over internal propaganda and the police-state apparatus, Xi faces strong challenges to retaining his near-absolutist power for the next decade or so.

Dr. Willy Wo-Lap Lam is a Senior Fellow at The Jamestown Foundation and a regular contributor to China Brief. He is an Adjunct Professor at the Center for China Studies, the History Department, and the Master's Program in Global Political Economy at the Chinese University of Hong Kong. He is the author of five books on China, including Chinese Politics in the Era of Xi Jinping (2015). His latest book, The Fight for China's Future, was released by Routledge Publishing in July 2019.

Notes

[1] Original text: “个人服从组织、少数服从多数、下级服从上级、全党服从中央。”

[2] “Memorandum of Conversation between Anastas Mikoyan and Mao Zedong,” February 3, 1949, History and Public Policy Program Digital Archive, APRF: F. 39, Op. 1, D. 39, Ll. 47-53. Reprinted in Andrei Ledovskii, Raisa Mirovitskaia and Vladimir Miasnikov, *Sovetsko-Kitaiskie Otnosheniia*, Vol. 5, Book 2, 1946-February 1950 (Moscow: Pamiatniki Istoricheskoi Mysli, 2005), p. 62-66. Translated by Sergey Radchenko. <http://digitalarchive.wilsoncenter.org/document/113239>.

What the 2020 Chinese Census Tells Us About Progress in Hukou Reform

By Kam Wing Chan

Introduction

The People's Republic of China (PRC) recently published its seventh national ten-year 2020 Census results, which led to much discussion and commentary about the development implications of low population growth and a rapidly aging population (e.g., [China Brief](#), May 21). Fewer have noted insights that the 2020 Census has provided into the progress of China's long-awaited reforms to its household registration system (户籍制度, *hujī zhìdù*, also known as 户口, *hukou*) ([Weixin](#), May 12). The system China adopted in 1958, which was similar to the Soviet Union's residence registration system (*propiska*), broadly divided all Chinese citizens into a "dual system" (二元制 *èryuán zhì*) that created different systems for urban and rural residents. It was initially used to limit rural-to-urban population movement but was refashioned in the reform era to serve China's export industrialization.^[1]

Although internal migration restrictions were gradually lifted following the period of reform and opening up in the 1980s, the hukou system has continued to determine Chinese citizens' access to housing, education, and public services. For example, only urban hukou holders have access to urban social benefits or public services. Lacking a local (urban) hukou, China's large rural migrant population (also known as the "floating population," or 流动人口 *liúdòng rénkǒu*) working and living in cities cannot access most basic public services. As a result, many of the workers that have provided the cheap labor behind decades of manufacturing growth have been effectively disenfranchised.^[2] The hukou system poses many problems at present and for the future; despite frequent calls for reform, its continuation points to a difficult path toward building an integrated and equal Chinese society.



Image: A woman participates in a campaign to digitize household registration, or hukou, at a community affairs office in Xuhui District, Shanghai, on October 14, 2020. The hukou system is critical for population oversight and control, but failures to sufficiently reform it have led to long-lasting social problems. (Source: [Xinhua](#)).

Hukou Reform Plan 2014

The Chinese government finally moved to address the hukou reform issue in 2014, when the State Council released the “National New-type Urbanization Plan (2014-2020)” ([国家新型城镇化规划 (2014-2020年)], *Guojia Xinxing chengzhenhua guihua*) ([State Council](#), March 16, 2014), and a related “State Council Opinion on Further Promoting the Household Registration System Reform” ([国务院关于进一步推进户籍制度改革的意见], *Guowuyuan guanyu jinyibu tuijin huji zhidu gaige de yijian*) ([State Council](#), July 30, 2014), aiming to close the urban social benefits gap incrementally over the next six years. As a first step, the Plan set a goal of bringing down the “difference” (i.e. the percentage of the floating population), from 17.2 percent in 2012 to 15 percent in 2020. The two documents also stipulated to gradually equalize social benefits for migrants and locals through a resident permit system (居住证, *juzhu zheng*) and open up hukou conversions in smaller cities while tightening them in mega-cities. The new initiatives left plenty of room for local governments to design their system of granting social benefits, which some chose to do based on a points system that would privilege highly educated or affluent migrants. The 2014 plan represented the most ambitious hukou reform program since its inception in 1958.

Even as China has pursued a city-driven approach to economic development, achieving an urbanization rate of 63.9 percent in 2020 (see Table 1), systemic inequalities between rural and urban residents remain. To overcome these, China will need to gradually reform or even phase out its current hukou system and provide all urban residents (including migrants) with access to social benefits. One way to achieve this would be to accelerate urban hukou conversions so that the size of the population holding urban hukou (urban hukou

population, UHP) is the same as that of the urban population (UP). In quantitative terms, the UP% should match the UHP% as a percentage of the national population.[3]

In reality, the UP% and UHP% have diverged continuously since the early 1980s, reaching a gap of about 17.2 percent in 2012 (see Table 1, Column G). This gap is called the “difference between two rates” (两率之差, *lianglü zhicha*), and is roughly equivalent to the percentage of rural hukou population (RHP) living as “floating population” (FP) in urban areas without social benefits.[4] The 17.2 percent can be conceived of as the “urban social benefits gap,” translating to about 230-240 million urban dwellers without social benefits in 2012. In response to the release of the 2014 hukou reform plan, the author proposed a 15-year program to close this “difference” ([Paulson Institute](#), December 2014).

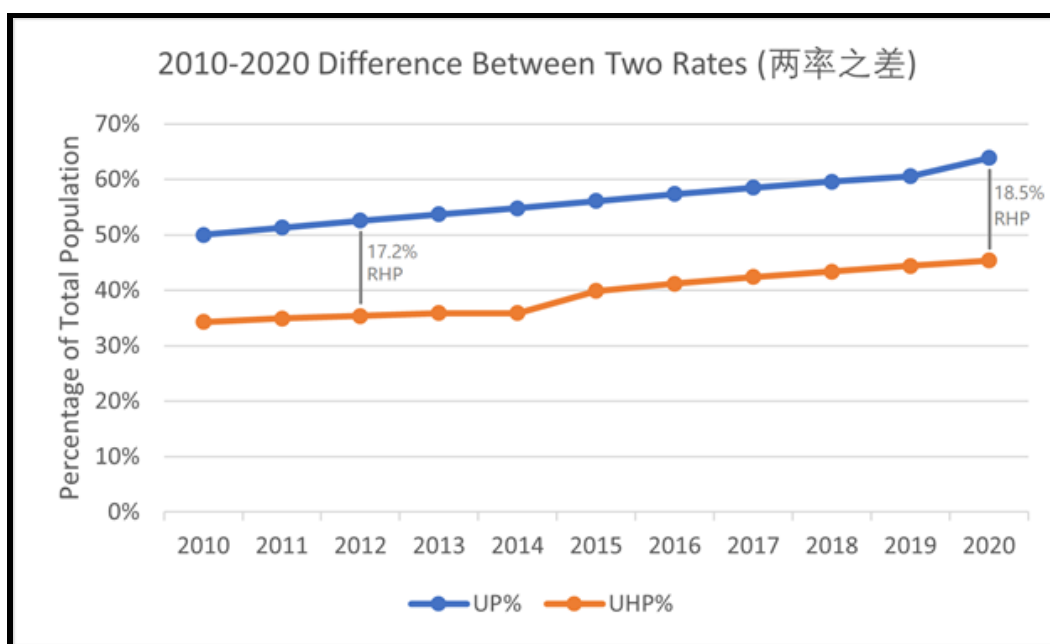


Image: The graph shows the change from 2010 to 2020 in the “difference between two rates” between the urban population (UP%) and the urban hukou population (UHP%) as a percentage of the total population, representing an approximate of the migrant population living in cities (RHP). Despite plans to bring the “difference” down by 2 percentage points from 2014 to 2020, it has slightly increased (Source: Table 1).

Table 1: China's Urban Population, Urban Hukou Population and Floating Population, 2010-2020

	Total Population	Urban Population, UP		Urban <i>hukou</i> Population, UHP		Rural Hukou Population, RHP (calculated by subtracting UHP from UP)		Floating Population, FP	
	A	B	C	D	E	F	G	H	I
Year	Millions	Millions	%	Millions	%	Millions	%	Millions	%
2010	1340.9	669.8	50.0	459.6	34.3	210.2	15.7	221	16.5
2011	1347.4	690.8	51.3	470.6	34.9	220.2	16.3	230	17.1
2012	1354.0	711.8	52.6	479.7	35.4	232.1	17.2	236	17.4
2013	1360.7	731.1	53.7	489.9	35.9	241.2	17.8	245	18.0
2014	1367.8	749.2	54.8	491.0	35.9	258.2	18.9	253	18.5
2015	1374.6	771.2	56.1	548.5	39.9	222.7	16.2	247	18.0
2016	1382.7	793.0	57.4	569.7	41.2	223.3	16.1	245	17.7
2017	1390.1	813.5	58.5	588.7	42.4	224.8	16.2	244	17.6
2018	1395.4	831.4	59.6	605.2	43.4	226.2	16.2	241	17.3
2019	1400.1	848.4	60.6	621.3	44.4	227.1	16.2	236	16.9
2020	1411.8	902.0	63.9	640.9	45.4	261.1	18.5	376	26.6

Explanation and sources:

Columns A, B, and H use data taken from the Statistical Yearbook of China 2020 ([NBS](#), 2020) for the years 2010-2019 and the Census 2020 ([NBS](#), May 11) for the year 2020.

Columns D and E use MPS registration data reported in various sources (e.g. for 2020, see [Sohu.com](#), May 10).

Analysis of the 2020 Census Data

To summarize, the “difference” was the single most important metric for measuring the success of the 2014 initiatives in hukou reform. It can be evaluated based on the latest official data from the 2020 Census released by the National Bureau of Statistics ([NBS](#), May 11). The latest household registration data published by the Ministry of Public Security shows that the UHP reached 45.4 percent in 2020 (Table 1, Column E), meeting the 2014 Plan’s target ([Sohu.com](#), May 10). However, 2020 Census figures showed a UP% of 63.9 percent (Column C) for last year, resulting in a floating population percentage of 18.5 percent (Column G). This results in a “difference” that exceeds the 15 percent goal set in the 2014 Plan by 3.5 percentage points. Indeed, the 2020 urban social services gap is even higher than the 17.8 percent (RHP%) that was recorded at the end of 2013 when the Plan began, demonstrating that hukou reform has basically stalled according to those figures.

Moreover, the Census also revealed a far larger floating population than expected, recording 376 million Chinese citizens living outside of their hukou residencies in another city or county in 2020 ([NBS](#), May 11).

Because the 2020 Census FP figure is the result of a direct and full population survey, it is more accurate than pre-Census UP figures, which are extrapolated from smaller sample surveys such as a 1 percent mini-census taken in 2015 or 0.1 percent annual surveys taken in the mid-to late 2010s ([Chinanews.com](#), May 12). (The UP figures are used to derive the RHP figures, as shown in Table 1). Furthermore, floating population counts derived from sample surveys designed for counting the general population, such as those taken in 2015-2019, often easily undercount migrant populations that are much more mobile than the general population.

It is worth noting that the 2020 Census, which was conducted during pandemic conditions, likely returned more accurate population counts as Chinese citizens' movements were severely restricted and heavily surveilled due to various lockdown and public health monitoring measures ([Weixin](#), May 11). The nonrespondent rate of the 2020 Census is exceedingly low, at 0.05 percent ([Chinanews.com](#), May 11). Even though the 2020 Census FP figure initially caught many observers by surprise, demographers have now agreed that the recent pre-Census sample surveys seriously undercounted the population, including migrants, and that the 2020 Census numbers are far more accurate ([NBS](#), May 12; [Weixin](#), May 11). Since then, the NBS has also adjusted its pre-Census urban population figures for the 2010s upwards ([Zhihu](#), Jun 5).

What can one make of the large difference between the FP figure (26.6 percent) and the RHP figure (18.5 percent) in 2020? Two different interpretations have been suggested: the first contends that there is continued migration despite the difficulty of getting an urban hukou, implying that hukou residency is becoming less of a barrier to migration.[5] Many cities now offer residence permits to migrants without local hukou, granting partial urban social benefits based on a points system. The benefits of such relaxed policies appear to apply to mostly small and medium cities, where urban social benefits are few, and hukou-based discrimination occurs less. But in the megacities that attract the most migrants, the situation is quite different.

This leads to the second interpretation, which holds that the old “cheap migrant labor” model—in which migrants can come to work in urban areas but they cannot access social benefits, especially in “first tier” megacities (i.e., Beijing, Shanghai, Guangzhou and Shenzhen) that have better job and education opportunities— still prevails. These cities continue to exploit a large pool of cheap labor (in relative terms—although migrants' wages are rising, so are urban living costs). The new residence permit system in these cities scores migrants by a variety of social and economic factors and use the scores to distribute partial urban social benefits, including public education. Only a small group of highly educated and affluent migrants is qualified for most benefits, and the residency relaxations exclude the vast majority of migrants ([Dong and Goodburn](#) 2019). This has further stratified urban society and exacerbated long-term social problems.

Conclusion

Although researchers will need to await the release of more detailed data to analyze what has happened in the last few years, the 2020 Census clearly indicates that the population of migrant workers—either represented by the FP figure released by the NBS or by RHP calculations—is higher than the target set by the 2014 Plan. This lends strong support to the author’s contention that China’s hukou reform has stalled and arguably even regressed. In the inter-censal period, the migrant percentage exploded from 16.5 percent in 2010 to 26.6 percent in 2020, representing an increase of 156 million FP in that decade. Put another way, the social benefits gap in the cities has widened considerably in the last ten years despite pledges to narrow it in the 2014 Plan.

These metrics aside, research on the children of migrants provides further indications that China’s hukou reforms have not succeeded. A litmus test of the hukou reform progress is whether or not ordinary migrants—not just the highly educated “talents” or wealthy that benefit from residence permits—have greater access to urban social benefits. A critical benefit to most migrant families is whether their children can access education at the destination, the lack of which often forces parents to send their kids back home, turning them into “left-behind children” (LBC, 留守儿童, *liushou ertong*). With no or only partial parental care close by, LBC face many problems in their nurturing and education, which is a highly troubling situation with serious long-term consequences ([Caixin](#), June 26, 2015). Although there are no comparable LBC population figures yet from the 2020 Census to make a definitive judgment, the author’s earlier research has shown that the LBC population increased from less than 70 million in 2010 to 88 million in 2015, making up about one third of China’s total children population. Between 2010 and 2015, the migrant children population in Shanghai and Beijing decreased by 34-40 percent despite continued FP growth.[6] Reports have also shown that children of migrants in megacities face greater difficulties in school enrollment in recent years, likely fueling the growth of the LBC population nationwide ([Xin Gongmin Jihua](#), March 25).

The gap between the UP% and UHP% has persisted and widened in the last few years. Many of the reform measures in the 2014 Plan turned out to be largely cosmetic or were usurped by local governments for other purposes ([Sohu.com](#), December 28, 2018). The disadvantaged floating population has continued to grow rapidly, reaching 376 million in 2020. There remains much to be done in reforming the hukou system.

*Kam Wing Chan is Professor of Geography at the University of Washington. He is the author of *Cities with Invisible Walls: Reinterpreting Urbanization in Post-1949 China* (1994), and *Urbanization with Chinese Characteristics* (2018). His research focuses on China’s urbanization, migration, spatial economy and the hukou (household registration) system.*

Notes

[1] Kam Wing Chan and Yanning Wei. 2019. "Two Systems in One Country: The Origin, Functions, and Mechanisms of the Rural-Urban Dual System in China." *Eurasian Geography and Economics*, 60(4): 422-454.

[2] Ibid.

[3] The UHP statistics are household registration data kept by the Ministry Public Security (MPS); the UP data are collected by the National Bureau of Statistics (NPS) through direct surveys (censuses and sample surveys).

[4] Note that RHP refers to those with rural (agricultural) hukou. RHP and FP overlap a great deal, but strictly speaking they are not the same. For details, see Kam Wing Chan, 2019. "China's Hukou System at 60: Continuity and Reform," in Ray Yep, June Wang, Thomas Johnson (eds.) *Edward Elgar Handbook on Urban Development in China*, Edward Elgar, pp.59-79.

[5] Rosealea Yao. "The Urbanization Surprise," *GavekalDragonomics Ideas*, June 7, 2021.

[6] Kam Wing Chan and Yuan Ren. 2018. "Children of Migrants in China in the 21st Century: Trends, Living Arrangements, Age-gender Structure, and Geography." *Eurasian Geography and Economics* 59 (2): 133–163.

Recent Trends in Sino-Israeli Relations Bely Lasting Warm Ties

By William Figueroa

Introduction

On May 19, the Israeli Embassy in China protested what it called “blatant anti-Semitism” on a Chinese international news program, after the CGTN broadcaster Zheng Junfeng (郑俊峰) openly wondered whether the U.S. position toward Israel was the result of the influence of “wealthy Jews in the U.S.” and pro-Israeli lobbies ([Haaretz](#), May 19; [World Journal](#), May 19). Just two days before, Chinese Foreign Minister Wang Yi used China’s position as chair of the United Nations (UN) Security Council to propose a four-point plan for peace between Israel and Palestine, which called for negotiations and a cease-fire but also criticized Israel in particular for its lack of restraint ([Xinhua](#), May 16). More recently, during a state visit to Egypt on July 18, Wang proposed China’s direct involvement as a neutral negotiator and invited both sides to come to negotiate directly in Beijing under the banner of a UN-led global peace conference with the participation of all the Security Council permanent members and “stakeholders in the Middle East peace process” ([Xinhua](#), July 19).

Traditionally, Israel has been reluctant to act overtly against Chinese interests. On June 23, Israel for the first time criticized human rights violations in Xinjiang, signing a joint letter to the UN Human Rights Council, but only at the request of the United States and after a debate in which several officials “raised concerns about backlash from Beijing” ([Jerusalem Post](#), June 23). The Israeli foreign ministry spokesperson Lior Hayat confirmed that Israel had supported the statement but gave no further details ([Times of Israel](#), June 23). Other than this, Israel has appeared largely unwilling to rock the boat with its third largest trading partner and top source of imports. By the same token, China seems unwilling to move beyond critical rhetoric and lofty proposals that merely repeat the international consensus on a two-state solution. It has not acted in any way to pressure Israel to modify its behavior in Palestine or come to the negotiating table, despite having extensive economic and political ties that could be used as leverage.

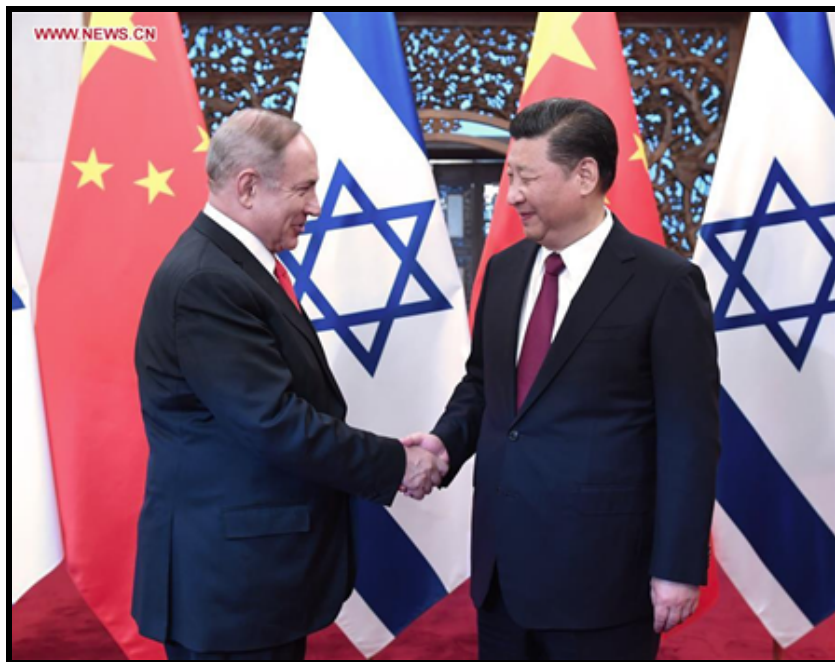


Image: Israeli Prime Minister Benjamin Netanyahu meets with Chinese President Xi Jinping in Beijing on March 21, 2017. During the state visit, the two sides announced an “innovative comprehensive partnership” that would include youth exchanges and cooperation in establishing joint labs, innovation parks, and an innovation cooperation center (Source: [Xinhua](#)).

The Triangular U.S.-China-Israel Relationship

Multiple media reports have indicated that Israel is under pressure from the United States to temper its enthusiasm for good relations with China. ([Times of Israel](#), June 23; [Financial Times](#), May 13, 2020). Most recently, Washington pushed back against Chinese participation in Israeli 5G networks and Chinese involvement in the expansion of the Haifa port, citing espionage and surveillance concerns. At a recent lecture at Bar-Ilan University, ex-Mossad chief Yossi Cohen pushed back against this assessment, saying “I do not understand what the Americans want from China. If anyone understands, they should explain it to me. China isn’t against us and is not our enemy.” Another senior government source told Haaretz that such concerns are not taken seriously: “If they [China] want to gather intelligence, they can simply rent an apartment in Haifa instead of investing in ownership of a port” ([Haaretz](#), June 8).

China and Israel have a long history of quietly pursuing positive relations despite various forces demanding a different public face.^[1] China maintained an anti-Zionist stance throughout most of the Cold War as part of its diplomatic strategy to win votes to oust Taiwan at the UN, despite Israeli overtures. Israel was the first country in the Middle East to recognize the PRC as the legitimate government of China in 1950, but anti-Zionist rhetoric persisted until the 1980s, and relations were not officially established until 1992. To this day, China still uses pro-Palestinian rhetoric to forge stronger relations with Arab states, but its criticism is far more

tempered and tends to place Palestinian and Israeli security concerns on equal footing. At the same time, it has developed a dynamic, multi-faceted relationship with Israel that makes it unlikely that either side will abandon efforts to maintain some level of partnership.

Economic Ties

China and Israel have seen a dramatic expansion of economic ties since diplomatic relations were normalized. In the past 28 years, the bilateral trade relationship has grown from around \$50 million to just under \$10 billion, making China Israel's third-largest trading partner, behind the U.S. and the UK ([Observatory of Economic Complexity](#), accessed July 12). More than a thousand Israeli companies operate out of China, looking to take advantage of China's technology manufacturing capacity.[2] Chinese companies have invested heavily in Israel's transportation sector, although some of these projects (such as a high speed railway from Eilat to Ashdod) were put on hold ([Globes](#), April 29, 2015). Notable successes include the Carmel Tunnels ([People's Daily Online](#), October 25, 2010), agreements to develop the ports of Ashdod and Haifa ([Xinhua](#), July 11, 2019; [Globes](#), June 24, 2020), and a light rail system in Tel Aviv ([The Paper](#), June 7). Although Israel is not an official partner nation of China's Belt and Road Initiative (BRI) ([IIGF Green BRI Center](#), accessed July 12), it became a member of the China-led Asian Infrastructure Investment Bank in 2015, and Chinese investors have flocked to invest in technology start-ups in Israel's "Silicon Wadi" ([TechNode](#), October 26, 2018).

While China is clearly a key part of the Israeli economy, however, Israel is not a major trading partner from Beijing's perspective. Even if Sino-Israeli trade were to double, it would not place Israel among China's top ten trading partners. However, Beijing derives other important benefits from its relationship with Jerusalem. First, trade relations form an important part of China's foreign policy as leverage to achieve political goals. This was fully on display when, in 2013, the Israeli Prime Minister Benjamin Netanyahu caved to Chinese demands to drop a lawsuit against the Bank of China for secretly bankrolling Hamas terrorist activities, which would have damaged the bank's international reputation ([Jerusalem Post](#), June 22, 2013). Israel reaps significant dividends from an economic policy that China uses to deliver international prestige and political leverage.

Military Technology and Commercial R&D

China has also historically benefitted from military technology transfers with Israel. In 2010, Israel was second only to Russia as a provider of weapons systems to China and a source for advanced military technology.[3] Israel has consistently provided China with military technology, both cutting-edge American weapons received from its "special relationship" with the U.S. as well as technology that Israel develops itself ([CFR.org](#), July 30, 2019). This fact has consistently ruffled feathers in Washington: in 2000, the U.S. pressured Israel not to sell PHALCON systems to China and ended up paying China \$350 million dollars in compensation ([Haaretz](#), May 13, 2002). In 2005, a brief crisis in U.S.-Israeli relations ensued after

Washington sanctioned Tel Aviv for selling Harpy Killer drones to China. ([Haaretz](#), July 27, 2005). More recently the roles have been reversed, with the Israeli Defense Forces (IDF) benefiting from Chinese drone technology. The U.S recently blacklisted Chinese drone manufacturer SD DJI Technology Co. and grounded all 800 of the drones it had previously purchased from them, citing security concerns. But the IDF, which extensively uses DJI drones, has been more reluctant to remove or replace them ([CTech](#), December 21, 2020). Despite occasionally canceling deals that draw the attention of the United States, the overall drive to share and sell military technology has remained consistent, although not always with the direct approval of the Israeli government ([Haaretz](#), March 30).

Israel has also been an important source for technology transfers to China ([Haaretz](#), June 4, 2015). These take place primarily through international business conferences, R&D connections, and joint business investments. For example, the Israeli Innovation Authority recently issued a seventh call for proposals under the “China-Israel Cooperation Program for Industrial Research & Development,” a research funding framework that is jointly implemented with the Chinese Ministry of Science and Technology ([Innovationisrael.org.il](#), accessed July 12). China and Israel have also hosted many official events facilitating cooperation between Chinese and Israeli businesses ([Jerusalem Post](#), December 8, 2020). Such ties encompass a variety of industries, from agriculture, to telecommunications, to chemicals and light manufacturing.

Agriculture in particular has been a major target for investment, as both sides view food security as being critical to national security: between 2007 and 2017, China invested over \$5 billion in Israeli agriculture technology projects. Major acquisitions include China National Chemical Company’s takeover of Adama, a major player in the crop protection industry, and China Bright Food Group’s incorporation of Israel’s Tnuva Food Industries.[4] In China, joint projects like the Sino-Israeli Agricultural Town in Hebei, the Sino-Israeli Agri-tech Ecological City in Shandong, the Sino-Israel Agriculture High-tech Demonstration Park in Henan, and the Yunnan Sino-Israel Highland Agriculture Demonstration Park rely heavily on imported Israeli technology. ([Hortidaily.com](#), August 31, 2020; [EACi.co](#), September 17, 2017; [Xinhua](#), August 8, 2018; [Jerusalem Post](#), August 9, 2019). These projects are funded and supported by local and national government agencies in both countries, and tend to emphasize high-level agricultural technology, which can then be replicated and integrated into future Chinese enterprises.

Internet technology is also a major target for investment. Chinese firms such as Huawei and Alibaba have set up R&D centers in Israel, where they can benefit from the experience of Israeli firms and employees, which Chinese firms then learn from and integrate ([GlobalTimes.cn](#), October 25, 2018). The close ties have persisted despite shifting geopolitical winds. In 2018, semiconductor exports from Israel to China jumped 80 percent to \$2.6 billion, as Israel moved to fill a void left after U.S pressure effectively blocked several leading manufacturers from selling advanced chips to Chinese companies ([GlobalTimes.cn](#), April 25, 2019). China’s investments in Israeli technology are extremely diverse and largely dominated by state-owned enterprises, acting in tandem with local, regional, and national government agencies.[5]

Both governments have promoted the notion of Israel as China's "R&D Lab." During a visit to China in 2013, Netanyahu gave a speech to Chinese and Israeli business leaders in Shanghai on the same day as the unveiling of the 2013 edition of China's Israel-Palestine peace plan, in which he stressed:

"Israel is not as big as China. We have 8 million residents, approximately one-third of the population of Shanghai. But we manufacture more intellectual property than any other country in the world in relation to its size...If we create a partnership between Israel's inventive capability and China's manufacturing capability, we will have a winning combination" ([Israel MFA](#), May 7, 2013).

Conclusion

Chinese support for the Palestinians and its recent anti-Zionist rhetoric should be primarily understood as a tool of foreign policy, which remains largely separate from continuing warm bilateral relations with Israel. In the most recent cases, China saw an opportunity to portray itself as a defender of international human rights and also score diplomatic points by criticizing the U.S. for its stance on the Gaza crisis, likely seeking to counter growing accusations of human rights abuses against Chinese Muslims in Xinjiang by the U.S. and its allies. Chinese foreign ministry spokesperson Hua Chunying made that link explicitly when criticizing the United States for blocking a UNSC resolution critical of Israel. Calling American policy hypocritical for holding a "meaningless meeting on Xinjiang" while also blocking China's resolution on Israel, she opined, "the U.S. should understand that the lives of the Palestinian Muslims are just as precious" ([Chinese MFA](#), April 1).

The extensive network of commercial relations that now exists provides substantial economic and military/technological benefits to both sides. It is unlikely that either Israel or China would give up these benefits even under diplomatic pressure. Both governments occasionally make moves to appease the forces that take issue with their partnership: Israel will occasionally cancel deals with China under U.S. pressure, and China will occasionally offer rhetorical and diplomatic support to the Palestinians without placing any meaningful pressure on Israel. But both sides also seem willing to tolerate such actions from the other without moving to substantially alter the relationship. Finally, it must be recognized that due to the entwined nature of the Chinese and Israeli economy, China is fundamentally unable to act as an impartial negotiator in the event of an Arab-Israeli peace process.

Dr. William Figueroa is a Postdoctoral Fellow at the Middle East Center at University of Pennsylvania, where he recently also received his PhD in History. Dr. Figueroa's work primarily focuses on historical Sino-Iranian relations in the late 19th-early 20th century. His commentary on modern Sino-Iranian and Sino-Middle East relations has appeared in outlets like Jadaliyya, The Diplomat, and BBC Persian.

Notes

[1] For more on this, see Gangzheng She; “The Cold War and Chinese Policy toward the Arab-Israeli Conflict, 1963–1975.” *Journal of Cold War Studies* 2020

[2] See: Shira Efron, Karen Schwindt, Emily Hasle, “Chinese Investment in Israeli Technology and Infrastructure: Security Implications for Israel and the United States,” RAND Corporation, 2020, https://www.rand.org/pubs/research_reports/RR3176.html.

[3] See: Islam Ayyadi & Mohammed Kamal, “China-Israel Arms Trade and Co-Operation: History and Policy Implications”, *Asian Affairs*, 47:2 (2016), 260-273.

[4] See: Shira Efron, Howard J. Shatz, Arthur Chan, Emily Haskel, Lyle J. Morris, Andrew Scobell, “The Evolving Israel-China Relationship,” RAND Corporation, 2019, xiv,26, https://www.rand.org/content/dam/rand/pubs/research_reports/RR2600/RR2641/RAND_RR2641.pdf.

[5] See: Doron Ella, "Chinese Investments in Israel: Developments and a Look to the Future", The Institute for National Security Studies, Tel Aviv University, 2021 <https://www.inss.org.il/publication/chinese-investments/>.

China's Hypersonic Missiles: Methods and Motives

By Richard Weitz

Introduction

The People's Republic of China (PRC) is pursuing various hypersonic delivery systems to augment its already impressive arsenal of precision strike capabilities. Hypersonic missiles are emerging as a highly valued weapon system for the Chinese People's Liberation Army (PLA) and other advanced militaries due to their unique combination of attributes, which include: 1) sustained high speed (by definition flying at least five times the speed of sound after separation from launcher); 2) increased maneuverability, either through powered flight or during gliding descent toward a target; and 3) altitude—many hypersonic missiles fly in the upper atmosphere for much of their trajectory, which is higher than most cruise missiles but lower than the apogee of standard ballistic missiles.

China's new hypersonic delivery vehicles, which could be armed with either conventional or nuclear munitions, could better attack many time-sensitive, mobile, or high-value targets compared with non-hypersonic missiles as well as crewed or uncrewed planes. Such capabilities would impact the existing security balance in the Indo-Pacific and potentially contribute to escalating regional tensions. Hypersonics' attributes make them especially difficult to intercept for the existing air, sea, and land-based missile defense systems of the United States and its allies, which have been designed to counter ballistic missiles flying more predictable trajectories in outer space or slower cruise missiles flying closer to the earth's surface.



Image: A 2017 test of the DF-17 missile, which can carry the DF-ZF hypersonic glide vehicle. Source: Guancha.cn.

Beijing's Hypersonic Portfolio

The PLA has invested heavily in building a massive intermediate-range missile arsenal. Though the United States has more strategic missiles for delivering nuclear warheads at intercontinental ranges of 5,500 kilometers (3,400 miles) or more, its forward-based forces in Asia rely primarily on shorter-range missiles developed during the Cold War, such as the Navy's subsonic Tomahawk Land Attack Missile that are deployed on U.S. surface ships and submarines. Indeed, until its recent demise, the Intermediate-Range Nuclear Forces Treaty prohibited the United States from manufacturing, deploying, or flight-testing ground-launched ballistic and cruise missiles with ranges of 500–5,500 km (300–3,400 miles), which are generally thought to be more destabilizing to regional theater security. Meanwhile, the U.S. Department of Defense's 2020 China Military Power Report estimates that China (unhindered by the INF Treaty) has deployed more than 1,250 intermediate-range missiles.[1] Some of these include the 1,500 kilometer (932 miles)-range DF-21D "carrier killer," the 4,000 km (2,485 miles) DF-26 "Guam Express" ballistic missiles (东风, *Dong Feng*), the YJ-12 and YJ-18 (鹰击, *Ying Ji*) supersonic anti-ship cruise missiles, and several types of subsonic cruise missiles (CSIS, updated July 16, 2020).

The PLA is now researching and developing two basic types of hypersonic missiles, which can be categorized based on their means of propulsion. The first group, hypersonic cruise missiles (HCM), rely on powered flight with air-breathing engines. The second group, hypersonic glide vehicles (HGV), are launched into the upper atmosphere (50–80 kilometers, or 30–50 miles) and then glide unpowered toward a target. Both types can reach distant targets more rapidly than China's existing subsonic or even supersonic cruise missiles and warplanes. And although China's ballistic missiles can fly as fast as these hypersonic systems, HCMs and HGVs have more unpredictable maneuverability, allowing for better circumvention of some aspects of present-day U.S. Ballistic Missile Defense (BMD) systems.[2]

The first public demonstration of China's apparently operational hypersonic capability came when the PLA displayed several DF-17s, a solid-fueled medium-range ballistic missile (MRBM) with a range of 2,000 kilometers (1,243 miles), designed to launch the DF-ZF (also known as the WU-14) HGV during a 2019 National Day parade (Xinhua, October 1, 2019). PRC media sources have also discussed deploying HGVs on longer-range ballistic missiles, including the new DF-41 intercontinental-range ballistic missile (ICBM) that is capable of reaching the U.S. mainland, and noted that HGV technology has become "an integral part of nuclear strategy" (Xinhua, January 3, 2018), and that its "sophisticated trajectory...[makes] penetrating enemy defense networks an easy job" (China Daily, August 1, 2020).

In February 2020, General Terrence O'Shaughnessy, then-head of U.S. Northern Command, testified that China was already "testing...an intercontinental-range hypersonic glide vehicle—similar to...[Russia's] Avangard" (U.S. Senate Armed Services Committee, February 13, 2020). Having both a traditional reentry vehicle capable of delivering multiple warheads on one ballistic missile and a HGV capable of carrying fewer warheads but better able to maneuver in unpredictable ways will reinforce China's ability to overcome its

adversaries' missile defenses. The PLA Navy (PLAN) might also seek to emulate Russia's ship-launched Tsirkon hypersonic capabilities and equip its JL-2 submarine-launched ballistic missiles (SLBMs) with nuclear-armed HGVs to further improve strategic nuclear deterrence.

As in the space race and other high-technology fields, China has made a major effort to catch up to and perhaps overtake Russian and U.S. capabilities. PRC research into the military potential of hypersonic technologies used to lag far behind the efforts of Russia and the United States. But during the past decade, China has invested heavily in new hypersonic research, development, test, and evaluation programs and facilities, and now both Chinese and foreign analysts argue that PRC hypersonics research has surpassed the U.S. in some regards ([Xinhua](#), June 2; [CRS](#), updated July 9). China is constructing some of the world's fastest wind tunnels ([South China Morning Post](#), May 31), which can simulate hypersonic flight conditions on the ground and streamline testing ([Sina.com](#), December 23, 2020). It is also developing a large-scale supercomputer program that could enable the better simulation, modeling, and development of hypersonic technologies and other advanced weapons development ([South China Morning Post](#), April 10). The 10th Near Space Flight Research Institute under the state-owned China Aerospace Science and Industry Corporation (CASIC) previously led much of China's HGV research and development efforts ([China Brief](#), April 21, 2016). Other organizations heavily involved in hypersonics research include the Chinese Academy of Sciences Institute of Mechanics (中国科学院力学研究所, *Zhongguo kexue yuan lixue yanjiusuo*) and the Academy of Military Science (AMS)-affiliated China Aerodynamics Research and Development Center (CARD, 中国空气动力研究与发展中心, *Zhongguo kongqi dongli yanjiu yu fazhan zhongxin*) ([ASPI](#), October 31, 2019; [China Brief](#), May 29, 2019).

China seeks to build international prestige by becoming a leading innovator in the hypersonics field ([Science](#), January 8, 2020). In 2018, Chinese scientists tested three different designs of scaled-down hypersonic aircraft, codenamed D18-1S, D18-2S, and D18-3S. These possessed distinct designs: one with a single vertical tail, another with two, and the third with a single wing above its body. The variety of designs permitted Chinese scientists to evaluate how various aerodynamic features can affect flight performance ([Global Times](#), November 6, 2018). In August of that year, the China Academy of Aerospace Aerodynamics (CAAA, 中国航天空气动力技术研究院, *Zhongguo hangtian kongqi dongle jishu yanjiu yuan*) announced the first official test flight of Starry Sky-2 (星空-2, *Xing Kong-2*), a new hypersonic glider employing experimental "waverider" technology, in which a hypersonic delivery vehicle rides shock waves generated by its own flight to boost lift, and which media reports suggested could be used as part of a hypersonic strike platform "capable of evading all existing air-defense networks" ([China Daily](#), August 6, 2018).

The PRC military-industrial complex is also researching HCMs powered by supersonic combustion ramjet (or scramjet) engines, which compress and ignite high-speed incoming air to generate vigorous thrust. According to media reports, the Institute of Mechanics last year conducted a ground test in which a scramjet engine ran for a record 10 minutes. If successfully applied during high speed flight, the technology would allow a missile

to travel at sustained hypersonic speeds for some 4,000km (2,500 miles) ([South China Morning Post](#), May 31, 2020). This could eventually be used to develop a global power projection capability.[3]

Implications for Warfighting and Strategic Competition

Hypersonic missiles launched on planes or ships can reach targets further away than equivalent ground-based systems launched from mainland bases. More importantly, they can approach a target from a wider range of locations than if launched from a land-based system, compounding their ability to evade existing BMD systems. In October 2020, an amateur video posted online appeared to suggest that the PLA was developing an air-launched HCM capable of being carried by a strategic bomber such as the H-6N (轰, Hong) missile carrier aircraft or possibly a more advanced successor ([Twitter](#), October 17, 2020). In March of this year, the Beijing Institute of Technology published a study entitled, “Network for hypersonic UCAV swarms” which discussed how groups of future Unmanned Combat Air Vehicles (UCAVs, aka drones) could act in coordinated operations through networked sensors and communications at hypersonic speeds.[4]

The PLA will likely employ hypersonic systems in combination with its subsonic and supersonic delivery systems. Because of their speed and unique trajectory capabilities, hypersonic missiles can, as first-strike weapons, facilitate follow-on attacks by non-hypersonic strike systems by disabling an adversary’s air and missile defense systems. One PRC defense expert specifically observed that the range of the DF-17 would enable the system to reach the Terminal High Altitude Area Defense (THAAD) BMD system in South Korea and the SM-3 BMD interceptor in Japan, “which are security threats to China” ([Global Times](#), October 1, 2019).

In addition to directly bolstering the PLA’s warfighting capabilities, China seeks hypersonic delivery systems to weaken Washington’s extended deterrence guarantees to its allies and partners in Asia. A recent report by the U.S.-China Economic and Security Review Commission notes that, “Capabilities that can credibly threaten the U.S. military also support Beijing’s aim to intimidate and coerce regional states by fueling doubts about U.S. ability or willingness to intervene in a crisis.”[5]

Conclusion

The PLA’s hypersonic delivery systems intensify Beijing’s challenge to the U.S.’ political-military primacy in the Indo-Pacific region. The effectiveness of China’s hypersonic capabilities in battle is uncertain; in addition to the PLA being largely untested in combat, hypersonics are still an emerging military technology. Furthermore, we do not know whether China, like the United States, will choose to only arm its hypersonic missiles with conventional munitions, or whether Beijing will follow Moscow’s lead and load some of its hypersonic delivery systems with nuclear warheads. In any case, China’s novel hypersonic capabilities could, alongside the growing power of the PLA in general, make PRC decision-makers more confident about their ability to employ force successfully against the U.S. military. If Chinese leaders believe that they could

employ these capabilities to preemptively destroy or disable key U.S. defense systems, then this would give Beijing greater incentive to strike first, raising the risk of escalation and war in a crisis.[6] If other Asian countries believed that China could more effectively fight U.S. forces, this could weaken the credibility of U.S. security guarantees to allies in Asia and further undermine regional stability.

Some of the measures that the United States and its Indo-Pacific allies are already taking to minimize damage from the PLA's traditional missile strike capability will also enhance defense against hypersonic weapons, for example passive measures that the U.S. military is pursuing to decrease the vulnerability of U.S. forward-based forces and facilities to China's ballistic and cruise missiles that include deception, dispersal, hardening, concealment, and mobility, as well as redundancy, recovery, and reconstitution.[7] In the future, more active (and expensive) responses could encompass disrupting hypersonic data links and sensors, space-based sensors that can track missiles in the upper atmosphere, and novel technologies for interceptors. The 2019 Missile Defense Review directs that, "Moving forward, the United States, allies, and partners will pursue a comprehensive missile defense strategy that will deliver integrated and effective capabilities to counter ballistic, cruise, and hypersonic missile threats" ([Office of the Secretary of Defense](#), January 17, 2019). But U.S. policymakers have yet to agree on the balance of funding for hypersonic weapons systems, enabling technologies, supporting research and development infrastructure, and hypersonic missile defense ([CRS](#), updated July 9).

U.S. responses to China's hypersonic challenge should also encompass non-military measures. The PRC's failure to sign on to the now-expired INF treaty allowed it to develop and deploy destabilizing ballistic and cruise missile systems. The United States should aim to prevent a recurrence of this gap in coverage by striving to include China in future missile limitation agreements. The U.S. government should also work with its allies and partners (including European states and Israel) to strengthen controls over the transfer of equipment, material, and technologies that could help the PRC develop hypersonic weapons. Additionally, U.S. officials could discuss limiting sales of hypersonic weaponry to rogue countries such as Iran and North Korea with China and other states pursuing research in the hypersonic space.[9] Policymakers and defense planners alike would do well to address the potential risks presented to regional stability as much as possible while also conducting further research into understanding Chinese strategic thinking on hypersonic technology as well as its emerging capabilities.

Richard Weitz, Ph.D., is a Senior Fellow and Director of the Center for Political-Military Analysis at the Hudson Institute in Washington, DC.

Notes

[1] Office of the Secretary of Defense, Military and Security Developments Involving the People's Republic of China 2020 (Arlington, VA: Department of Defense, 1 September 2020),

<https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>.

[2] Margot van Loon, "Hypersonic Weapons: A Primer," in American Foreign Policy Council, Defense Technology Program Brief, no. 18 (May 2019), p. 3.

[3] Paul Bernstein and Dain Hancock, "China's Hypersonic Weapons," Georgetown Journal of International Affairs, January 27, 2021, <https://gjia.georgetown.edu/2021/01/27/chinas-hypersonic-weapons/>.

[4] Shixun Luo, Zhongshan Zhang, Shuai Wang, Shuo Zhang, Jibo Dai, Xiangyuan Bu and Jianping An, "Network for hypersonic UCAV swarms," *Science China Information Sciences*, volume 63, Article number: 140311 (2020), <https://link.springer.com/article/10.1007/s11432-019-2765-7>.

[5] Jacob Stokes, "China's Missile Program and U.S. Withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty," U.S.-China Economic and Security Review Commission, Updated February 4, 2019, p.5, https://www.uscc.gov/sites/default/files/Research/China%20and%20INF_0.pdf.

[6] John T. Watts, Christian Trotti, Mark J. Massa, "Primer on Hypersonic Weapons in the Indo-Pacific Region," Atlantic Council, August 2020, <https://www.atlanticcouncil.org/wp-content/uploads/2020/08/Hypersonics-Weapons-Primer-Report.pdf>.

[7] U.S. Joint Chiefs of Staff, "Countering Air and Missile Threats," Joint Publication 3-01, April 21, 2017; validated May 2, 2018, V-15-18, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_01_pa.pdf.

[8] "2019 Missile Defense Review," U.S. Department of Defense, https://www.defense.gov/Portals/1/Interactive/2018/11-2019-Missile-Defense-Review/The%202019%20MDR_Executive%20Summary.pdf, p. 22.

[9] Richard H. Speier, George Nacouzi, Carrie A. Lee and Richard M. Moore, "Hypersonic Missile Nonproliferation," (RAND Cooperation Report, RADN, 2018), https://www.rand.org/pubs/research_reports/RR2137.html.
