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## Panel II: China's Development of Expeditionary Capabilities: "Bases and Access Points"

1. *Where and how is China securing bases and other access points to preposition materiel and facilitate its expeditionary capabilities?*

Previous testimony has addressed the various military logistics vessels and transport aircraft that supply People's Liberation Army (PLA) forces operating abroad. This method is costly, inefficient, and provides insufficient capacity to sustain longer and more complex military activities beyond the range of mainland logistics networks. Yet, with the notable exception of the sole military "support base" (*baozhang jidi,* 保障基地)[1] in Djibouti, these platforms are the PLA's only organic mode of "strategic delivery" (*zhanlüe tousong*, 战略投送) to project military power overseas. Lacking a network of overseas bases in the short to medium term, the PLA must rely on a variety of commercial access points in order to operate beyond the first island chain. Because the PLA Navy (PLAN) is the service branch to which virtually all of these missions fall, this testimony focuses on port facilities.

The PLAN depends on commercial ports to support its growing operations overseas. Over the course of deploying 34 escort task forces (ETF) since 2008 to perform an anti-piracy mission in the Gulf of Aden, the PLAN has developed a pattern of procuring commercial husbanding services for fuel and supplies at hundreds of ports across the globe. All navies that operate abroad rely to some degree on such routine commercial arrangements. The distinctive aspect of the PLAN's efforts to support a growing overseas presence, however, is its access to a large and growing number of ports (partially) owned and operated by PRC firms. PLA officers and Chinese analysts tout a variety of possible dual-use functions at these ports, which are often dubbed China's overseas "strategic strongpoints" (*zhanlüe zhidian*, 战略支点).[2]

How does the PLAN utilize these facilities? Where are the facilities located, who owns and operates them, and what, if any, military purposes do they serve? After summarizing the pattern of commercial activity, we will turn to the potential dual-use functions of Chinese-owned and -operated ports and the prospects for securing actual military bases.

*China's Global Port Portfolio.* Since the late 1990s, a handful of Chinese firms have seized considerable market share as international terminal operators. They have leveraged capital and expertise drawn from the extraordinary scale of China's own domestic port industry (which boasts 31 of the world's

[1] The facility is sometimes called a "logistics and supply base" (*houqin buji jidi,* 后勤补给基地), a "support base" (*baozhang jidi,* 保障基地), or simply a "military base" (*junshi jidi*, 军事基地), in both official and non-official sources.
[2] See Conor Kennedy. 2019. "Strategic Strongpoints and Chinese Naval Strategy." *Jamestown China Brief*, vol. 19, no. 6, https://jamestown.org/program/strategic-strong-points-and-chinese-naval-strategy/. PLA scholars from the Academy of Military Sciences have written on the subject; e.g., for a good example of civilian writing on the subject, see Liu Lin (刘琳). 2017. "Strategic Strongpoints along the 'Belt and Road' and Building Military Diplomacy ('一带一路'沿线战略支点与军事外交建设)." *World Affairs (世界知识)*, no. 17: 62–64 [CMSI Translation]. Civilian scholars have also pursued the idea, e.g. Zhang Jie (张杰). 2015. "Sea Lane Security and the Construction of China's Strategic Strongpoints – Also, An Assessment of the Security of 21st Century Maritime Silk Road (海上通道安全与中国战略支点的构建——兼谈 21 世纪海上丝绸之路建设的安全考量)." *International Security Research (国际安全研究)*, no. 6, available at http://www.globalview.cn/html/zhongguo/info_3755.html

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top 50 ports by total cargo tonnage, and 7 of the top 10 highest throughput container ports)[3] to expand overseas. As of February 2020, PRC firms (partially) own or operate some 94 ports across the globe.[4] At a far larger number of ports, on the order of hundreds, Chinese firms have built port works, upgraded equipment, or dredged harbors.[5] However, such contracted projects do not leave a Chinese firm in control of the management or operations of the port and are thus excluded from analysis here of how Chinese commercial facilities may support military operations. Organizational and geographic patterns of ownership and operation of these 94 ports are presented in **Appendix A**.

A few facts bear noting with regard to ownership:

- At 59 of these ports, one or more terminals is owned or operated by a state-owned enterprise (SOE). 56 of these terminals involve central SOEs supervised and administered directly by the PRC State Council, and 11 are local SOEs. Private firms own or operate 39.[6]
- A Chinese firm is the majority shareholder in the terminal operator (these are often joint ventures) in at least one terminal at 50 ports, and 100% shareholder in 20 of those.
- Three Chinese firms account for the vast majority of Chinese overseas ports:
    - Hong Kong-based China Merchants Port Holdings (CMPort), a subsidiary of the central SOE China Merchants Group, has a stake at 31 foreign ports.
    - The Shanghai-based central SOE China COSCO Shipping Company (COSCO) has 19 owned or operated overseas facilities.
    - Privately-owned, Hong Kong-based CK Hutchison and its subsidiary Hutchison Port Holdings (Hutchison) operates in 36 international ports.

The geographic distribution is also instructive:

- By ocean: Atlantic: 32; Indian: 23; Pacific: 20; Mediterranean: 18
- By region: Europe 22; Middle East/North Africa (MENA): 20; Americas: 18; South/Southeast Asia: 17; sub-Saharan Africa: 10; Pacific Rim: 7
- Proximity to key maritime chokepoints:[7]
    - Malacca Strait: 10; English Channel: 9; Hormuz Strait: 8; Suez Canal: 6; Panama Canal: 4; Gibraltar Strait: 4; Turkish Straits: 4; Bab al-Mandeb Strait: 1

*Analysis.* The "where" of prospective PLAN access points can basically be read off of a map (**Appendix B**). That spatial representation is more revealing, as a simple count does not show the wide geographic dispersion of Atlantic ports (10 in the west Atlantic, 11 in the east Atlantic, 11 in the north Atlantic). Because the Atlantic ports lie on different continents, the greater Indian Ocean region is actually the area of greatest concentration – and especially so if we include the 7 ports on the eastern Mediterranean, which serve vital roles for traffic moving through the Suez Canal into or out of the Indian Ocean. South and Southeast Asia also feature ports at key locations along major sea lines of communication and proximate to critical chokepoints.

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[3] Data from IHS Markit.

[4] Proprietary database on file with author. Certain key data points are presented in Appendix A for reference – but not for citation without express permission from author.

[5] Data collection is incomplete on such construction projects, largely conducted by a small handful of central SOEs: China Communications Construction Corporation, its subsidiaries China Harbour Engineering Corporation and China Road and Bridge Corporation, and China State Construction Engineering Corporation.

[6] NB – there are several instances of separate private and SOE terminals at the same port, thus the sum greater than 94

[7] Defined as proximate enough to support logistics for aircraft and surface or subsurface vessels operating in and around the chokepoints, within 480 nautical miles (one day's travel steaming at 20 knots).

The "how" of securing control over the operations of a port and utilizing it is more complex. China's lack of alliances[8] means that there are no standing legal commitments for military use (with the exception of Djibouti), and each such access agreement will be negotiated ad hoc – and likely out of public view. The fact pattern above shows a significant incidence of Chinese SOE ownership and operation at foreign port facilities, concentrated in a small handful of firms. On its face, this suggests the potential for a high degree of coordination between firms and the military for utilization of a network of commercial port facilities. This assumption bears further scrutiny, though, as there are several other characteristics of port operations that may be more decisive than corporate ownership. There are also a large number of ports in countries in which the PLA is unlikely to enjoy the political favor of the host government. Analysis of these characteristics allows us to winnow down the list to a handful of ports that should be considered most likely candidates for fuller dual-use development as PLAN access points in critical regions.

The dominance of the political over the commercial in firm behavior cannot be assumed based on ownership.[9] More significant than corporate ownership is the degree to which the firm itself controls the operations of the port, the physical capacity of the port to supply naval vessels, the specific conditions of its concession from the local port authority (e.g., lease term, responsibilities of various partners to a venture), and the nature and scope of China's broader diplomatic and economic relations with the host country. In general, a terminal operator will have significant discretion in granting access for naval vessels seeking to call, warehousing and storage, bunkering, as well as use of dry dock, medical, power, and other terminal facilities. Majority or sole ownership of the port operator is the condition that best positions a firm to guarantee logistical support for naval operations. Such arrangements are more feasible in friendly countries in which low transparency is the norm in contracting (and governance generally), and where China accounts for a large proportion of their overall trade and investment.

Considering these factors at the firm level helps narrow the field. Of the 50 majority stakes held by Chinese firms, Hutchison holds 32 – including 16 of the 20 cases with 100% stakes. Nearly half (16) of their holdings are in advanced industrial democracies, and tend to be single terminals in much larger port complexes. This private firm's senior management is from Hong Kong, Europe, and Latin America and is incorporated in the Cayman Islands (with subsidiaries scattered across other jurisdictions, including the British Virgin Islands and Singapore). Its major operations can be found in the United Kingdom, the Netherlands, and Mexico, but it also operates several ports in and around the Persian Gulf (UAE, Iraq, Saudi Arabia, Pakistan), the eastern Mediterranean (Egypt), the Panama Canal, and East Africa (Tanzania) in which it holds majority or total ownership of one or

[8] NB – A Chinese firm operates one port in erstwhile ally North Korea, which is a likely candidate for PLA utilization but according to a different set of political and economic factors than the rest of its port investments. See "China wins 30-year concession to use North Korean port (中国获朝港口 30 年使用权 韩媒称中国利用朝鲜)." *Global Times* (环球时报). 12 September 2012, https://world.huanqiu.com/article/9CaKrnJx36J

[9] While the designation "state-owned" implies a greater degree of state control over firm activities than might be expected in private firms, this is not always the case. In fact, there are reasons to think some large SOEs with politically-empowered managers and directors are able to act with greater autonomy than their private counterparts, which depend on the good will and patronage of the state and may be even more responsive to its requests. (The controversy over Huawei, a private firm, and its relationship to the state should be instructive here.) For a careful analysis of the state-owned vs. private distinction and its limitations, see Milhaupt, Curtis J., and Wentong Zheng. 2015. "Beyond Ownership: State Capitalism and the Chinese Firm." *Georgetown Law Journal*, vol. 103, no. 3, pp. 665–722.

more terminals. Hutchison's political and geographic distance from Beijing[10] make it a less-likely candidate for the deep cooperation required to establish dual-use functions. Its governance is more transparent than that of SOEs. Diversion of corporate resources towards non-economic purposes would likely meet internal resistance and invite external scrutiny.

By contrast, COSCO is a central SOE that was formerly controlled directly by the PRC Ministry of Transport as the sole domestic and international shipping operator in China. It has undergone several rounds of corporate transformation and mergers to become a global transport and logistics behemoth.[11] Its terminal-operating subsidiary, COSCO Shipping Ports, has taken a variety of notable positions in foreign ports, including majority control of the port authority at Piraeus, Greece, with a 100% ownership of development and operations at two of its terminals. Other notable projects include COSCO's first international greenfield port development, a 90% stake in the Khalifa port in Abu Dabi, UAE, to set up the largest freight station in the Middle East; a second greenfield investment, at Puerto Chancay in Peru, is also a majority stake (60%). Notably, COSCO's lack of transparency and appetite for loss-making ventures due to heavy subsidization and support[12] from Beijing make it a most-likely candidate for facilitating military utilization of its port facilities (and its shipping, container, and general logistics capacity).

CMPort is also a central SOE, but with a political reputation and corporate strategy quite different from COSCO's. Firm representatives and industry executives note its independent origins as a Hong Kong trading house founded during the "self-strengthening movement" in opposition to British occupation,[13] and have taken somewhat more conservative positions in overseas ports (with major exceptions at Hambantota and Djibouti). The bulk of CMPort's overseas ports, 22 of 31, are in fact portfolio investments: that is, minority stakes in a joint venture with the French firm CMA CGM's terminal operating subsidiary Terminal Link in which CMPort has no operational or managerial role.[14] CMPort has sought to distinguish itself with slick marketing and appeals to foreign investors on the strength of its "Shekou Model" for comprehensive development of a port site into a trade

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[10] There has been some speculation about the degree to which the firm's owner, Hong Kong tycoon Li Ka-shing (李嘉诚), is cooperative with the PRC party-state For example, during hearings at the Senate Armed Services Committee after Hutchison acquired stakes in two ports on the Panama Canal. See "Hearing before the Committee on Armed Services." 1999. U.S. Senate, 106th Congress, 22 October, First Session, p. 40. Li's level of coordination with Beijing is not likely to be high, and his case is a likely example of the relative autonomy of some private firms. Mainland and Hong Kong media often cover his public disagreements with Beijing. See, for example, Eddie Lee. 2015. "Chinese state media continues tirade against Hong Kong tycoon Li Ka-shing in People's Daily." *South China Morning Post*. 21 September. https://www.scmp.com/news/china/economy/article/1860098/chinese-state-media-continues-tirade-against-hong-kong-tycoon-li. More recently, mainland media and social media have been criticizing Li for alleged support for Hong Kong democracy and protesters, e.g. He Dingding (何鼎鼎). "Hong Kong Cannot Wait Any Longer to Solve the Housing Problem (解决住房问题，香港不能再等了)."People's Daily (人民日报). 12 September 2019; see also "'Li Ka-shing' Criticized By Name in the People's Daily!" ('李嘉诚'被人民日报点名了!)" *Hulian Net* (*互联网*). 16 September 2019, http://www.sohu.com/a/341133277_100016235

[11] Yu Zheng and Chris Smith. 2017. "New Voyages in Search of Treasure: China Ocean Shipping Company (COSCO) in Europe." In *Chinese Investment in Europe: Corporate Strategies and Labour Relations*, edited by Jan Drahokoupil, pp. 231–50. Brussels: ETUI.

[12] Greg Knowler. 2018. "Boosted by Beijing subsidy, COSCO expects hefty 2017 profit. *JOC.com*. 310 January 2018, https://www.joc.com/maritime-news/helping-hand-beijing-cosco-heads-hefty-profit_20180130.html; Author interviews with industry executives in New York, Los Angeles, and Hong Kong.

[13] China Merchants Port Holdings Company Limited, "History," http://www.cmport.com.hk/EN/about/History.aspx?from=6

[14] These terminals include four in France, three in northern Europe, one in India, and two the U.S. (Houston and Miami).

and commerce hub, drawing favorable attention to their corporate strategy from the likes of Wharton and Harvard Business School.[15] Their executives are media savvy (at least relative to COSCO's) promoters who traffic in business jargon and explain their firm's interests as maximizing "synergies" with exposure to trade flows and key resources.[16] However, CMPort operates the port adjacent to the Djibouti base, where it has regularly devoted commercial pier space to PLAN surface combatants.[17] The comprehensive commercial ecosystem prescribed in their "Shekou Model" also establishes a large and diverse Chinese commercial presence as well as ashore transport, logistics, industry, and communications. While less easily persuaded to crowd out its commercial business than COSCO or local SOEs, CMPort is demonstrably willing to coordinate with the PLAN.

Beyond those big three players, other PRC firms operate or own only a small handful of ports worthy of close scrutiny. China Overseas Port Holdings is a state-owned firm that is the sole owner and operator of the Pakistani port of Gwadar. According to its Chairman, Zhang Baozhong, the firm was "specially-designed and purposely-built for the construction of the Gwadar Port by the Chinese government."[18] One unnamed PLA officer reportedly said of China's military use as a base that "the food is already on the plate, we'll eat it whenever we want to."[19] Pakistan stands out as a country where China's extraordinarily close political, military, and economic ties make it a prime candidate for expansion of PLAN operations. Provincial SOEs Guangxi Beibu Gulf International Port Group and Tianjin Union Development Corp. are developing port projects in Cambodia under an unusual land lease, and construction of a military-grade airfield and reported PLA activity in the area has raised hackles.[20] Cambodia, like Pakistan and North Korea, is among the countries most likely to cooperate in non-public ways with Beijing to provide reliable military access to the PLA.

2. *How do policies such as "military-civil fusion" and laws and regulations such as China's 2017 National Defense Transportation Law improve the PLA's expeditionary and force projection capabilities?*

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[15] Rithmire, Meg, and Yihao Li. 2019. "Chinese Infrastructure Investments in Sri Lanka: A Pearl of a Teardrop on the Belt and Road." *Harvard Business School Case Study* N9-719–046; "Cruising Ahead: China Merchants Group's Shekou Prince Bay Project." 2019. *Knowledge@Wharton*. 18 February, https://knowledge.wharton.upenn.edu/article/cruising-ahead-china-merchants-groups-shekou-prince-bay-project/

[16] Author interview with CMPort executive, Hong Kong, June 2019. A strong commercial position in coal imports, for example, is the commercial motivation for a 98-year CMPort lease at the Australian port of Newcastle. See "CMPort completes its acquisition of the Port of Newcastle in Australia Achieving a full coverage of the six continents." *China Merchants Port Holdings Company Ltd.* 14 June 2018, http://www.cmport.com.hk/enTouch/news/Detail.aspx?id=10007652

[17] NB - now that the naval pier appears complete on open source satellite imagery, it may cease to provide this service.

[18] Yasir Habib Khan. 2019. "China Overseas Port Holding Company was made specifically to build the Gwdar port: chairman." *Geo.tv*. 14 May. https://www.geo.tv/latest/237251-our-company-was-made-specifically-to-build-the-gwadar-port

[19] "…那已经是盘中的菜，想什么时候吃就什么时候吃." Jin Wu (金吴). 2016. "Djibouti: The PLA's First Overseas Base (吉布提：人民解放军首个海外基地)." *Phoenix Military* (凤凰军事), 22 April, http://news.ifeng.com/a/20160411/48414276_0.shtml.

[20] See Liam Cochrane. 2020. "Chinese military officials made secret visit to Cambodia weeks before mysterious drone crashed." *ABC News*. 5 February. https://www.abc.net.au/news/2020-02-05/secret-chinese-delegation-visited-cambodian-naval-base/11928184; Jeremy Page, Gordon Lubold, and Rob Taylor. 2019. "Deal for Naval Outpost in Cambodia Furthers China's Quest for Military Network. *Wall Street Journal*. 22 July. https://www.wsj.com/articles/secret-deal-for-chinese-naval-outpost-in-cambodia-raises-u-s-fears-of-beijings-ambitions-11563732482; Kenji Kawase. 2018. "Cambodia's biggest port sees China coveting Japan's dominant role. *Nikkei Asian Review*. 3 August. https://asia.nikkei.com/Business/Company-in-focus/Cambodia-s-biggest-port-sees-China-coveting-Japan-s-dominant-role

Beijing's energetic promotion of "military-civil fusion" (*junmin ronghe,* 军民融合) has created wide avenues for cooperation between the PLA and industry.[21] Among the significant elements of this program for the military utilization of commercial port facilities are a series of reforms as well as laws and regulations obligating firms to actively prepare for and accommodate military requests. A National Defense Mobilization Law,[22] a National Defense Transportation Law,[23] and two newly formed and upgraded organs under the Central Military Commission (CMC), the National Defense Mobilization Department and Logistics Support Department, created under a major round of PLA reforms in 2016[24] stand out as key indications of the desired trajectory of more integrated dual use capabilities. Central policy is driving towards a more substantial role for the military and the state in defining the conditions under which civilian assets and resources are employed.[25]

The mobilization law guarantees fiscal reimbursement to central and local budgets (Art. 6) and further promises untold "rewards for citizens and organizations that have made outstanding contributions in national defense mobilization" (Art. 7). Certain key construction projects are to be built to military standards (Art. 23), designated jointly by the State Council and CMC (Art. 22), with the benefit of "subsidies or other preferential policies" (Art. 24).[26] While the implementation of the law is left to lower-level authorities, the mandate is clear: "any organization or individual has the obligation to accept the expropriation of civil resources in accordance with the law" (Art. 55).[27] The mobilization law also establishes a system for maintaining and transferring "strategic material reserves" (*zhanlüe wuzi chubei,* 战略物资储备) from enterprises to the military (Arts. 33-36). While

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[21] See, for example Fang Yongzhi (房永智). 2014. How to Realize Deeper Military-Civilian Fusion in Infrastructure Construction (础设施建设如何实现深度军民融合.") *China Youth Daily* (中国青年报). 24 January 2014, http://theory.people.com.cn/n/2014/0124/c40531-24217713.html; Zhang Caibi (张才毕). 2005. "Accelerate National Defense Mobilization Preparation in Coastal Areas (加速推进沿海地区国防动员准备)."*National Defense* (国防), No. 1, pp. 29-31.

[22] The National Defense Mobilization Law of the People's Republic of China (中华人民共和国国防动员法). 2010. *13th meeting of the Standing Committee of the 11th National People's Congress.* 26 February, http://www.gov.cn/flfg/2010-02/26/content_1544415.htm

[23] The National Defense Transportation Law of the People's Republic of China (中华人民共和国国防交通法). 2016. *22nd Session of the Standing Committee of the Twelfth National People's Congress*. 3 September. http://www.npc.gov.cn/zgrdw/npc/xinwen/2016-09/03/content_1996764.htm

[24] For PLA commentary on these developments, see Qu Baichun, Liao Pengfei, and Gao Zhiwen. 2016. "Military and Civilian Integration Accelerates the Development of Strategic Delivery Capabilities (军民融合加快推进战略投送能力建设 )." *PLA Daily* (解放军报). 5 September, http://www.81.cn/jfjbmap/content/2016-09/05/content_155683.htm; "Former Deputy Director of the Military General Logistics Department Transportation Department Bai Zhongbin Appointed Director of Central Military Commission Logistics Support Department Transport and Projection Department(原总后军交运输部副部长白忠斌任军委后勤保障部运输投送局长.)") *The Paper* (澎拜新闻). 5 September 5, www.thepaper.cn/newsDetail_forward_1524277 17. See also wide-ranging analysis of this and other elements of the 2016 PLA reforms in Joel Wuthnow and Phillip C Saunders (eds.). 2017. "Chinese Military Reforms in the Age of Xi Jinping: Drivers, Challenges, and Implications." *China Strategic Perspectives*, no. 10.

[25] For a rich analysis of the transportation elements of this program, including discussion of the vehicles, ships, and industry-level organizations involved, see Conor Kennedy. 2019. "Civil Transport in PLA Power Projection." *CMSI China Maritime Report*, no. 4, December, p. 12, https://digital-commons.usnwc.edu/cmsi-maritime-reports/4/.

[26] Scholars from the PLA Army Transportation University suggest that these subsidies and incentives will be disbursed directly by the PLA, which will "establish an incentive mechanism for the requisition of overseas Chinese-funded enterprises, and fully mobilize the enthusiasm of relevant institutions and enterprises." Wang Tianze, Qi Wenzhe, Hai Jun (王天泽, 齐文哲, 海军). 2018. "An Exploration Into Logistical Support of Transportation and Projection for Military Bases Abroad (海外军事基地运输投送保障探讨)." *Defense Transportation Engineering and Technology* (国防交通工程与技术), no. 1, p. 34

[27] The mobilization law further enumerates legal liabilities for failure to cooperate (Arts. 68-71).

administrative regulations are left to local military and civilian authorities (notably, the Transportation War Readiness Offices at the provincial level), those organs may task the enterprises with storing military supplies at overseas facilities. The prerogative to utilize civil transportation capacity – to include facilities at ports, airports, rail, and road – are expressly granted under standing defense mobilization regulations issued by the CMC and State Council.[28]

Under what circumstances will enterprises will have capacity and willingness to build and maintain facilities, equipment, and supplies at military standards, diverting resources and space that otherwise might have commercial value? These considerations are closely held, so observable evidence of participation in other military-civilian fusion programs is probably the best indicator. COSCO and CMPort container and RO-RO vessels have participated in a number of military-civilian exercises, including transport of live ammunition and use of RO-RO vessels built to military specifications, so there is a basis for expecting cooperation on other matters.[29] Making this integration systematic and reliable in the event of domestic crisis, however, is a challenge. A foreign crisis would be orders of magnitude more difficult, requiring them to overcome both distance and the acute political sensitivities of a host country that will likely prefer not being drawn into a conflict.

PLA analysts have studied aspects of this problem of integration, and have flagged various issues concerning the suitability of commercial facilities for military use.[30] One 2019 study written by a member of the joint staff of the Eastern Theater Command with academics from Army Transportation Academy and Tsinghua argues that the relevant national defense requirements have not been properly implemented for port construction. Enterprises need to build "combat ready terminals" with RO-RO berths built at a higher standard than those for passenger automobiles,[31] ensure minimum 10 meter berth depth,[32] with assembly sites, storage facilities greater than 120,000 square meters, cold chain storage for overseas replenishment, and high quality roads serving the port that can bear heavy equipment. Commercial demand for these facilities is low, so better "top-level

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[28] See PRC State Council and PLA Central Military Commission. 2013. "Civilian Capacity Defense Mobilization Regulations (民用运力国防动员条例). 11 September. http://www.mod.gov.cn/regulatory/2016-02/17/content_4618058.htm; minor amendments were adopted in 2011 and 2019, see PRC State Council. 2019. "Decision of the State Council on Amending Certain Administrative Regulations." 2 March. http://www.gov.cn/zhengce/content/2019-03/18/content_5374723.htm

[29] See Kennedy "Civil Transport in PLA Power Projection," pp. 6-22 for detailed discussion on the extensive industry cooperation on transport capacity for strategic lift in the formation of "strategic projection support ship fleets" (*zhanlüe tousong zhiyuan chuandui,* 战略投送 支援船队) organized into transport units of various sizes. These activities are supported by vessels from COSCO and CMPort shipping fleets, see esp. pp. 9 and 12.

[30] A good overview from authors at PLA Naval Aviation University is: Wang Ruiqi (王瑞奇), Gu Yuyuan (顾钧元), and Li Zhiqiang (李志强). 2018. "Research on Building Civil-Military Integration Systems in Port Logistics." *Discussion and Research (探讨与研究 港口物流军民融合体系构建研究)*, no. 10: 105–7.

[31] RO-RO berths unsuitable for heavy wheeled and tracked equipment will need to own and configure heavy-duty loading and unloading machinery that meets military specifications. See Zhang Jing (张静), Zhang Zhihui (张智慧), Zhou Jiangshou (周江寿). 2019. "Comparison Between China and America in Implementation of National Defense Requirements in Port Construction (中美港口建设贯彻国防要求对标分析)." *Journal of Military Transportation University* (军事交通学院学报), vol. 21, no. 4, pp. 32-36.

[32] At least 11 meter draught will be necessary, however, to accommodate the largest vessels in the PLAN surface fleet, the Type 001 and Type 002 carriers as well as the new Type 901 supply ship. See "China Navy." 2019. *IHS Jane's Fighting Ships online.*

design" and subsidies are necessary for enterprises to properly construct ports – even domestically – that can support military utilization.[33]

Military analysts from the Navy Service College in Tianjin have attempted to model out how commercial cargo terminals can be used to provide emergency fuel and material support for the PLAN. Accepting that commercial piers and refueling facilities are typically not built to military standards, they address the complex protocol that would be required to safely conduct refueling using local power, fuel supplies, and military refueling vehicles that can provide the correct types and quantities of petroleum, oil, and lubricants for the varied classes of ships in the PLAN.[34] Modelling processes for emergency wartime refueling at civilian piers, the paper tries to "accurately predict the emergency fuel support process that is in line with wartime naval vessels using civil port cargo terminals, fuel equipment types, and quantity requirements to meet the number of ships and refueling flow requirements."[35] This effort seeks only to model one replenishment prior to the arrival of supply ships and tankers, not the sustained access to secure fuel and supplies that would be required in a protracted conflict. The degree of difficulty here should be taken as evidence of a recognition within the PLAN that they require a more reliable way to ensure adequate support for combat vessels than emergency use of non-specialized commercial ports.

The transaction for sourcing and procuring materials is also at issue. Authors from the Naval University of Engineering in Wuhan note that "since central state-owned enterprises' main responsibility is certainly not replenishing the Chinese military overseas, procurement channels are limited" and will lead to high costs and unsteady supply.[36] They argue that options should be explored such that adequate "wartime prepositioned materials" (*zhanbei wuzi chubei,* 战备物资储备) can be brought to the fight. They propose three: (1) overseas bases directly operated by the PLA, (2) PLA cooperation with Chinese companies already engaged commercially in the local economy, and (3) that the PLA may deal directly with local governments to rent space and procure necessary supplies.[37]

However desirable to PLA operators,[38] such an extensive network of bases is not going to materialize in the near future. Therefore, the practical questions concern how to get the right supplies on time and at manageable prices. One article in the PLAN's official newspaper estimated that it took over 20 days to execute a purchase of supplies overseas, giving rise to an "emergency foreign purchase plan" that permitted the task force commander make the purchase directly from a

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[33] Ibid., p. 33-35

[34] Shao Haiyong (邵海永), and Ma Longbang (马龙邦). 2019. "Prediction Model for Wartime Use of Civil Port Cargo Terminals to Realize Requirements for Emergency Fuel Supply and Material Support (展示海军舰艇利用民用港口货运码头实施应急游客保障装备需求预测模型)." *Military Operations Research and Systems Engineering (军事运筹与系统工程)*, no. 1, pp. 52–57.

[35] Ibid. p. 57

[36] Luo Zhaohui (罗朝晖), Wan Jie (万 捷), and Li Hongyang (李弘扬). 2019. "Research on the Factors for Selecting Overseas Naval Bases." *Logistics Technology (军事物流)*, p. 142.

[37] Ibid., pp. 141-145

[38] Several authors from the PLAN's Naval Research Institute are highly critical of the progress to date in establishing this necessary support, arguing that "China's serious lack of strategic strongpoints and outposts in the Indian Ocean can be called a form of 'malnutrition.' The longstanding no-basing policy of the PRC has caused the navy's capacity to lag the expansion of national interests." Li Jian, Chen Wenwen, Jin Jing (李剑, 陈文文, 金晶). 2014. "Indian Ocean Seapower Structure and the Expansion of China's Sea Power into the Indian Ocean (印度洋海权格局与中国海权的印度洋拓展)." *Pacific Journal* (太平洋学报), vol 22, no. 5, p. 74.

Chinese firm within two days.[39] PLA logistics officers argue that civilian firms' organic capabilities far exceed the PLA's own, and that port calls to their facilities "provide a platform for the military to rely on corporate strengths…use market economic means, and adopt commercial contract entrustment methods (*shangye hetong weituode fangshi*, 商业合同委托的方式) to give full play to the advantages of enterprises and realize resource sharing."[40] Whether these savings will be achieved because of "sweetheart" deals, longer-term wholesale contracts, or outright expropriation is unclear.

From an operational effectiveness standpoint, the PLA will much prefer to operate its own dedicated facilities. For broader political reasons, however, the opportunity costs of overtly militarizing facilities will likely continue to make this option less attractive to civilian leadership – especially when various functional needs of the PLA can be adequately serviced by commercial firms.[41] The military-civilian fusion program reflects and advances a clear leadership preference for leveraging growing overseas PRC commercial capacity.

3. *In your view, what does China regard as the most important criteria for selecting future bases and access points for the PLA?*

A burgeoning literature by Chinese military and civilian analysts on securing access to overseas bases and places provides insight into the several criteria that make for desirable overseas bases and access points. Most of these criteria are intuitive and long-standing: geographic proximity to perceived security threats, hosted by friendly, stable countries, with suitable natural conditions at the port (e.g., wide approach channels, deep harbors, unthreatening climate), and capable of adequate force protection.[42] An additional more recent factor, based on the commercial developments addressed above, is the advantage offered by the presence of Chinese enterprises on or near the site.[43]

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[39] Yu Yonghua (余永华), "Lifting Warships Towards the Deep Blue: A Record of a Detachment's Shore Logistics Unit Exploring a Far-Ocean Logistics Guarantee Model" (托举战舰向深 蓝：某支队岸勤部探索远洋后勤保障模式纪事), *Renmin Haijun* (人 民海军), September 30, 2010 (page?)

[40] Liu Dalei (刘大雷), Hu Yongmin (于洪敏), and Zhang Hao (张浩). 2017. "Equipment Support in Overseas Military Actions" (我军海外军事行动装备保障问题研究). *Journal of Military Transportation Academy* (军事交通学院学报), vol. 19, no. 9, p. 25.

[41] For elaboration of this argument, see author's prior testimony on this subject. Isaac Kardon, Testimony for the U.S. China Economic and Security Review Commission. 2019. "Bases, Places, and a 'Security Guarantee' for the Belt and Road Initiative." *Hearing on "A 'World-Class' Military: Assessing China's Global Military Ambitions*." 20 June. https://www.uscc.gov/sites/default/files/Kardon_USCC%20Testimony_FINAL.pdf

[42] e.g., Liang Fang (梁芳). 2011. *On Maritime Strategic Access* (海上战略通道轮). Beijing: Fact Publishing (时事出版社); Zheng Chongwei (郑崇伟), et al. 2017. "Wind Climate Analysis Under the Demand of Reef Runway Construction (岛礁跑道设计中的风候特征分析)." *Marine Forecasts* (海洋预报), No. 4, Vol. 34, pp. 52-57; Xu Ke (许可). 2016. "On the Establishment of Strategic Fulcrums for the 21st Century Maritime Silk Road: A Reference of Diego Garcia Base for China (构建 '海上丝路' 上的战略支点)." *Asia-Pacific Security and Maritime Affairs Research* (亚太安全与海洋研究), No. 5, pp. 9-21.

[43] In 2010, the deputy chief of the PLAN Operations Department lamented the "uncertainties of foreign berthing facilities" as "limiting factors in the long term regularization of overseas operations" and looked to "Chinese enterprise facilities in overseas ports as the next step in building an 'overseas support system' (*haiwai baozhang tixi,* 海外保障体系)." Wang Bin (王滨). 2010. "Thoughts on the Construction of Overseas Support Points for Escort Operations (护航行动海外保障点建设思考)" *Navy Magazine* (海军杂志), No. 12, p. 2. Cited and translated in Kennedy "Strategic Strong Points."

Naturally, geostrategic considerations are paramount. China's armed forces seek to build capability to defend vulnerable maritime sea lines of communication, especially at key chokepoints.[44] The authoritative PLA Academy of Military Science's 2013 *Science of Military Strategy* states that: "we must build overseas strategic strongpoints that depend on the homeland, radiate into the periphery, and moves us in the direction of the two oceans [i.e. the Pacific and Indian Oceans]. These sites are to provide support for overseas military operations or act as a forward base for deploying military forces overseas, exerting political and military influence in relevant regions. We should form a posture with the homeland strategic layout that takes account of both the interior and the exterior, connects the near with the far, and provides mutual support."[45] A staff officer and an academic from the PLA Navy Submarine Academy in Qingdao further posit that "[t]he line stretching from the Taiwan Strait through the South China Sea, Malacca Strait, Indian Ocean, and the Arabian Sea is China's 'maritime lifeline'."[46] Most analysts focus on this vulnerable "lifeline" and propose strategic strongpoints stretching across the Indian Ocean region such that supply intervals between them are short enough to make one or more ports redundant in a crisis.[47]

Some analysts are willing to make concrete recommendations about preferred locations. Academics at the Army Transportation Academy propose that "to protect our ever-growing overseas interests, we will progressively establish a logistics network in Pakistan, United Arab Emirates, Sri Lanka, Burma, Singapore, Indonesia, Kenya and other countries based on various means – buying, renting, cooperating – to construct our overseas bases or overseas support strongpoints (*haiwai baozhang zhichengdian,* 海外保障支掌点)."[48] A group of researchers from the PLA Naval Research Institute proposed that China needed to establish at least one strategic strongpoint in the Bay of Bengal, one in the Persian Gulf region, and one in the Suez-Red Sea-Gulf of Aden region. They suggest Sittwe in Burma, Gwadar in Pakistan, and Djibouti or the Seychelles, respectively.[49] They argue that these are defensive positions to check India, but that a way to "further influence the entire Indian Ocean route and the African continent" would be to establish locations at Hambantota in Sri Lanka or Dar es Salaam in Tanzania. An Academy of Military Sciences analyst was also specific about locations, but struck a more cautious note that "India is extremely sensitive about China-Pakistan cooperation. Despite the fact that China has repeatedly emphasized that Gwadar port is a civilian project, India has long suspected that China will someday build Gwadar port into a military base."[50] Other

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[44] A military professor from the PLA National Defense University analyzes Malacca, Hormuz, Gibraltar, Suez, Panama, Mandeb, and Black Sea straits as the principal "strategic maritime corridors" (*haishang zhanlüe tongdao,* 海上战略通道)*:* Liang Fang "On Maritime Strategic Access, pp. 213-250.

[45] Shou Xiaosong (寿晓松). 2013. *Science of Military Strategy (战略学).* Beijing: Military Science Publishing (军事科学出版社),p. 254.

[46] Hu Dongying, Huang Rui, and Cai Guangyou (胡冬英，黄锐，蔡广友). 2017. "Several Thoughts on Advancing the Submarine Force to Distant Oceans (推进潜艇兵力走向远洋的几点思考)." *Ship Electronic Engineering* (舰船电子工程), No. 1, p. 2.

[47] Zheng Chongwei (郑崇伟), et al. 2017. "The Strategy of Maritime Silk Road in the 21st Century: Construction of Integrated Application Platform (经略 21 世纪海上丝绸之路': 综合应用平台建设)." *Ocean Development and Management* (海洋开发与管理), No. 2, pp. 52-57; Zheng Chongwei (郑崇伟), et al.. 2016. "Strategy of the 21st Century Maritime Silk Road: On the Important Routes, Crucial Nodes and Characteristics of Ports (经略 21 世纪海上丝路: 重要航线、节点及港口特征)." *Ocean Development and Management* (海洋开发与管理), No. 1, pp. 4-13; Zhang Jie "Maritime Channels in Southeast Asia"

[48] Wang Tianze, et al. "An Exploration Into Support for Transportation and Projection," p. 32. A CASS researcher proposed Indonesia's Sumatra and Kalimantan as appropriate targets, see Zhang Jie "Safety of Maritime Passages".

[49] Li Jian, et al. "Indian Ocean Seapower Structure," pp. 74-75.

[50] Liu Lin (刘琳) "Strategic Strongpoints along the 'Belt and Road'," p. 64 [CMSI Translation]

proposed locations surrounding India (the Maldives, Seychelles, Bangladesh) pose similar geopolitical problems for China in terms of balancing from India, Japan, and the U.S.[51]

Some analysts argue that military access should adhere more closely to economic development-focused PRC foreign policy. The "key nodes" should be "places where the flow of people, logistics, capital, and information are highly concentrated….Reasonably determining and accelerating the construction of key nodes along strategic channels is of great practical significance…for improving out military's strategic delivery capability."[52] Authoritative sources further stress the importance of non-combat military operations to protect Chinese citizens from terrorism, unrest, and natural disasters.[53] This logic puts "trade before the flag" in suggesting that points suitable for military support should be determined by first-order considerations of securing China's commercial interests.

Still, both a geoeconomic and a geostrategic set of criteria dictate that various ports between Suez and the South China Sea should be priorities for military access. Points further afield are less attractive from either standpoint. Yet opportunism is a powerful motivation, and the chance to establish more substantial military access to a commercial port off of the major strategic SLOCs – in, say, the Gulf of Guinea or the south Pacific – also yields a certain operational logic. In addition to providing capacity to operate in distant theaters, such off-center sites might trigger less aggressive balancing from the U.S., India, and Japan than would a Chinese base in Sri Lanka or Pakistan.

4. *How does China use military diplomacy, foreign assistance, military training, and military sales to secure agreements with other countries to provide the PLA with basing and other access rights?*

PLA interactions with foreign governments and militaries are an important component of China's overall foreign policy.[54] China's military diplomacy has provided ample opportunities to call at ports owned or operated by PRC firms. PLAN vessels (including the hospital ship *Peace Ark*) have visited

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[51] Xi Dugang (郗笃刚), et al. 2018. "Geopolitical risks for the 'One Belt One Road' Construction in the Indian Ocean ('一带一路'建设在印度洋地区面临的地缘风险分析郗)." *World Regional Studies* (世界地理研究), Vol. 27, No. 6 pp. 14-23.

[52] Yuan Dechun (苑德春), Wu Yang (吴洋), Zhang Wei (张昕), "Thoughts on Strengthening the Construction of Key Nodes on Strategic Channels (加强战略通道关键节点建设的思考)," *Journal of Military Transportation University (军事交通学院学报),* vol. 18, no. 2, 2016, p. 2

[53] The PLA National Defense University's 2015 *Science of Military Strategy* adopts the approach prescribed in the PRC's broader diplomacy, linking military presence to protection of "overseas interests" – that is, China's citizens and commercial assets abroad. "Under the new situation, with the in-depth development of economic globalization and the continuous advancement of China's reform and opening up policy, the pace of 'going out' of domestic enterprises has been accelerating, overseas investment has grown substantially, international trade has developed rapidly, and overseas interests have become more widespread. The scale is getting greater and greater, and it is still expanding to deeper and broader levels. At the same time, international terrorism has become increasingly rampant, conflicts in local areas have been raging, and social unrest has caused various security threats to overseas personnel, overseas assets, investment markets, resource supply sites, and maritime strategic channels. Therefore, there is a strong demand for China to send military forces to go overseas to safeguard national interests." Xiao Tianliang (肖天亮), ed. 2015. Beijing: *Science of Military Strategy* (战略学). Beijing: PLA National Defense University Press, p. 302

[54] For in-depth analysis of this phenomenon, see Kenneth Allen, Phillip C. Saunders, and John Chen. 2017. "Chinese Military Diplomacy, 2003–2016: Trends and Implications." *INSS China Strategic Perspectives*, no. 11 (Washington, DC: National Defense University Press); Saunders, Phillip and Jiunwei Shyy. 2019. "China's Military Diplomacy." In *China's Global Influence: Perspectives and Recommendations*, edited by Scott D. McDonald and Michael C. Burgoyne, pp. 207–27.

at least 27 of those 94 sites.[55] Perhaps more notable, at 56 of the 94 PRC ports overseas, the PLAN has called at a different port in the same country. In 17 of those 56 unvisited ports, PRC firms held a majority share in a terminal operation. This implies that diplomatic rather than operational factors are determinative. China either defers to the host country's preferences, seeks to downplay the military implications of its commercial enterprises' presence in country, or both. It is also clear that many of these facilities are unsuited for military use, or otherwise unable to host multiple vessels at commercial piers; those are firm-level factors that are not directed by the PLA. As such, the data do not establish a definite link between PLA visits and the establishment of bases or access points.

Other components of military diplomacy like foreign assistance, military sales, and military training or education are consequential for forging relationships conducive to allowing Chinese military access to ports on foreign shores. Increasingly, senior-level leadership interactions and training are undertaken "off-site", in mainland China.[56] Although foreign students report having very little interaction with their PLA counterparts (except with instructors in the classroom),[57] this combined educational programming establishes personal ties among senior officers and forges institutional links between militaries. Functional exchanges on specialized subjects like logistics and military medicine are also a part of the PLA's outreach package to foreign militaries. These, like training and education, are an opportunity for China to showcase its growing capabilities, confidence, and professionalism – a valuable impression to leave with foreign militaries who may consider affording greater access to a powerful PLA deemed capable of benefitting their own national security.

Arms sales, typically paired with other military diplomacy, offer material benefits that can serve as further inducement for a foreign country's receptiveness to PLA access. They are disproportionately concentrated among South Asian states (Pakistan, Burma, and Bangladesh were the top three recipients of Chinese arms in the period 2008-2018, together accounting for 61% of PRC arms transfers).[58] With growing sophistication of some of these exports (like submarines, surface combatants, and UAVs),[59] they also invite ongoing Chinese technical assistance. China's sale of two *Ming*-class Type 035B diesel electric submarines to Bangladesh illustrates this process.[60] While these affordable but obsolete submarines were not capable platforms, they came packaged with Chinese personnel to "supervise the construction" and PLAN crews to train the Bangladeshi submariners.[61] PLAN vessels began calling in Bangladesh in 2016 once the submarines were delivered, and by 2019, Bangladesh was negotiating with China to build it a submarine base – though expressly denying that the PLA would use the facility.[62]

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[55] These visits occurred at one or more terminals at 14 of the 36 ports operated by Hutchison, 11 of the 31 ports owned or operated by CMPort, and 6 of the 19 owned or operated by COSCO. Author database, including data shared by the U.S. National Defense University's Center for the Study of Chinese Military Affairs.
[56] Saunders "China's Global Military-Security Interactions," pp. 195-200
[57] Author interviews with participants.
[58] Stockholm International Peace Research Institute. "Importer/Exporter TIV Tables." https://www.sipri.org/databases/armstransfers
[59] US Department of Defense. 2018. *Assessment on US Defense Implications of China's Expanding Global Access*, p. 5, https://media.defense.gov/2019/Jan/14/2002079292/-1/-1/1/EXPANDING-GLOBAL-ACCESS-REPORT-FINAL.PDF
[60] "Why China's Submarine Deal With Bangladesh Matters." *The Diplomat*. 20 January 2017. https://thediplomat.com/2017/01/why-chinas-submarine-deal-with-bangladesh-matters/
[61] Ibid.
[62] Kamran Reza Chowdhury. 2019. "China To Help Bangladesh Build Submarine Base, Senior Official Says." *Benar News*. 12 September. https://www.benarnews.org/english/news/bengali/submarine-base-09122019155029.html

China's military diplomacy repertoire has grown, and by virtue of the PLA's increasing capability, presents China as a more attractive partner to many states. Yet to date, only Djibouti has provided anything recognizable as a secure basing arrangement. This is not necessarily a sign of the failure of the program, but rather, of its more incremental and unpublicized nature. According to one researcher at the Academy of Military Science's Foreign Military Studies Institute, the relationship between military diplomacy and establishment of access may be the reverse: "Military diplomacy must obey and serve overall national diplomacy. Therefore, in the process of building strategic strongpoints China should not over-emphasize the role of military diplomacy. Military diplomacy should play a supporting role. Moreover, it should place civil affairs and economics front and center. It should mix the military among the civilians (*yujun yumin*, 于军于民) to conceal the military (*yumin yan jun,* 以民掩军)."[63] Observation of military diplomacy, especially PLAN port calls, may be a lagging indicator of the practical military support afforded by China's growing portfolio of overseas ports.

**Implications & Recommendations**

While it is premature to claim that PLA logistics arrangements overseas rely on PRC firms, there is a growing body of evidence that the commercial facilities owned or operated by those firms are a key component of Chinese efforts to project power abroad. A few further implications and recommendations flow from this conclusion:

1. Over the long term, PLA planners believe they will require network of overseas bases.[64] For the short to medium term, however, the dual use "strongpoint" model is ascendant. This model provides significant peacetime logistics capability and intelligence value. Unless and until China establishes alliances or security agreements that assure reliable military access in a conflict, however, the wartime utility of these facilities will be limited.
2. Properly equipped, commercial ports may perform valuable military functions – not only for logistics, but for intelligence and communications – that do not require establishment of formal PLA facilities and permissions. As such, further research and analysis of the characteristics of China's commercial port facilities is necessary.
3. Economic influence is the leading instrument of Chinese efforts to achieve security. The Chinese firms building and operating infrastructure overseas are on the front line in a nascent great power competition. There is no viable method for preventing their commercial entry into most foreign markets. U.S. failure to roll back the concession won by Shanghai International Port Group at the port of Haifa in Israel should be a cautionary tale.[65] If a close security partner like Israel is not persuaded that the security risks outweigh the commercial benefits, it is highly improbable that other states will forego Chinese involvement in their critical infrastructure.

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[63] Liu Lin (刘琳) "Strategic Strongpoints along the 'Belt and Road'," p. 64. [CMSI Translation]

[64] Liu Jiasheng, Sun Datong, and Peng Fubing (刘嘉生, 孙大同, 彭富兵). 2019. "Development of Carriers for Strategic Projection in Response to National Security Needs (基于国家安全需求的战略投送载运工具建设)." *Journal of Military Transportation University* (*军事交通学院学报*), no. 2, pp. 9-13.

[65] "Israeli government approves Haifa Port privatization." *Container Management*, 27 January 2020, https://container-mag.com/2020/01/27/israeli-government-approves-haifa-port-privatisation/; Ron Kampeas. 2019. Michael Wilner. 2019. "Treasury joins White House, Pentagon in warning Israel over Chinese encroachment. *Jerusalem Post*. 16 January, https://www.jpost.com/Israel-News/Treasury-joins-White-House-Pentagon-in-warning-Israel-over-Chinese-encroachment-577638; "US Senate warns Israel against letting China run Haifa port. *The Times of Israel*. 19 June, https://www.timesofisrael.com/us-senate-warns-israel-against-letting-china-run-haifa-port/

4. Neither US firms nor the US government are prepared to offer direct substitutes for Chinese firms building, financing, or operating ports and other transport infrastructure. More useful than insisting that other states refuse Chinese largesse is empowering them to exploit it. US firms and government agencies could provide anticipatory consultation with governments and businesses engaging with PRC firms on port projects, providing legal and managerial advice on how best to retain control over important operational elements of their infrastructure. Helping other states maintain open bidding and non-discriminatory commercial access to Chinese projects will limit prospective harms to U.S. national security.
5. Given the number and geographic distribution of ports under PRC full or partial ownership and operational control, each regional combatant commander should be tasked to specify to the Secretary of Defense which ports in are essential to United States joint forces in carrying out assigned missions in that area of responsibility.

## Appendix A

| Name (shaded indicates PRC firm is sole operator) | Country | Ocean | PRC firm (owner or operator) | PLA port call: 0 (no) 1 (yes) 2 (other port) |
|---|---|---|---|---|
| Abidjan Port | Cote D'Ivoire | ATL-E | CMPort (Terminal Link/TL) | 1 |
| Abu Qir Port | Egypt | MED-E | Hutchison | 2 |
| Ahmed Bin Rashid Port (Umm Al Quwain) | UAE | IO-W | Hutchison | 2 |
| Ajman | UAE | IO-W | Hutchison | 2 |
| Akwa Ibom | Nigeria | ATL-E | China Power | 2 |
| Alexandria Port | Egypt | MED | Hutchison | 1 |
| Antwerp | Belgium | ATL-N | CMPort (TL) & COSCO | 1 |
| Barcelona | Spain | MED-W | Hutchison | 2 |
| Basra | Iraq | IO | Hutchison | 0 |
| Boke | Guinea | ATL-E | Yantai Port Group | 0 |
| Buenos Aires | Argentina | ATL-W | Hutchison | 1 |
| Busan Port | S. Korea | PAC-W | CMPort (TL) & COSCO & Hutchison | 1 |
| Casablanca | Morocco | MED | CMPort (TL) | 1 |
| Colombo | Sri Lanka | IO | CMPort | 1 |
| Colon (Cristóbal) | Panama | ATL-W | Hutchison | 0 |
| Colon (Isla Margarita) | Panama | ATL-W | Landbridge | 0 |
| Conakry | Guinea | ATL-E | Rizhao Port Group | 2 |
| Damietta Port | Egypt | MED-E | COSCO | 2 |
| Dammam Port | Saudi Arabia | IO | Hutchison | 2 |
| Dar es Salaam | Tanzania | IO-W | Hutchison | 1 |
| Djibouti | Djibouti | IO-W | CMPort | 1 |
| El Dekheila | Egypt | MED | Hutchison | 2 |
| El Hamdania | Egypt | MED-W | CHEC | 2 |
| Ensenada | Mexico | PAC-E | Hutchison | 2 |
| Felixstowe Port | UK | ATL-N | Hutchison | 2 |
| Grand Bahama | Bahamas | ATL-W | Hutchison | 0 |
| Nantes | France | ATL-E | CMPort (TL) | 2 |
| Dunkirk | France | ATL-N | CMPort (TL) | 2 |
| Gwadar Sea Port | Pakistan | IO | China Overseas Port Holdings | 2 |
| Gwangyang | S. Korea | PAC-W | Hutchison | 2 |
| Haifa Port | Israel | MED-E | Shanghai International Port Group | 1 |

| Name (shaded indicates PRC firm is sole operator) | Country | Ocean | PRC firm (owner or operator) | PLA port call: 0 (no) 1 (yes) 2 (other port) |
|---|---|---|---|---|
| Hambantota | Sri Lanka | IO | CMPort | ? |
| Harwich | UK | ATL-N | Hutchison | 2 |
| Houston | USA | ATL-W | CMPort (TL) | 2 |
| Isle of Grain | UK | ATL-N | Hutchison | 2 |
| Jakarta | Indonesia | IO-E | Hutchison | 1 |
| Kaohsiung | Taiwan | PAC-W | COSCO | 0 |
| Karachi | Pakistan | IO | Hutchison | 1 |
| Khalifa Port | UAE | IO-W | COSCO | 2 |
| Kingston Freeport | Jamaica | ATL-W | CMPort (TL) | 0 |
| Kribi | Cameroon | ATL-E | CHEC | 2 |
| Kuantan Port | Malaysia | PAC-W | Guangxi Beibu Gulf International Port Group | 2 |
| Kumport | Turkey | MED-E | COSCO & CMPort & CIC | 2 |
| Kyaukpyu Deep Water Port | Myanmar | IO-E | CITIC/Qingdao Port Group | 2 |
| Laem Chabang | Thailand | PAC-W | CMPort (TL) | 1 |
| Lazaro Cardenas | Mexico | PAC-E | Hutchison | 2 |
| Lekki Port | Nigeria | ATL-E | CHEC | 2 |
| Lome | Togo | ATL-E | CMPort | 0 |
| Los Angeles | USA | PAC-E | COSCO | 2 |
| Manzanillo | Mexico | PAC-E | Hutchison | 2 |
| Marsaxlokk | Malta | MED | CMPort (TL) | 2 |
| Marseille Fos Port | France | MED | CMPort (TL) | 2 |
| Melaka Gateway | Malaysia | IO-E | Rizhao Port Group + China Power + Shenzhen Yantai Group | 2 |
| Miami | USA | ATL-W | CMPort (TL) | 2 |
| Muara Port | Brunei | PAC-W | Guangxi Beibu Gulf International Port Group Co Ltd (Beibu) | 1 |
| Mundra | India | IO-W | CMPort (TL) | 2 |
| Newcastle | Australia | PAC-W | CMPort | 2 |
| Odessa | Ukraine | BLACK | CMPort (TL) | 2 |
| Pepel | Sierra Leone | ATL-E | Shandong Iron and Steel Group | 2 |
| Piraeus Harbour | Greece | MED | COSCO | 1 |
| Port Botany (Sydney) | Australia | PAC-S | Hutchison | 1 |

| Name (shaded indicates PRC firm is sole operator) | Country | Ocean | PRC firm (owner or operator) | PLA port call: 0 (no) 1 (yes) 2 (other port) |
|---|---|---|---|---|
| Port Darwin | Australia | IO-E | Landbridge | 1 |
| Port de Tanger Med | Morocco | MED | CMPort (TL) | 2 |
| Port Gdynia | Poland | ATL-N | Hutchison | 1 |
| Port Klang | Malaysia | PAC-W | Hutchison | 1 |
| Port of Amsterdam | Netherlands | ATL-N | Hutchison | 2 |
| Port of Brisbane | Australia | PAC-S | Hutchison | 1 |
| Port of Le Havre | France | ATL-N | CMPort (TL) | 2 |
| Port of Long Beach | USA | PAC-E | COSCO | 2 |
| Port of Panama City (Balboa) | Panama | PAC-E | Hutchison | 0 |
| Port of Quebec | Canada | ATL-W | Hutchison | 2 |
| Port of Rotterdam | Netherlands | ATL-N | CMPort (TL) & COSCO & Hutchison | 1 |
| Port of Seattle | USA | PAC-E | COSCO | 2 |
| Port of Thessaloniki | Greece | MED | CMPort (TL) | 2 |
| Port of Zeebrugge | Belgium | ATL-N | CMPort (TL) & COSCO | 2 |
| Port Qasim | Pakistan | IO | SinoHydro | 2 |
| Port Said | Egypt | MED-E | COSCO | 2 |
| Porto Vado | Italy | MED | COSCO & Qingdao Port International Development (QPI) | 2 |
| Puerto Chancay | Brazil | PAC-E | COSCO | 2 |
| Puerto de Bilbao | Spain | ATL-E | COSCO | 2 |
| Ras Al Khaimah | UAE | IO-W | Hutchison | 2 |
| Qingjin/Chongjin | North Korea | PAC-W | Yanbian Haihua Group | ? |
| Saigon | Vietnam | PAC-W | CMPort (TL) & Hutchison | 2 |
| Savona | Italy | MED | COSCO | 2 |
| Singapore | Singapore | IO-E | CMPort (TL) & COSCO | 1 |
| Sohar Port | Oman | IO-W | Hutchison | 2 |
| Stockholm | Sweden | ATL-N | Hutchison | 1 |
| Tanjung Priok | Indonesia | IO-E | Zhejiang Provincial Support Investment & Operation Group | 1 |
| Terminal de Contêineres Paranaguá | | ATL-W | CMPort | 2 |
| Tincan Island Port | Nigeria | ATL-E | CMPort | 1 |
| Umm Qasr port | Iraq | IO-W | CMPort (TL) | 2 |
| Valencia | Spain | MED-W | COSCO | 1 |

| Name (shaded indicates PRC firm is sole operator) | Country | Ocean | PRC firm (owner or operator) | PLA port call: 0 (no) 1 (yes) 2 (other port) |
|---|---|---|---|---|
| Veracruz | Mexico | ATL-W | Hutchison | 2 |
| Yangon/Thilawa | Myanmar | IO-E | Hutchison | 1 |

# Appendix B

Red pins: SOEs

Blue pins: private firms