

**CHINESE MARITIME EXPANSION AND POTENTIAL DUAL-USE IMPLICATIONS ON  
CRITICAL MARITIME CHOKEPOINTS**

by  
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## Abstract

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The current strategic environment has placed the United States and its allies on a seemingly inexorable path towards confrontation with the People's Republic of China. Based on this framework, this capstone has examined recent Chinese maritime infrastructure developments under a 2013 program of development known as the Belt and Road Initiative. One facet of this initiative is maritime expansion via trade routes and port facilities. However, given the close, or even doctrinal, relationship between Chinese corporations and military entities, there is speculation regarding the purpose of certain expansionary efforts. This speculation is generally based on the concept of Military-Civil Fusion and dual-use assets, whereby a civilian entity may be co-opted for military purposes or integrated into military efforts. This concept, while concerning based on the breadth of Chinese expansion, is not unique. Commercial shipping has been used for military purposes throughout history. For example, the United States created the Jones Act for just such a purpose, whose enactment in World War II was reflected in the creation of the Wartime Shipping Administration.<sup>1</sup>

In the context of the maritime infrastructure, this capstone addresses the implications of the potential military use of seventeen civilian ports on eight identified critical maritime chokepoints. This capstone employs imagery analysis to assess what type of threats could be hosted at these locations utilizing both military and civilian shipping to transport these threats. The implications and extent of these threats have been graphically superimposed over maps of strategic sea routes to indicate visually the extent of the potential future strategic obstacles. Consequently, this report concludes that Chinese Belt and Road Initiative developments pose a threat, if desired, to seven of eight identified critical maritime chokepoints.

**Primary Reader:** Jack O'Connor

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<sup>1</sup> U.S. Congress. 1958. "United States Code: Merchant Marine Act, 1920, 46 U.S.C. §§ 861-889 (1958)." *Library of Congress*. Accessed April 4, 2021. <https://www.loc.gov/item/uscode1958-009046024/>.



## **Preface**

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The contents of this report are unclassified. All material has been compiled via open source collection of publicly available resources. The aggregation of said information in no way compromises classified concepts, methods, sources, or actions. This report is for academic purposes only and represents the views of the author. The views expressed herein in no way represent the official policy or position of Johns Hopkins University.

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## Contents

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<b>Abstract</b>	.....	<b>ii</b>
<b>Preface</b>	.....	<b>iii</b>
<b>List of Tables</b>	.....	<b>vi</b>
<b>List of Figures</b>	.....	<b>vii</b>
<b>1. Key Intelligence Question</b>	.....	<b>1</b>
<b>2. Key Judgement</b>	.....	<b>1</b>
<b>3. Framing the Discussion</b>	.....	<b>1</b>
3.1 The Underlying Trend	.....	1
3.2 The Strategic Environment	.....	2
3.3 Chinese Expansion	.....	2
3.4 Understanding Chinese Corporate Players	.....	4
3.5 Chinese Civil-Military Relationship	.....	7
3.6 Cause for U.S. Concern	.....	8
<b>4. Analysis Factors</b>	.....	<b>11</b>
4.1 Intelligence Question Amplification	.....	11
4.2 Assumptions and Disclaimers	.....	11
4.3 Importance of Critical Maritime Chokepoints	.....	12
4.4 Identifying Critical Maritime Chokepoints	.....	13
4.5 Locations of Interest	.....	14
4.6 Methods	.....	15
4.7 Open Source Threats	.....	16
<b>5. Analysis</b>	.....	<b>18</b>
5.1 Southeast Asia	.....	18
5.1.1 Ream Naval Base	.....	18
5.1.2 Melaka Gateway Port Project	.....	19
5.1.3 Port of Kuantan	.....	21
5.1.4 Port of Singapore	.....	22
5.1.5 Port of Kyaukphyu	.....	24

5.1.6 Port of Colombo .....	25
5.1.7 Port of Hambantota .....	26
5.2 Middle East .....	28
5.2.1 Port of Khalifa .....	28
5.2.2 PLA Expeditionary Base .....	29
5.2.3 Port of Sokhna .....	30
5.2.4 Port of Gwadar .....	31
5.3 Europe .....	33
5.3.1 El-Hamdania Port Project .....	33
5.3.2 Port of Zeebrugge .....	34
5.3.3 Port of Piraeus .....	35
5.3.4 Port of Valencia .....	37
5.3.5 Port of Kumpport .....	38
5.4 Americas .....	39
5.4.1 Panama Colon Port Project .....	39
<b>6. Application of Analysis .....</b>	<b>41</b>
6.1 Assessment of Key Intelligence Question .....	41
<b>7. Conclusion and Wrap-Up .....</b>	<b>46</b>
7.1 Questions for Follow-on Collection .....	46
7.2 Requirements for Follow-on Collection .....	47
7.3 Suggested Timeline for Follow-on Collection .....	49
7.4 Suggested Budget for Follow-on Collection .....	50
<b>8. Glossary .....</b>	<b>51</b>
<b>9. Works Cited .....</b>	<b>52</b>

## List of Tables

---

4.1	Critical Maritime Chokepoints .....	13
4.2	Locations of Interest .....	15

## List of Figures

---

<b>3.1</b>	Landbridge Group founder Ye Cheng and PRC President Xi Jinping in 2015.....	6
<b>3.2</b>	Naval Ships and Merchant Magazine depiction of Roll-on-Roll-off vessels for vehicle transport .....	9
<b>3.3</b>	2017 Beijing Military exhibition of operations conducted with CSC RoRo Logistics Ltd. vessels .....	9
<b>4.1</b>	Representation of Maritime Traffic relative to selected Critical Maritime Chokepoints.....	14
<b>5.1.1</b>	Ream Naval Base Graphic .....	18
<b>5.1.2</b>	Melaka Gateway Port Project Graphic .....	19
<b>5.1.3</b>	Port of Kuantan Graphic.....	21
<b>5.1.4</b>	Port of Singapore Graphic .....	22
<b>5.1.5</b>	Port of Kyaukphyu Graphic .....	24
<b>5.1.6</b>	Port of Colombo Graphic .....	25
<b>5.1.7</b>	Port of Hambantota Graphic .....	26
<b>5.2.1</b>	Port of Khalifa Graphic .....	28
<b>5.2.2</b>	PLA Expeditionary Base Graphic .....	29
<b>5.2.3</b>	Port of Sokhna Graphic .....	30
<b>5.2.4</b>	Port of Gwadar Graphic .....	31
<b>5.3.1</b>	El-Hamdania Port Project Graphic .....	33
<b>5.3.2</b>	Port of Zeebrugge Graphic .....	34
<b>5.3.3.1</b>	Port of Piraeus Graphic .....	35
<b>5.3.3.2</b>	Port of Piraeus Proximity Graphic .....	36
<b>5.3.4</b>	Port of Valencia Graphic .....	37
<b>5.3.5</b>	Port of Kumpport Graphic.....	38
<b>5.4.1.1</b>	Panama Colon Port Project Graphic .....	39
<b>5.4.1.2</b>	Screenshot and caption of “work camp” .....	40
<b>6.1.1</b>	Southeast Asia Assessment .....	42
<b>6.1.2</b>	Middle East Assessment .....	43
<b>6.1.3</b>	Europe Assessment .....	44
<b>6.1.4</b>	Americas Assessment .....	45

## 1. Key Intelligence Question

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**In the event of a Great Power Conflict, what Chinese maritime investments and developments abroad potentially threaten U.S. and Allied maritime capability via the reinforcement and denial of sea space immediately surrounding critical maritime chokepoints?**

## 2. Key Judgement

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**It is currently assessed that the pre-placement of threat capabilities at the identified Belt and Road Initiative related maritime infrastructures would enable the PRC to deny freedom of navigation to U.S and Allied maritime activities via all of the identified critical maritime chokepoints, with the exception of the Panama Canal.**

## 3. Framing the Discussion

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### 3.1 The Underlying Trend:

"The Thucydides Trap."<sup>2</sup> Thucydides, in the aftermath of the Peloponnesian War, stated, "what made the war inevitable was the growth of Athenian power and the fear which this caused in Sparta."<sup>3</sup> Ultimately, his statement has come to represent the idea put forward by Harvard Professor Graham Allison, that "rising powers tend to come into conflict with those whose strength is long established."<sup>4</sup> Indeed, so powerful is this concept that in 2015 President Xi Jinping stated "There is no such thing as the so-called Thucydides trap in the world." But should major countries time and again make the mistakes of strategic miscalculation, they might create such traps for themselves."<sup>5</sup> In the same speech Xi Jinping states, "We want to see more understanding and trust, less estrangement and suspicion, in order to forestall misunderstanding and miscalculation." However, in an earlier speech, from 2013, Xi Jinping notes that "in the economic, technological, and military domains" his country would need to prepare for "a long period of cooperation and of conflict" with the expressed aim of "building a socialism that is superior to capitalism, and laying the foundation for a future where we will win the initiative and have the dominant position."<sup>6</sup> To understand the full dynamics of this strategic situation, it is important to comprehend the

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<sup>2</sup> Clark, Bruce. 2020. "The Thucydides Trap." *The World Today*. January. Accessed March 2021. [https://www.chathamhouse.org/sites/default/files/field/field\\_document/16%20Thucydides%2005.pdf](https://www.chathamhouse.org/sites/default/files/field/field_document/16%20Thucydides%2005.pdf).

<sup>3</sup> Ibid, 40.

<sup>4</sup> Ibid, 40.

<sup>5</sup> Jinping, Xi. 2015. *Speech by H.E. Xi Jinping President of the People's Republic of China at the Welcoming Dinner Hosted by Local Governments and Friendly Organizations in the United States*. September 22. Accessed March 7, 2021. [https://www.fmprc.gov.cn/mfa\\_eng/topics\\_665678/xjpdmgjxgswbcxlhgcl70zxnlfh/t1305429.shtml](https://www.fmprc.gov.cn/mfa_eng/topics_665678/xjpdmgjxgswbcxlhgcl70zxnlfh/t1305429.shtml).

<sup>6</sup> U.S. Department of Defense. 2020. "Military and Security Developments Involving the People's Republic of China: Annual Report to Congress." *U.S. Department of Defense*. Accessed March 7, 2021.

extent of the factors in play.

### **3.2 The Strategic Environment:**

In 2018, the United States Department of Defense's (DOD) National Defense Strategy stated that the "re-emergence of long-term, strategic competition between nations" has driven the realization that "inter-state strategic competition, not terrorism, is now the primary concern in U.S. national security."<sup>7</sup> Specifically, "long-term strategic competitions with China and Russia are the principal priorities."<sup>8</sup> It goes on to elaborate that, "China is leveraging military modernization, influence operations, and predatory economics to coerce neighboring countries to reorder the Indo-Pacific region to their advantage."<sup>9</sup> However, beyond the Indo-Pacific region, the People's Republic of China (PRC) is pursuing a course of expansion that threatens the key US defense objectives of:

1. "Sustaining Joint Force military advantages, both globally and in key regions"
2. "Maintaining favorable regional balances of power in the Indo-Pacific, Europe, the Middle East, and the Western Hemisphere," and
3. "Ensuring common domains remain open and free."<sup>10</sup>

The PRC potentially threatens these objectives via a program of infrastructure expansion it began in 2013.

### **3.3 Chinese Expansion:**

The Belt and Road Initiative (BRI), originally referred to as the "One Belt, One Road Initiative," began in 2013 following an announcement by President Xi Jinping. The initiative consists of two distinct efforts: the Silk Road Economic Belt, and the Maritime Silk Road.<sup>11</sup> According to President Xi Jinping, the BRI will "strengthen cooperation with countries along the land and maritime Silk Roads, so as to jointly build an open platform for cooperation and create new impetus to achieve sustainable development in the

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<https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>, 5.

<sup>7</sup> US Department of Defense. 2018. "2018 National Defense Strategy Summary." *US Department of Defense*. Accessed March 6, 2021. <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>, 1.

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.*, 2.

<sup>10</sup> *Ibid.*, 4.

<sup>11</sup> Chatzky, Andrew, and James McBride. 2020. *China's Massive Belt and Road Initiative Background*. January 28. Accessed March 6, 2021. <https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative>.

related regions”<sup>12</sup> The Silk Road Economic Belt is primarily aimed at land based infrastructure to facilitate international trade with China and globally expand Chinese economic influence throughout Asia, Europe, and Africa. A flagship example of this effort is the China-Pakistan Economic Corridor (CPEC). According to the Chairman of Chinese National Development and Reform Commission, Mr. He Lifeng, CPEC seeks to “improve the region's infrastructure, and put in place a secure and efficient network of land, sea and air passages, lifting their connectivity to a higher level; further enhance trade and investment facilitation, establish a network of free trade areas that meet high standards, maintain closer economic ties, and deepen political trust.”<sup>13</sup> Similar to this Economic Belt,, as a complimentary effort, the PRC is pursuing a global network of maritime ventures designed to achieve the same objective via “jointly building smooth, secure and efficient transport routes connecting major sea ports along the Belt and Road.”<sup>14</sup> This expansion effort should not be confused with PRC expansion into the South China Sea via their “Nine Dash Line” proclamation, which is a different political movement, though one which is potentially an equal indicator of future intent.

Fundamental to the BRI’s concept is President Xi Jinping’s stance that “China will continue to pursue win-win cooperation and enhance friendship and cooperation with other countries.”<sup>15</sup> The concept of “win-win” relationships implies that both countries will achieve some sort of windfall at the completion of mutual endeavors. Therein lies the contentious interpretation of the BRI’s purpose. While BRI may be portrayed as an economic “win-win,” many skeptics believe the relationship to be coercive between China and the nations it supports through BRI investments. *C4ADS* summarizes this notion in a related analysis by stating “with over one third of the BRI participant countries vulnerable to debt distress, unfavorable deals can put a country at economic disadvantage, endowing China with outsized leverage over its ‘partner.’”<sup>16</sup> Though BRI is a state-sponsored program of expansion, the individual actors for the BRI are the network of Chinese companies conducting individual business deals with nations around the globe.

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<sup>12</sup> 2020. *China-Pakistan Economic Corridor*. Accessed March 6, 2021. <http://cpec.gov.pk/>.

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*

<sup>15</sup> *Ibid.*

<sup>16</sup> Thorne, Devin, and Ben Spevack. 2018. "Harbored Ambitions: How China's Port Investments are Strategically Reshaping the Indo-Pacific." *C4ADS Reports*. April 17. Accessed February 5, 2021. <https://c4ads.org/reports>.



### 3.4 Understanding Chinese Corporate Players:

Unlike Western contemporaries, the majority of Chinese corporations are very closely tied to the Chinese State. To succeed, the BRI relies on Chinese corporations to operate in a semi-autonomous fashion to pursue ventures ultimately aimed at supporting the overall goals of the nation. Several Chinese companies have major roles in the BRI. Their roles will be described throughout the rest of this report, specifically: *China Communications Construction Company (CCCC)*, *China Harbor Engineering Company (CHEC)*, *COSCO Shipping Holdings (COSCO)*, *China Merchants Port Holdings (CMPort)*, *China Overseas Port Holding Group (COPHC)*, and *Landbridge Group*.

CCCC was founded in 2006 as a state-run enterprise and claims to be “the largest port construction and design company in China, a leading company in road and bridge construction and design, a leading railway construction company, the largest dredging company in China and the second largest dredging company (in terms of dredging capacity) in the world. [CCCC] is also the world’s largest container crane manufacturer.”<sup>17</sup> Notably, CCCC played a significant role in the construction of the contentious Paracel and Spratly Island infrastructure.<sup>18</sup> Via its subsidiary organizations, CCCC has played a major role in the development of several overseas locations of interest. COPHC, a subsidiary of CCCC, is the governing authority for the development of Pakistan’s Gwadar Port,<sup>19</sup> which is an integral part of CPEC. CHEC, also a subsidiary of CCCC, “has been developing and operating overseas business on behalf of CCCC [...] in over 80 countries throughout the world,” and operates primarily in the “Engineering-Procurement-Construction (EPC), Build-Operate-Transfer (BOT), and Private-Public-Partnership (PPP)” sectors. In addition to land based infrastructure, CHEC has construction roles in the development of the ports at El-Hamdania, Sokhna, Colombo, and Hambantota in Algeria, Egypt, and Sri Lanka respectively.<sup>20</sup>

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<sup>17</sup> 2008. *China Communications Construction Company Ltd*. Accessed March 6, 2021. <http://en.ccccltd.cn/aboutcompany/introduction/>.

<sup>18</sup> 2020. "China's Construction Companies Sow Chaos Worldwide." *US Embassy in Georgia*. Accessed March 7, 2021. <https://ge.usembassy.gov/chinas-construction-companies-sow-chaos-worldwide/>.

<sup>19</sup> 2015. *China Overseas Ports Holding Company Pakistan Ltd*. Accessed February 20, 2021. <http://cophcgwadar.com/about.aspx>.

<sup>20</sup> 2020. *China Harbor Engineering Corporation*. Accessed March 3, 2021. <http://www.cccme.org.cn/>.

*CMPort*, a subsidiary of the state owned *China Merchants Group*,<sup>21</sup> owns or operates portions of the ports of Colombo (Sri Lanka), Hambantota (Sri Lanka), Doraleh (Djibouti), and Kumpport (Turkey).<sup>22</sup> Perhaps more significantly, but beyond the scope of this analysis, in 2013 *CMPort* acquired a 49% operational stake in *Terminal Link*, a joint venture with the French firm *CMA-CGM*. According to the press release, “*Terminal Link* owns 15 container terminals in 8 countries across four major continents” to include: the Belgian ports at Zeebrugge and Antwerp, the French ports at Dunkirk, Le Havre, Montoir, and Fos, the Moroccan ports at Casablanca and Tangier, the American ports at Houston and Miami, the South Korean port at Busan, the Maltese port at Marsaxlokk, and the Ivorian port at Abidjan.<sup>23</sup> Additionally, *China Merchants Group*, through its subsidiary, *China Merchants Energy Shipping*, and via their (*China Merchants Energy Shipping*) subsidiary *CSC RoRo Logistics Ltd.*, “operates a fleet of 25 car carriers and large transshipment depots around the country.”<sup>24</sup> Finally, following a 2017 merger *China Merchants Group* acquired the subsidiary *Sinotrans & CSC Co. Ltd.* which specializes in logistics and freight shipping.<sup>25</sup>

*COSCO* is arguably the most wide reaching of all Chinese maritime industries. *COSCO Shipping Holdings* is a state-run company which “is mainly engaged in domestic and international maritime container transport services and related businesses.”<sup>26</sup> According to *COSCO*, as of 2020 they, “owned and operated 536 container vessels with a total capacity of 3.1 million TEUs, ranking the 3th place in the world in terms of shipping capacity.”<sup>27</sup> In addition to container transportation, *COSCO Shipping Specialized Carriers Co. Ltd.* operates a fleet of special use vessels, to include multi-purpose, heavy lift,

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<sup>21</sup> 2021. *China Merchants Group*. Accessed March 3, 2021. [https://www.cmhk.com/main/a/2016/a26/a30448\\_30530.shtml](https://www.cmhk.com/main/a/2016/a26/a30448_30530.shtml).

<sup>22</sup> 2020. *China Merchants Ports Holdings Ltd.* Accessed March 3, 2021. <http://www.cmport.com.hk/EN/business/Haiwai.aspx>.

<sup>23</sup> CMA-CGM. 2013. "CMHI and CMA CGM complete the Terminal Link Transaction." *The CMA-CGM Group*. June 11. Accessed March 1, 2021. <https://www.cma-cgm.com/static/News/Attachments/CMHI%20and%20CMA%20CGM%20complete%20the%20Terminal%20Link%20transaction.pdf>.

<sup>24</sup> Kennedy, Conor M., "China Maritime Report No. 4: Civil Transport in PLA Power Projection" (2019). CMSI China Maritime Reports. 4. <https://digital-commons.usnwc.edu/cmsi-maritime-reports/4>, 9.

<sup>25</sup> Hong Liang, Lee. 2017. *China Merchants, Sinotrans & CSC complete strategic reorganization*. April 11. Accessed March 11, 2021. <https://www.seatrade-maritime.com/asia/china-merchants-sinotrans-csc-complete-strategic-reorganisation>.

<sup>26</sup> COSCO Shipping Lines Co. Ltd. 2021. *About Us*. Accessed February 15, 2021. <http://lines.coscoshipping.com/home/About/about/Profile>.

<sup>27</sup> *Ibid.*

semi-submersible, and specialized car carriers.<sup>28</sup> Besides this extensive capacity for shipping, *COSCO* also operates an extensive network of port facilities, with terminals in Seattle (USA), Chancay (Peru), Zeebrugge (Belgium), Antwerp (Belgium), Bilbao and Valencia (Spain), Vado (Italy), Piraeus (Greece), Kumport (Turkey), Abu Dhabi (UAE), Busan (Korea), and Singapore.<sup>29</sup> In addition to being an extensive list of locations, the similarity of locations between *CMPort* ventures and *COSCO* terminals indicates possible cooperation amongst Chinese maritime companies.

While all these companies can be directly tied to the Chinese state, *Landbridge Group*, a privately owned company based in Rizhao, China, has also played a significant role in China's overseas expansion, although perhaps to a lesser extent than explicitly state-owned enterprises. That said, a 2015 photo documents *Landbridge's* founder, Ye Cheng, receiving a congratulatory handshake from Chinese President Xi Jinping following *Landbridge's* 2015 acquisition of a 99 year lease to operate Darwin Port in Australia,<sup>30</sup> indicating a potential degree of

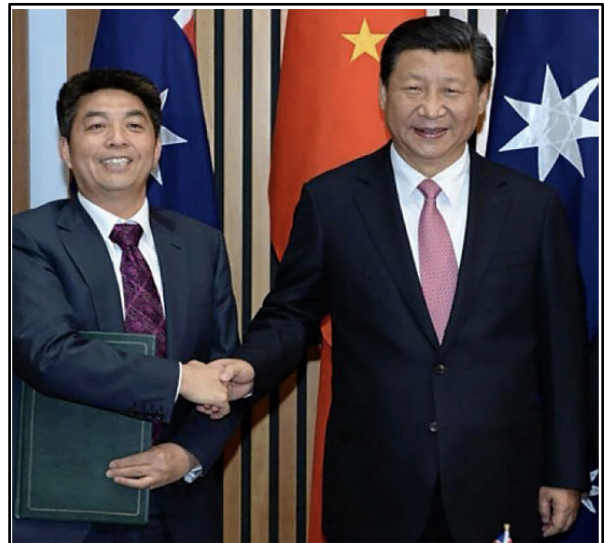


Image 3.1: *Landbridge Group* founder Ye Cheng and PRC President Xi Jinping in 2015

government supervision or cooperation. *Landbridge's* main acquisitions, as mentioned, are the purchase of the port in Darwin, Australia<sup>31</sup> as well as the purchase and on-going development of the Panama Colon Container Port, at the Caribbean entrance to the Panama Canal.<sup>32</sup> Although *Landbridge Group* is a privately owned company based in China, the relationship between Chinese corporations and the state is distinctly different compared to western norms.

<sup>28</sup> COSCO Shipping Specialized Carriers Co., Ltd. n.d. *Vehicle Specifications Pure Car Carrier*. Accessed February 20, 2021. <http://en.spe.coscoshipping.com/col/col12960/index.html>.

<sup>29</sup> COSCO Shipping Ports Ltd. 2021. *COSCO Businesses*. Accessed January 30, 2021. <https://ports.coscoshipping.com/en/Businesses/Portfolio/#OverseasTerminals>.

<sup>30</sup> Ye, Min. 2019. "Xi's bridge builder." *Boston University Pardee School of Global Studies*. December 6. Accessed March 11, 2021. <https://www.bu.edu/pardeeschool/files/2019/12/twPL-2019-12-06-6789.pdf>.

<sup>31</sup> Landbridge Group. 2020. *Landbridge*. Accessed February 15, 2021. <https://www.landbridgegroup.com.au/our-projects/>.

<sup>32</sup> 2019. *Landbridge Group Co., Ltd. (Landbridge Group)*. Accessed February 25, 2021. <https://www.bnamericas.com/en/company-profile/landbridge-group-co-ltd-landbridge-group>.

### 3.5 Chinese Civil-Military Relationship:

China has long operated under the fundamental concept of Civil-Military Integration (CMI). CMI is “a process combining defense and civilian industrial bases to support military and commercial demands.”<sup>33</sup> Consequently, the corporate structure of Chinese business differs considerably from western societies. Specifically, where a western business must follow the rules of their government but, in most cases, is not strictly subservient to that government, Chinese businesses operate in a more controlled business sphere. In 2015, President Xi Jinping expanded on the concept of CMI, with a new concept, Military-Civil Fusion (MCF) when he stated:

“We should coordinate the development of our economy and defense capabilities, and combine efforts to make the country prosperous and military strong. We should further the great integration of military and civilian development, and work to achieve in-depth integration of the use of infrastructure and other key facilities based on demands and led by the government.”<sup>34</sup>

According to the U.S. State Department, MCF is “an aggressive, national strategy of the Chinese Communist Party” whose goal “is to enable the PRC to develop the most technologically advanced military in the world.”<sup>35</sup> This is to be accomplished via the “elimination of barriers between China's civilian research and commercial sectors, and its military and defense industrial sectors.”<sup>36</sup> Though CMI and MCF are only concepts for operation between the Chinese state and the Chinese populace, government regulations and policy reflect the desired intent of both programs. Article 7 of the *National Intelligence Law* states, “Any organization or citizen shall support, assist and cooperate with the state intelligence work in accordance with the law” and “the State protects individuals and organizations that support, assist, and cooperate with national intelligence work.”<sup>37</sup>

As a further measure to blur the lines between civilian and military operations, in 2016's *National Defense Transportation Law*, Chinese state authority was further expanded by placing “obligations on

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<sup>33</sup> Levesque, Greg, and Mark Stokes. 2016. "Blurred Lines: Military-Civil Fusion and the "Going Out" of China's Defense Industry." *Pointe Bello*. December. Accessed March 7, 2021. [https://static1.squarespace.com/static/569925bfe0327c837e2e9a94/t/593dad0320099e64e1ca92a5/1497214574912/062017\\_Pointe+Bello\\_Military+Civil+Fusion+Report.pdf](https://static1.squarespace.com/static/569925bfe0327c837e2e9a94/t/593dad0320099e64e1ca92a5/1497214574912/062017_Pointe+Bello_Military+Civil+Fusion+Report.pdf)

<sup>34</sup> *Ibid*, 8.

<sup>35</sup> U.S. Department of State. 2020. *Military-Civil Fusion and the People's Republic of China*. March. Accessed March 7, 2021. <https://www.state.gov/wp-content/uploads/2020/05/What-is-MCF-One-Page.pdf>.

<sup>36</sup> *Ibid*.

<sup>37</sup> "National Intelligence Law of the People's Republic of China." *National People's Congress*. June 27. Accessed January 30, 2021. [https://cs.brown.edu/courses/csci1800/sources/2017\\_PRC\\_NationalIntelligenceLaw.pdf](https://cs.brown.edu/courses/csci1800/sources/2017_PRC_NationalIntelligenceLaw.pdf).

Chinese transportation enterprises located abroad or engaged in international shipping” to “provide logistical support for PLA forces operating overseas” as “strategic support forces.”<sup>38</sup> These support forces charged with “rapid, long-distance, and large scale national defense support” and are typically composed of “large- and medium-sized Chinese companies.”<sup>39</sup> Finally, this law also “China’s 2017 strengthened construction standards for ships and aircraft to be built to military specifications,” in keeping with the dual-use concept.<sup>40</sup> The result is the possibility that civil ships could be easily repurposed for military use at a moment’s notice.

### **3.6 Cause for U.S. Concern:**

The PRC’s concept of using civilian commercial shipping to transport military supplies has been formally adopted via the formation of “transport dadui.”<sup>41</sup> Literally translated, “Dadui” means “military group.” Mentioned earlier, and as an example, *CMPort’s* indirect subsidiary, *CSC RoRo Logistics Ltd.* is the core of the “Fifth Transport Dadui,” and has participated in eight transport missions with the People’s Liberation Army (PLA), as well as a civil-military exercise in 2017.<sup>42</sup> The concept of transporting military units has been promulgated via various Chinese public forums, as seen in several images below identified as part of a U.S. Naval War College report:

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<sup>38</sup> Conor, "China Maritime Report No. 4: Civil Transport in PLA Power Projection", 4.

<sup>39</sup> Ibid.

<sup>40</sup> U.S.-China Economic and Security Review Commission. 2020. *2020 Report to Congress*. Report, Washington, D.C.: U.S.-China Economic and Security Review Commission, 401.

<sup>41</sup> Conor, "China Maritime Report No. 4: Civil Transport in PLA Power Projection", 7.

<sup>42</sup> Ibid, 9.



Image 3.2: Naval Ships and Merchant Magazine depiction of Roll-on-Roll-off vessels for vehicle transport.<sup>43</sup>



Image 3.3: 2017 Beijing Military exhibition of operations conducted with CSC RoRo Logistics Ltd. vessels.<sup>44</sup>

<sup>43</sup> Conor, "China Maritime Report No. 4: Civil Transport in PLA Power Projection", 7.

<sup>44</sup> Ibid.

Such cooperation can also be seen in other forms of civil shipping. *Sinotrans & CSC Co. Ltd*, the subsidiary company of *China Merchants Group*, participated in underway replenishment (UNREP) activities with the Chinese Type 54A (Jiangkai II) frigate *Linyi*.<sup>45</sup> The goal of this activity, according to the U.S. Naval Sea Systems Command is to enable ships to “remain underway at sea indefinitely in support of our national interests” by transferring “items such as fuel, food, ammunition, repair or replacement parts, and personnel.”<sup>46</sup> This cooperation could allow extensive PLAN operations beyond traditional territorial ranges through the cooperative use of civilian supply assets.

These instances of civil-military cooperation have become part of the basis for U.S. modeling of Chinese intentions. According to the U.S.-China Economic and Security Review Commission:

“China’s basing model includes military facilities operated exclusively by the PLA as well as civilian ports operated or majority-owned by Chinese firms, which may become dual-use logistics facilities. Chinese firms partially own or operate nearly 100 ports globally, more than half of which involve a Chinese state-owned enterprise (SOE).”<sup>47</sup>

Based on this concept, the report also states:

“In the short term (next five years), the PLA will focus on consolidating the capabilities that would enable it to conduct large-scale military operations around its maritime periphery. In the medium term (next 10–15 years), the PLA aims to be capable of fighting a limited war overseas to protect its interests in countries participating in the Belt and Road Initiative (BRI). By mid-century, the PLA aims to be capable of rapidly deploying forces anywhere in the world.”<sup>48</sup>

Following this same logic, and in accord with the previously stated Key Intelligence Question, this report has attempted to identify factors that threaten Critical Maritime Chokepoints within the scope of this question.. Relative to Chinese strategic imperatives of Food Security, Energy Security, and Trade Security, Chinese Belt and Road initiatives, specific to maritime expansion, have been identified and analyzed for their potential use as PRC dual-use stepping stones in a militarized environment, much like that described in the “Thucydides Trap.”

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<sup>45</sup> Conor, "China Maritime Report No. 4: Civil Transport in PLA Power Projection", 14.

<sup>46</sup> Naval Sea Systems Command. 2021. *Underway Replenishment Keeps our Ships at Sea*. Accessed March 11, 2021.

<https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Port-Hueneme/What-We-Do/Test-Evaluation/UNREP/>.

<sup>47</sup> U.S.-China Economic and Security Review Commission, *2020 Report to Congress*, 386.

<sup>48</sup> Ibid.

## 4. Analysis Factors

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### 4.1 Intelligence Question Amplification:

To reiterate, the Key Intelligence Question to be answered is:

**In the event of a Great Power Conflict, what Chinese maritime investments and developments abroad potentially threaten U.S. and Allied naval capability use of critical maritime chokepoints?**

After reviewing the strategic environment and the potential direction a Great Power Conflict (GPC) may take, the intricate relationship between Chinese Civil and Military ventures, and the extent of the BRI, this analysis investigates the potential for dual-use militarization of BRI infrastructure. With this specific direction in mind, the following additional intelligence questions have been created in order to fully answer and build upon the Key Intelligence Question:

1. Where is China pursuing overseas maritime investment?
  - a. To what extent are identified locations of Chinese investments being developed?
  - b. What are the indicators associated with Chinese expansion plans and do they fall into a predictable timeline?
2. What possible priorities do construction activities indicate?
3. Has China deployed, or can it support the deployment of, threat weapons to these locations?
  - a. What weapons could be supported at each location?
    - i. What are the expected engagement envelopes of these weapons?
      1. How do these engagement envelopes affect maritime chokepoints?
    - b. How would/could they be transported?
4. How do these threats affect maritime chokepoints?

### 4.2 Assumptions and Disclaimers:

To completely answer these questions, a comprehensive analysis of the global situation would be ideal. However, the scope of this report is inherently limited based on manpower, resources, and time. For example, companies like *CCCC* have investments in over 80 countries, while commercially associated ventures like *Terminal Link* provide access to a multitude of global terminals for their parent companies. This analysis is further complicated by the sheer size of each company and the combined mass of international investments. Though possible to analyze each location, the time required and mass



of information needed to accurately profile each individual point of interest would preclude the timely publication of this report. As such, several critical assumptions and concessions have been made that limit the conclusions of the report. First, this analysis focuses on a limited number, 17, of BRI locations of interest. Second, locations of interest have been selected based on their proximity to critical maritime chokepoints. Third, maritime strategic chokepoints have been limited to eight major waterways of global significance. As a consequence of these factors, and the underlying limitation of scope, the results of this report are a generalization of observed trends and cannot be definitely applied to the entire global spectrum of BRI activities. However, the conclusions made indicate the assessed possibility of certain actions and capabilities. Though there are doubtless many more locations of interest that are relevant to this discussion, and there are more maritime chokepoints of lesser significance, the selection of Chinese-built maritime facilities, whether completed or under construction, illustrates the concepts, themes, and application of GEOINT methods using limited resources to derive evidence-based analytic conclusions and possibilities.

#### **4.3 The Importance of Maritime Chokepoints:**

While commercial factors are a significant component to any maritime chokepoint discussion, this report will focus on the potential restriction of movement imposed upon military maritime movements by potential PRC dual-use infrastructure. Academically, “a chokepoint, in a strategic sense, should be a relatively narrow waterway, capable of being closed off to shipping.”<sup>49</sup> Consequently, this means there are “no readily available alternative maritime route[s] to use in event of closure” or “an alternative waterway would be extremely costly.”<sup>50</sup> Additionally, a critical chokepoint must be “of considerable significance to interests of several States, other than the State or States controlling the waterway.”<sup>51</sup> Alexander describes the military significance of chokepoints by tying them to the need for, “the passage of military vessels and aircraft through narrow international waterways anywhere in the world.”<sup>52</sup> In the case of the United States, where for the last 30 years the preponderance of operations have focused on the Middle

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<sup>49</sup> Alexander, Lewis M. 1992. "The Role of Choke Points in the Ocean Context." *GeoJournal* 26 (4): 504.

<sup>50</sup> *Ibid*, 505.

<sup>51</sup> *Ibid*, 504.

<sup>52</sup> *Ibid*, 505.

East, bringing logistical support and warfighting capability to bear has required the security of these chokepoints. In a Great Power Conflict, it is reasonable to assume that chokepoints will be of similar importance.

#### 4.4 Identifying Critical Maritime Chokepoints:

In his article, Alexander identifies seven “primary chokepoints”: The Strait of Gibraltar, the Bab el Mandeb, the Strait of Hormuz, the Danish Straits, the Turkish Straits, the Suez Canal, and the Panama Canal.<sup>53</sup> All these meet the three earlier criteria of being narrow, having no alternative route, and being significant to multiple nations. Additionally, Alexander lists eleven “secondary chokepoints” which include the Malacca-Singapore Strait and the Dover Strait, among others.<sup>54</sup> For the purposes of this report, the Danish Straits will be omitted due to its limited role in a Great Power Conflict with China, though their significance in a similar conflict with Russia should not be discounted. Therefore, based on these lists, and for the purposes of the ensuing analysis, the following chokepoints are considered Critical Maritime Chokepoints (CMC) and have been grouped into one of four Areas of Responsibility (AOR): Southeast Asia, Middle East, Europe, and Americas:

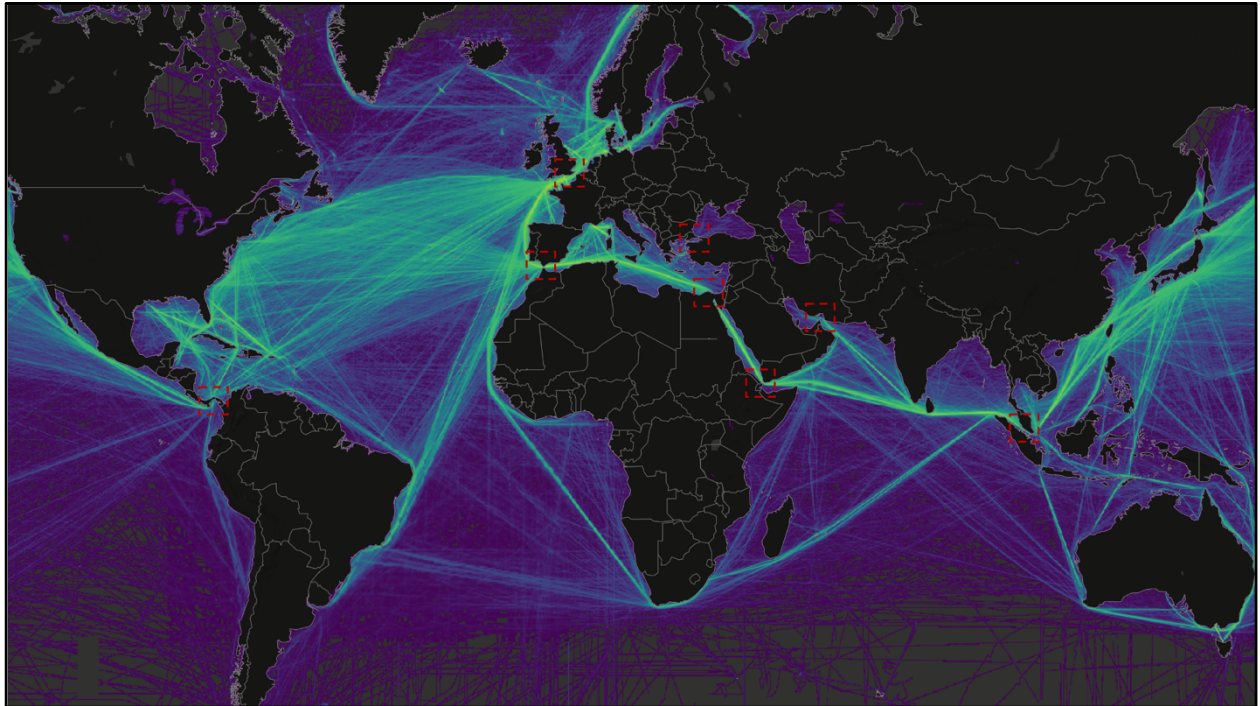
AOR	Name	Latitude	Longitude
<b>Southeast Asia</b>	Malacca-Singapore Strait	N 01°57'59.41"	E 102°09'34.94"
<b>Middle East</b>	Bab el Mandeb	N 12°35'18.85"	E 043°20'11.03"
<b>Middle East</b>	Strait of Hormuz	N 26°31'13.00"	E 056°26'26.02"
<b>Middle East</b>	Suez Canal	N 30°26'28.19"	E 032°21'20.21"
<b>Europe</b>	Dover Strait	N 51°01'26.69"	E 001°25'14.15"
<b>Europe</b>	Strait of Gibraltar	N 35°57'52.43"	W 005°28'37.25"
<b>Europe</b>	Turkish Straits	N 41°13'59.76"	E 029°05'05.65"
<b>Americas</b>	Panama Canal	N 09°18'49.89"	W 079°55'10.37"

Table 4.1: Critical Maritime Chokepoints

<sup>53</sup> Ibid, 506.

<sup>54</sup> Ibid, 507.

To illustrate the significance of the chosen CMC, their locations have been superimposed on a National Oceanographic and Atmospheric Administration layer which compiled a generalized heat map of shipping traffic.



*Image 4.1: Representation of Maritime Traffic relative to selected Critical Maritime Chokepoints<sup>55</sup>*

Visually, the selected maritime checkpoints intersect a significant portion of maritime shipping routes. Though there are alternatives that bypass the identified checkpoints, such as around the Cape of Good Hope, they incur significant cost to operations.

#### **4.5 Locations of Interest:**

Based on the identified CMC, locations of interest (LOI) can be identified to answer the first intelligence question: Where is China pursuing overseas maritime investment? By using open source reporting from news agencies, social media outlets, and PRC proprietary media marketing, a preliminary investigation of BRI ventures in close proximity to the identified CMC has yielded 17 LOI. These 17 LOI have been similarly grouped into one of the four AOR.

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<sup>55</sup> National Oceanic and Atmospheric Administration. n.d. "World Meteorological Organization Voluntary Observing Ships Scheme." *Resource Watch*. Accessed March 15, 2021. <https://resourcewatch.org/>

AOR	Name	Country	Latitude	Longitude
Southeast Asia	Ream Naval Base	Cambodia	N 10°30'13.32"	E 103°36'30.25"
Southeast Asia	Melaka Gateway Port Project	Malaysia	N 02°10'32.41"	E 102°15'30.78"
Southeast Asia	Port of Kuantan	Malaysia	N 03°59'14.52"	E 103°25'37.69"
Southeast Asia	Port of Singapore	Malaysia	N 01°16'26.11"	E 103°46'15.92"
Southeast Asia	Port of Kyaukphyu	Myanmar	N 19°21'59.32"	E 093°41'03.36"
Southeast Asia	Port of Colombo	Sri Lanka	N 06°56'38.18"	E 079°49'58.31"
Southeast Asia	Port of Hambantota	Sri Lanka	N 06°07'27.51"	E 081°06'03.34"
Middle East	Port of Khalifa	Abu Dhabi, UAE	N 24°48'50.61"	E 054°40'04.41"
Middle East	PLA Expeditionary Base	Djibouti	N 11°35'26.15"	E 043°03'46.95"
Middle East	Port of Sokhna	Egypt	N 29°38'49.06"	E 032°20'28.13"
Middle East	Port of Gwadar	Pakistan	N 25°06'40.64"	E 062°20'27.64"
Europe	El-Hamdania Port Project	Algeria	N 36°37'14.86"	E 002°15'36.70"
Europe	Port of Zeebrugge	Belgium	N 51°20'54.54"	E 003°11'52.42"
Europe	Port of Piraeus	Greece	N 37°56'26.00"	E 023°37'60.00"
Europe	Port of Valencia	Spain	N 39°25'42.20"	W 000°19'08.69"
Europe	Port of Kumport	Turkey	N 40°58'05.36"	E 028°40'39.70"
Americas	Panama Colon Port Project	Panama	N 09°22'31.26"	W 079°53'14.57"

Table 4.2: Locations of Interest

#### 4.6 Methods:

Analysis of the LOI has been conducted using Maxar commercial imagery provided via the Google Earth platform. At each location of interest, subsequent analysis has searched for indicators of maritime expansion. Drawing from the earlier discussion of BRI, a notable indicator of Chinese infrastructure development is the presence of extensive land reclamation projects, as this is a key

component of known expansion efforts in the South China Sea conducted by CCCC. Since land reclamation (if necessary) is a frequent first step in the typical port construction, it serves as a sound indicator for temporal analysis and building patterns of life. Where possible, an assessment of construction progress has been made to determine the expected progression of development. Additionally, an assessment of local room for potential expansion has been made where applicable. Specific emphasis has also been placed on identifying commercial and military shipping capabilities. Hosted vessels (military and commercial) will be identified to baseline the future capability to host threats enabled by those vessels. Based on the discussion of the PRC's civil-military relationship, the analysis has attempted to identify three specific types of operations capability: Military vessel, Roll-On Roll-Off (RO-RO) vessel, and Container vessel.

#### **4.7 Open Source Threats:**

*DISCLAIMER: For the purposes of classification, all threat ranges are estimated via open source reporting and should not be considered authoritative, merely representative of threat potentials.*

To fully understand the implications of the Chinese capability to limit U.S. and Allied naval mobility via strategic chokepoints threats must be identified. To deny naval movement, which for the purposes of this report will only encompass surface vessels and their associated airborne assets, the PRC may utilize various anti-ship and anti-aircraft weaponry. Anti-Ship weapons will be limited to Anti-Ship Cruise Missiles (ASCM) and Anti-Ship Ballistic Missiles (ASBM). Anti-Aircraft weaponry will be limited to Surface-to-Air-Missiles (SAM).

As this report seeks to identify only those threats which can rapidly be deployed to port facilities, threats will be limited to three general categories: mobile, naval, and containerized. This report defines mobile threats as wheeled or tracked vehicles capable of being transported by military or Roll-On Roll-Off vehicles. Naval threats are defined as combatant vessels with their associated weaponry. Finally, containerized threats are defined as concealable weapons within shipping containers. These specific weapon types are included because they may be overtly transported via military vessel or covertly transported via dual-purpose vessels that form the transport dadui mentioned earlier.

Mobile threats include the DF-21D ASBM, YJ-18 ASCM, YJ-12 ASCM, SA-21, SA-10, and HQ-9. The DF-21D, YJ-18, and YJ-12 possess anti-ship capability with ranges of 800nm,<sup>56</sup> 290nm,<sup>57</sup> and 270nm,<sup>58</sup> respectively. For anti-aircraft systems, the SA-21,<sup>59</sup> in its latest evolution, will be assessed with 250nm engagement zone, and SA-10<sup>60</sup> will be modeled with a 120nm engagement zone.

Naval threats are based on the weaponry standard on the Chinese Type 52D destroyer (Luyang III), the most sophisticated surface combatant noted, to date, at the PLA Expeditionary facility in Djibouti<sup>61</sup>. The Type 54D is equipped with the HHQ-9 and HHQ-10 SAM, and the YJ-18 ASCM<sup>62</sup>, with approximate ranges of 52nm, 9nm, and 290nm,<sup>63</sup> respectively.

Containerized threats include only the YJ-18C, which is a reported cruise missile variant capable of being operated from commercial shipping containers, with a range of 290nm.<sup>64</sup> Though reporting is limited, reporting and rumors of both Russian and Chinese capability to field missile systems located in shipping containers should not be discounted. Russian systems of this type, based on the 3M54 family of cruise missiles, such as the Klub-K have been reported.<sup>65</sup> Based on the history of Russian and Chinese arms cooperation, and the covert intent of these threats, being highly transportable and simultaneously very anonymous, the inclusion of such threats is based on potential intent and logical direction.

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<sup>56</sup> Center for Strategic and International Studies. 2020. *DF-21 (Dong Feng-21 / CSS-5)*. January 2. Accessed February 10, 2021. <https://missilethreat.csis.org/missile/df-21/>.

<sup>57</sup> Center for Strategic and International Studies. 2020. "Missile Defense Project, "YJ-18"." *Center for Strategic and International Studies*. June 25. Accessed February 15, 2020. <https://missilethreat.csis.org/missile/yj-18/>.

<sup>58</sup> Center for Strategic and International Studies. 2018. *Image Confirms Chinese Ground-Launched YJ-12 ASCM*. November 8. Accessed February 10, 2021. <https://missilethreat.csis.org/image-confirms-chinese-ground-launched-yj-12-ascm/>

<sup>59</sup> Minnick, Wendell. 2015. *S-400 Strengthens China's Hand in the Skies*. April 18. Accessed March 21, 2021. <https://www.defensenews.com/air/2015/04/18/s-400-strengthens-china-s-hand-in-the-skies/>.

<sup>60</sup> Center for Strategic and International Studies. 2018. *Missile Defense Project, "S-300"*. July 13. Accessed March 21, 2021. <https://missilethreat.csis.org/defsyst/s-300/>.

<sup>61</sup> Dutton, Peter A, Isaac B. Kardon, and Conor M Kennedy. 2020. "China Maritime Report No. 6: Djibouti: China's First Overseas Strategic Strongpoint." *U.S. Naval War College Digital Commons*. April 1. Accessed March 20, 2021. <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1005&context=cmsi-maritime-reports>, 44.

<sup>62</sup> Wertheim, Eric. 2020. *China's Luyang III/Type 052D Destroyer Is a Potent Adversary*. January. Accessed March 20, 2021. <https://www.usni.org/magazines/proceedings/2020/january/chinas-luyang-iiitype-052d-destroyer-potent-adversary>

<sup>63</sup> Center for Strategic and International Studies. "Missile Defense Project, "YJ-18"."

<sup>64</sup> Ibid.

<sup>65</sup> Ibid.

## 5. Analysis

### 5.1 Southeast Asia:

#### 5.1.1 Ream Naval Base:

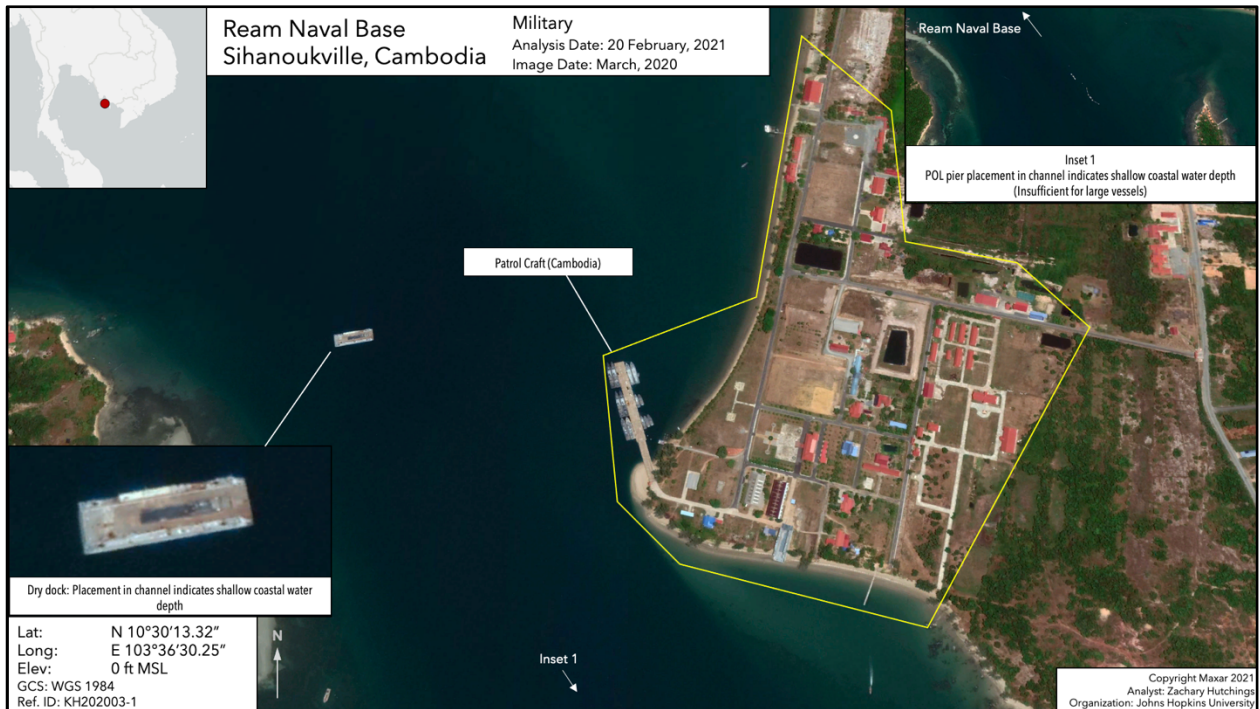


Image 5.1.1: Ream Naval Base Graphic

Ream Naval Base is a Cambodian Military facility located in Sihanoukville, Cambodia. It is wholly-owned and operated by the Cambodian Government, with the nearby town of Sihanoukville the site of a deep-water port, currently under development in partnership with the Japanese government. Ream itself has been the site of recent controversy as speculation circulated that China had recently formalized a 30-year use agreement for the base,<sup>66</sup> despite historic U.S. investment and involvement at the facility<sup>67</sup> and denial of the agreement by the Cambodian government.<sup>68</sup> Imagery analysis of Ream shows no specific Chinese activity or infrastructure investment. Though a naval facility, the placement of floating dry docks in the nearby channel, as well as the placement of a POL pier to the south, indicate the coastal waters are of insufficient depth for major surface vessels. As such it is assessed that Ream Naval Base will be

<sup>66</sup> Page, Jeremy, Gordon Lubold, and Rob Taylor. 2019. "Deal for Naval Outpost in Cambodia Furthers China's Quest for Military Network." *The Wall Street Journal*, July 22.

<sup>67</sup> Asia Maritime Transparency Initiative. 2020. *Update: Another U.S.-Built Facility at Ream Bites the Dust*. November 9. Accessed March 1, 2021. <https://amti.csis.org/changes-underway-at-cambodias-ream-naval-base/>.

<sup>68</sup> The Bangkok Post. 2020. *Cambodian PM Says Naval Base Not Just for China*. October 7. Accessed March 15, 2021. <https://www.bangkokpost.com/world/1998243/cambodian-pm-says-naval-base-not-just-for-china>



incapable of hosting major shipping or warships pierside unless significant dredging and infrastructure modification is undertaken, and basing is limited to the observed coastal patrol craft. This does not preclude the use of deeper waters as safe harbor for larger vessels, of which none have been observed to date. However, the shallow waters do significantly complicate the logistics of disembarking possible mobile threats. As such, the current assessment of Ream Naval Base is one of minimal hosting capability, with no observed capability for naval, mobile, or containerized threats. Subsequent monitoring should be conducted with emphasis on identifying indicators of potential PRC development and PLAN use.

### 5.1.2 Melaka Gateway Port Project:



Image 5.1.2: Melaka Gateway Port Project Graphic

The Melaka Gateway Port Project began as a joint venture between the Malaysian government and a Chinese conglomerate comprising *PowerChina International Group*, *Shenzhen Yantian Port Group*, and *Rizhao Port Group*.<sup>69</sup> *Rizhao Port Group*, notably, also operates Shandong province's Rizhao Port at which *Landbridge Group* maintains its corporate headquarters and operates multiple terminals.<sup>70</sup> The

<sup>69</sup> Kumar, P Prem. 2020. *Canceled \$10.5bn Malaysia Port Project Plays Down China Role*. December 3. Accessed February 15, 2021. <https://asia.nikkei.com/Business/Transportation/Canceled-10.5bn-Malaysia-port-project-plays-down-China-role>.

<sup>70</sup> Jiang, Jason. 2019. *Landbridge Eyes Listing of Rizhao terminal*. June 26. Accessed March 15, 2021. <https://splash247.com/landbridge-eyes-listing-of-rizhao-terminal/>.



project is of particular significance due to its location at the narrowest part of the Malacca-Singapore Strait which “makes it an ideal choice for a deep sea port facility” due to “the strategic location [...] at the Straits of Malacca.”<sup>71</sup> Consequently, development of this location could significantly restrict any ability to transit the Strait.

Initial land reclamation of the facility has been undertaken by the Malaysian *KAJ Development* however, imagery analysis of the effort corroborates reporting that *KAJ* has since lost the contract for development due to slow progress. This is indicated by the removal of construction support facilities, characterized by signature blue roofs, and dredging equipment. While the intricacies of the contractual arrangements for the facility can be generally characterized as unstable, the persistent presence of Chinese investors leaves reason for continued monitoring of the facility. Based on these factors, the current assessment of the Melaka Gateway Port Project is one of no hosting capabilities, with no observed capability for naval, mobile, or containerized threats. Subsequent monitoring should be conducted with emphasis on detecting the re-introduction of construction buildings, which will indicate renewed efforts at land reclamation and should prompt changes in collection requirements.

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<sup>71</sup> Melaka Gateway and KAJ Development. 2019. *Melaka Gateway Port*. Accessed February 10, 2021. <https://melakagateway.com/island-3-pme3-pulau-panjang/>

### 5.1.3 Port of Kuantan:



Image 5.1.3: Port of Kuantan Graphic

The Port of Kuantan is a flagship BRI investment located on the eastern side of the Malaysian Peninsula. Kuantan is a joint venture between the Malaysian firm *IJM* and the Chinese *Beibu Gulf Port Holding (Hong Kong) Co. Ltd*, which maintains a 40% share.<sup>72</sup> *Beibu Gulf Port Holding (Hong Kong)* acts as a wholly-owned subsidiary of the Chinese SOE<sup>73</sup> *Guangxi Beibu Gulf International*<sup>74</sup> thus implying state interest in the port facilities.

Imagery analysis of the port indicates completion of the planned phase 1A and 1B of modernization, which began in 2013 immediately following the launch of the BRI campaign and was approximately completed in January 2019. The continued presence of construction support facilities, noted by their blue roofs, and of unfinished land reclamation indicates construction is likely to continue. According to the Kuantan Port website, a second larger container terminal will be constructed, with

<sup>72</sup> Kuantan Port Consortium. 2016. *Kuantan Port*. Accessed March 1, 2021. <http://www.kuantanport.com.my/>.

<sup>73</sup> Moody's Investor Service. 2020. "Moody's Assigns First-Time Baa3 Rating to Guangxi Beibu Gulf International; Outlook Stable." *Moody's*. September 29. Accessed March 15, 2021. [https://www.moody's.com/research/Moodys-assigns-first-time-Baa3-rating-to-Guangxi-Beibu-Gulf--PR\\_433610](https://www.moody's.com/research/Moodys-assigns-first-time-Baa3-rating-to-Guangxi-Beibu-Gulf--PR_433610).

<sup>74</sup> Infospectrum. 2021. *Beibu Gulf Holding (Hong Kong) Co., Limited*. Accessed March 15, 2021. <http://portal.infospectrum.net/searchorder/GoogleCompanySearch.aspx?CompanyId=98530>.

undetermined “future plans.”<sup>75</sup> Based on patterns of life from phase 1 construction, this phase will likely require three to four years to complete. The newly constructed unused pier infrastructure retains the capability to be used for vehicle off-loading based on pier construction. PLAN warship support has not been observed. Immediately to the south the Malaysian Tanjung Gelang Naval Base indicates some limited capability for warship hosting, though this would require cooperation with the Malaysian government and may also serve as a limited deterrent to Chinese warship presence. Based on these factors, the current assessment of the Port Kuantan is one of moderate hosting capabilities, with no observed capability for naval threats but with the emerging capability to host mobile or containerized threats. Subsequent monitoring should be conducted with emphasis on monitoring phase two construction and maritime traffic at newly constructed port facilities.

#### 5.1.4 Port of Singapore:

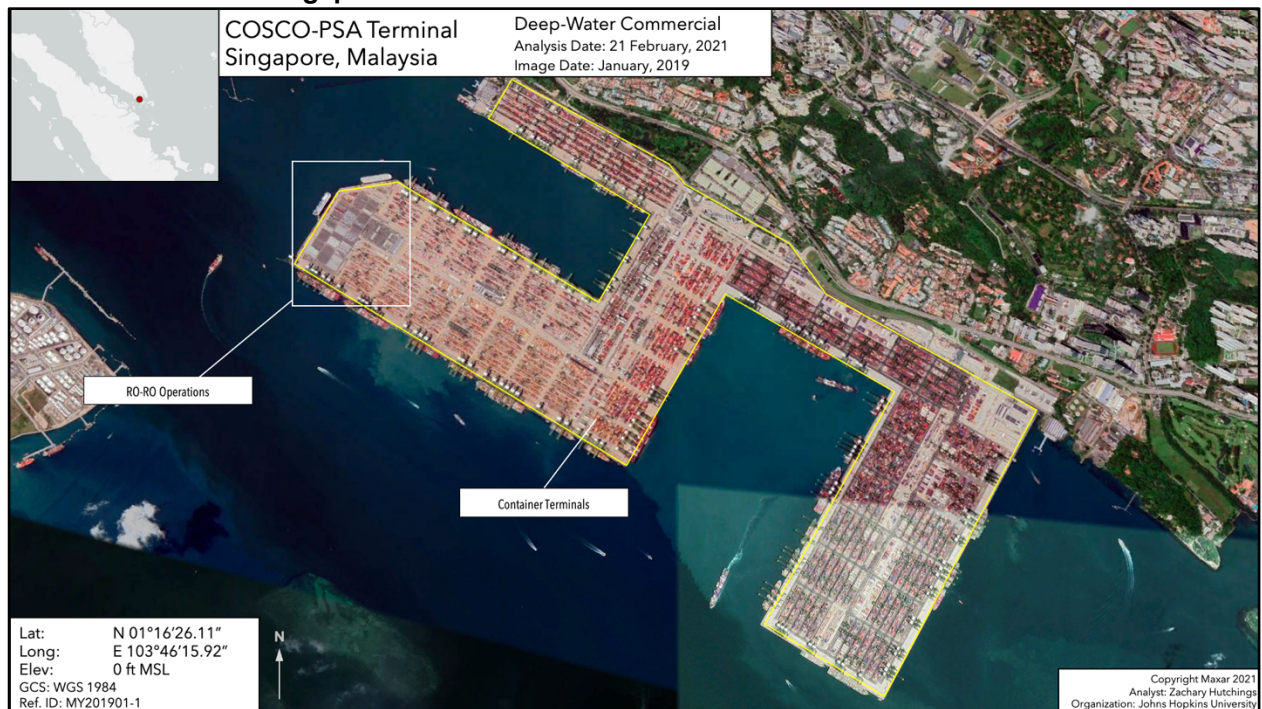


Image 5.1.4: Port of Singapore Graphic

The Port of Singapore is a strategically significant location for future Chinese investment based on its location at the junction of the South China Sea and the Indian Ocean via the Strait of Malacca.

<sup>75</sup> Kuantan Port Consortium. 2016. *Kuantan Port*. Accessed March 1, 2021. <http://www.kuantanport.com.my/>.

COSCO recently, in November of 2018, announced modification of its arrangement with PSA Co. Ltd. (formerly Port of Singapore Authority) which expanded COSCO port access from three wharfs to five. To reinforce the magnitude of the COSCO investment in Singapore, Mr. Ong Kim Pong, the Regional CEO for PSA International's Southeast Asia division<sup>76</sup> stated, "PSA is honoured by the trust that CSP has placed in us to serve as their main hub port for container transshipment in Southeast Asia. With their continued support and confidence in PSA, we will strive to augment their strategic presence in Singapore."<sup>77</sup> This reinforces the probability that Chinese investment in the Port of Singapore will continue to expand and is of strategic value. The port itself has the observed capability to conduct Roll-On Roll-Off and Container shipping operations. Based on these factors, the current assessment of the Port of Singapore is one of moderate hosting capabilities, with no observed capability for naval threats but with the capability to host mobile or containerized threats. Subsequent monitoring should be conducted with emphasis on monitoring COSCO shipping traffic and cargo manifests to establish pattern of life.

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<sup>76</sup> PSA International. 2021. *Senior Management Council*. Accessed March 20, 2021. <https://www.globalpsa.com/smc/>.

<sup>77</sup> COSCO Shipping and PSA. 2019. "COSCO Shipping Ports Limited Strengthens Partnership in Singapore." *PSA*. January 3. Accessed March 20, 2021. <https://www.globalpsa.com/cosco-shipping-ports-limited-strengthens-partnership-in-singapore/>.



### 5.1.5 Port of Kyaukphyu:

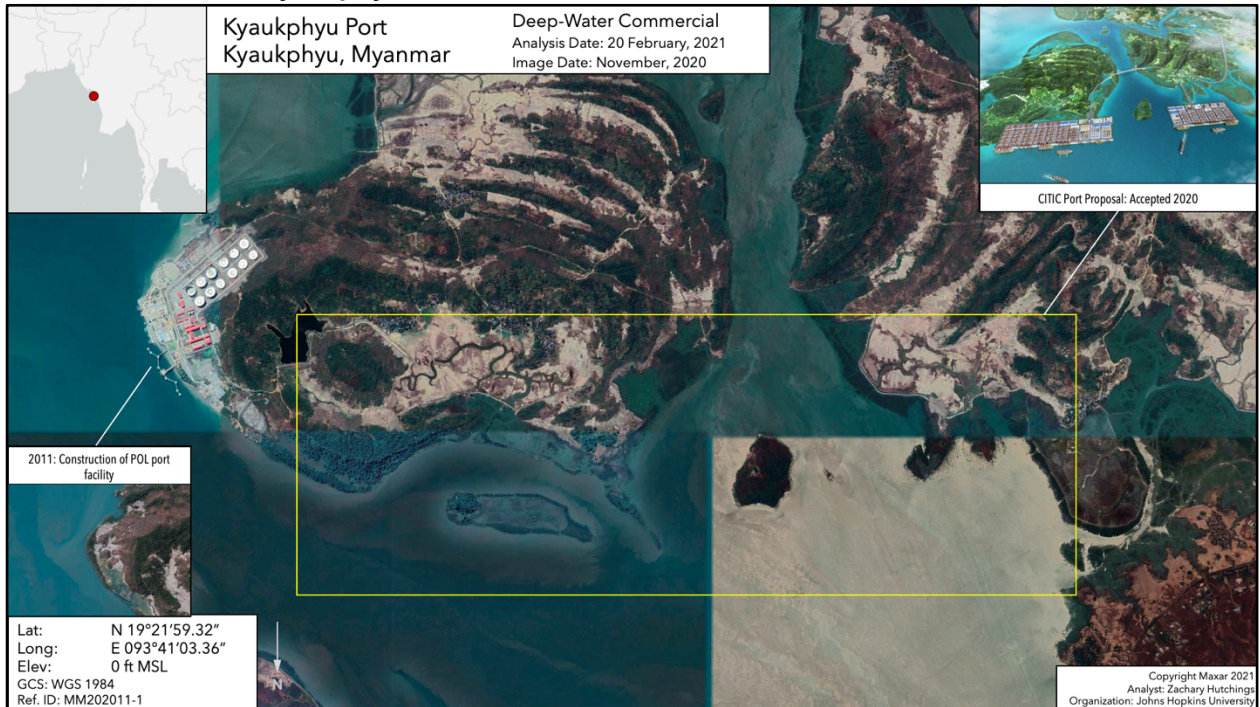


Image 5.1.5: Port of Kyaukphyu Graphic

The Port of Kyaukphyu, Myanmar, is a flagship port project as part of the Belt and Road Initiative, and more specifically the China-Myanmar Economic Corridor. The overt intent of this project is to facilitate Chinese Maritime economic interests through overland means terminating with the Port of Kyaukphyu as a means of dealing with the “Malacca Dilemma.”<sup>78</sup> The “Malacca Dilemma” is the concept that the Strait of Malacca provides a limitation for Chinese economic activities to escape the South China Sea region if contested by another state.<sup>79</sup> The acknowledgement of such a situation indicates the PRC’s greater understanding of the significance of maritime chokepoints in the strategic sense. As such, the PRC has begun a process of development with the government of Myanmar via a Chinese SOE known as *CITIC*.<sup>80</sup> As part of the development plans, Kyaukphyu is intended to operate a “total of 10 berths, [...] constructed in 4 phases, with construction duration of 20 years,” and “the expected annual capacity of the DSP will be

<sup>78</sup> Johnson, Keith. 2020. "China Leaps into Breach Between Myanmar and West." *Foreign Policy*. January 29. Accessed January 21, 2021. <https://foreignpolicy.com/2020/01/29/china-leaps-between-myanmar-west-india-xi-visit/>.

<sup>79</sup> Lanteigne, Marc. 2008. "China's Maritime Security and the “Malacca Dilemma”." *Asian Security*, April 24: 143-161.

<sup>80</sup> CITIC Group (Myanmar) Company Limited. 2018. "About Us." *CITIC Group (Myanmar) Company Limited*. Accessed March 1, 2021. <http://www.citicmyanmar.com/index.php?m=content&c=index&a=lists&catid=19>.

7.8 million tons of bulk cargo and 4.9 million TEU containers.”<sup>81</sup> Currently, the only operations in the immediate vicinity are via a petroleum facility to the east of the proposed construction location. Based on these factors, the current assessment of the Port of Kyaukphyu is one of no hosting capabilities for naval, mobile or containerized threats. However, based on imminent construction, monitoring should be conducted to assess construction progress and initial operating capability, which may then be used to trigger more robust collection efforts.

### 5.1.6 Port of Colombo:

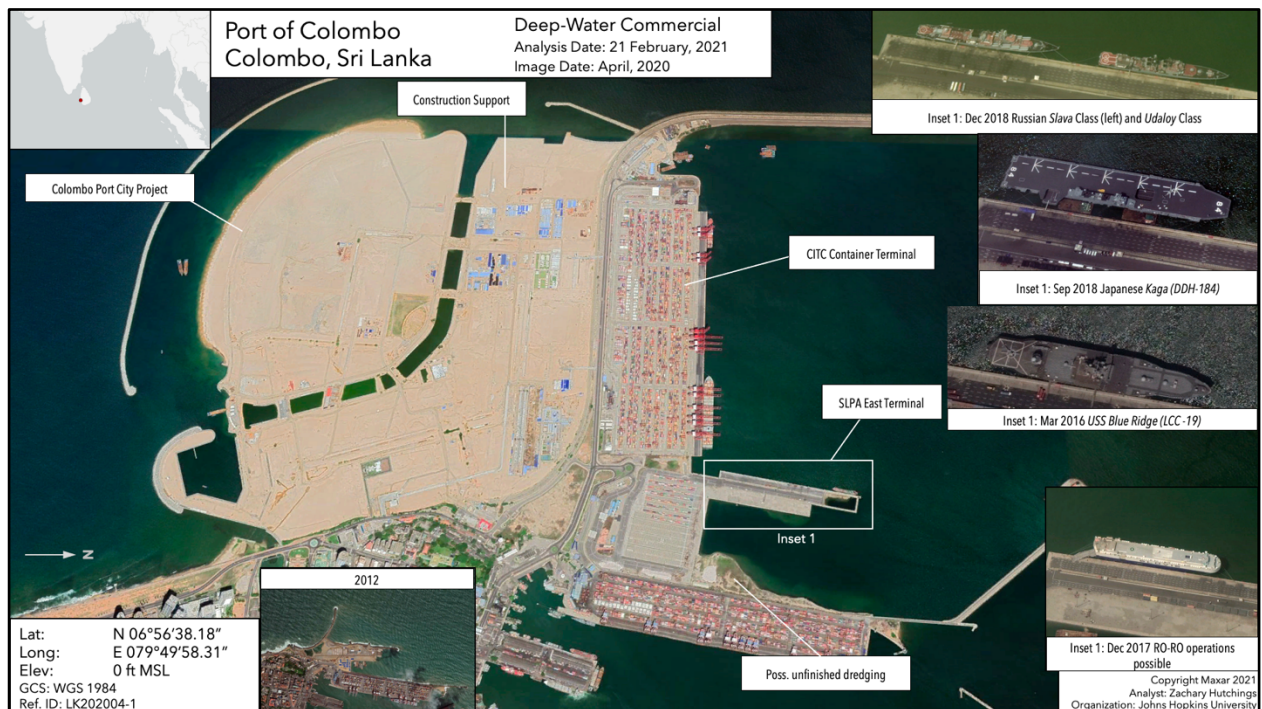


Image 5.1.6: Port of Colombo Graphic

The Port of Colombo, located on the western coast of Sri Lanka, has seen extensive PRC related activity. A subsidiary of *CMPort*, *CITC*, which conducts construction at Colombo as part of a BOT agreement, operates the newly built facility as a PPP.<sup>82</sup> Nearby, *CHEC* is constructing the Colombo Port City as a complimentary BRI effort to serve as “a catalyst for modern services in Sri Lanka.”<sup>83</sup> This indicates continued Chinese interest in the port for the foreseeable future. The east terminal, while

<sup>81</sup> CITIC Group (Myanmar) Company Limited. 2018. "KPSEZ DSP." *CITIC Group (Myanmar) Company Limited*. Accessed March 1, 2021. <http://www.citicmyanmar.com/index.php?m=content&c=index&a=lists&catid=498>.

<sup>82</sup> Sri Lanka Ports Authority. 2020. *Projects*. Accessed February 24, 2021. <https://www.slpa.lk/port-colombo/projects>.

<sup>83</sup> 2021. *CHEC Port City Colombo (Pvt) LTD*. Accessed March 20, 2021. <https://www.portcitycolombo.lk>.



operated by *SLPA* (Sri Lanka Port Authority) and not *CITC*, has hosted Roll-On Roll-Off vessels and a multitude of warships from several nations such as the U.S., Russia, and Japan. While not indicative of Chinese intent, it suggests the port is capable of hosting such vessels, if required or desired. To reinforce this capability, according to open source reporting,<sup>84</sup> in 2014 several Chinese warships docked at Colombo. This event, coupled with a denied request for port visits in 2017,<sup>85</sup> potentially indicates Chinese desire and capability to use the port to support military vessels. Based on these factors, the current assessment of the Port of Colombo is one of robust hosting capability of naval, mobile and containerized threats. Subsequent collection should be conducted to monitor Chinese construction, which will continue for several years, and shipping activity, with identification of all military vessels entering the port.

### 5.1.7 Port of Hambantota:



Image 5.1.7: Port of Hambantota Graphic

Also located on the island of Sri Lanka is the Port of Hambantota. Hambantota is currently owned and operated by *CMPort*, which controls 85% of port shares, as part of a 99-year lease agreement with

<sup>84</sup> Aneez, Shihar, and Ranga Sirilal. 2014. *Chinese Submarine Docks in Sri Lanka Despite Indian Concerns*. November 2. Accessed March 20, 2021. <https://www.reuters.com/article/sri-lanka-china-submarine-idINKBNOIMOLU20141102>.

<sup>85</sup> Aneez, Shihar, and Ranga Sirilal. 2017. *Sri Lanka Rejects Chinese Request for Submarine Visit: Sources*. May 11. Accessed March 20, 2021. <https://www.reuters.com/article/us-sri-lanka-china-submarine-idUSKBN1871P9>.

the Sri Lankan government.<sup>86</sup> As a major Chinese project predating BRI, Hambantota provides a template for project proceedings. Imagery indicates construction on the port began in 2010 and was completed in 2018, providing an approximate baseline for the timeline. The identification of buildings associated with construction and their relative erection/demolition, provides construction signatures that can be extended to other infrastructure projects. However, this timeline is limited by the temporal coverage of Google Earth imagery revisits, which preclude the ability to precisely determine start and stop dates, and only provide sufficient detail for approximation. Port operations include container operations and Roll-On Roll-Off vessels. While no naval vessels have been noted, as with Colombo, PLAN port visits and attempts to make port suggest PRC military interest in the country. Additionally, by referencing Image 3.1, from chapter 3, it is apparent that although Hambantota does not directly influence any CMCs, it lies along a major corridor between the Southeast Asia and Middle East regions, which makes it strategically relevant to the maritime environment. Based on these factors, the current assessment of the Port of Hambantota is possibly capable of hosting naval, mobile and containerized threats. Subsequent collection should be conducted to monitor port operations, commercial shipping activity, and PLAN vessel activity.

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<sup>86</sup> 2020. *China Merchants Ports Holdings Ltd.* Accessed March 3, 2021. <http://www.cmport.com.hk/EN/business/>.



## 5.2 Middle East:

### 5.2.1 Port of Khalifa:



Image 5.2.1: Port of Khalifa Graphic

The Port of Khalifa, located in Abu Dhabi is the site of a *COSCO* operated terminal, which was constructed between 2017 and 2018.<sup>87</sup> The facility is part of a 35-year agreement to operate the terminal as part of China's BRI expansion.<sup>88</sup> Imagery indicates the port facility is capable of container operations and Roll-On Roll-Off operations. Based on these factors, the current assessment is the Port of Khalifa has the capability to host mobile and containerized threats. Subsequent collection should be conducted to monitor port operations and commercial shipping activity to establish pattern of life.

<sup>87</sup> China COSCO Shipping Corporation, Ltd. 2017. *COSCO SHIPPING Ports & Abu Dhabi Ports Witnessed Ground-Breaking at Khalifa Port and Signed New CFS Agreement*. November 6. Accessed February 1, 2021. [http://en.coscoshipping.com/art/2017/11/6/art\\_6923\\_67941.html](http://en.coscoshipping.com/art/2017/11/6/art_6923_67941.html).

<sup>88</sup> Rahman, Fareed. 2018. *Cosco built container terminal opens in Abu Dhabi*. December 10. Accessed February 24, 2021. <https://gulfnews.com/business/energy/cosco-built-container-terminal-opens-in-abu-dhabi-1.60856478>.

## 5.2.2 PLA Expeditionary Base:

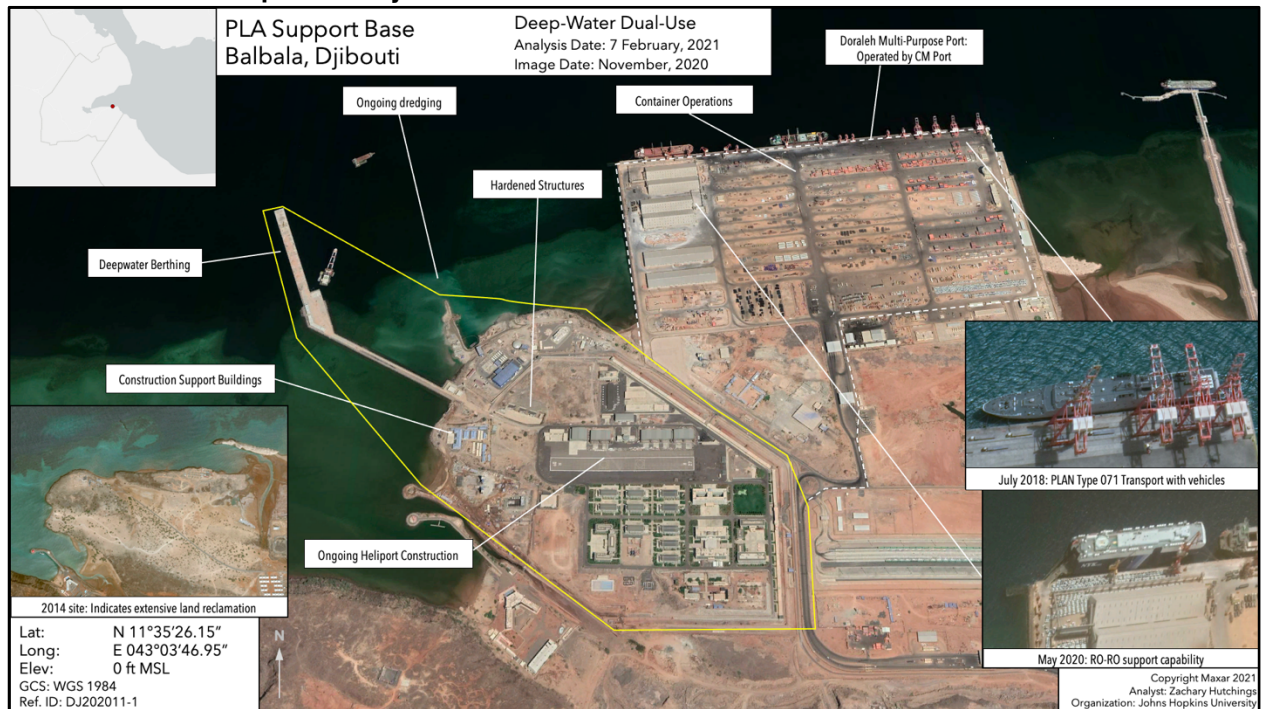


Image 5.2.2: PLA Expeditionary Base Graphic

Perhaps the most significant overseas investment, though not wholly part of BRI, is the development of a PLA Expeditionary Base in Djibouti. Located roughly 10km from a U.S. military facility, the PRC has developed the base in close concert with its port expansions as part of BRI. Doraleh Multipurpose Port was constructed by *CCCC* and is currently operated by *CM Port*, which retains a 25-percent stake of ownership.<sup>89</sup> Construction at the base began in 2014 and is still developing, with continued dredging operations ongoing in support of deep-water berthing, as well as various building construction projects. The base facilities indicate the ability to support aircraft, via the heliport tarmac, with hardened structures that could potentially be used for munitions storage. Via the use of Doraleh, which imagery shows had been used for PLAN berthing previously, the base could support significant quantities of troops and vehicles, with Roll-On Roll-Off capabilities also confirmed. The use of a PRC controlled (via SOE) civilian port to support military vessels provides additional reinforcement to the concept of civil-military cooperation as part of China's BRI infrastructure development. Based on these factors, the

<sup>89</sup> Dutton, Peter A, Isaac B. Kardon, and Conor M Kennedy. "China Maritime Report No. 6: Djibouti: China's First Overseas Strategic Strongpoint.", 9.



current assessment of the PLA base in Djibouti is: significant hosting of naval, mobile, and containerized threats is possible and likely. Subsequent collection should be conducted to monitor unit deployments and identify specific threats.

### 5.2.3 Port of Sokhna:

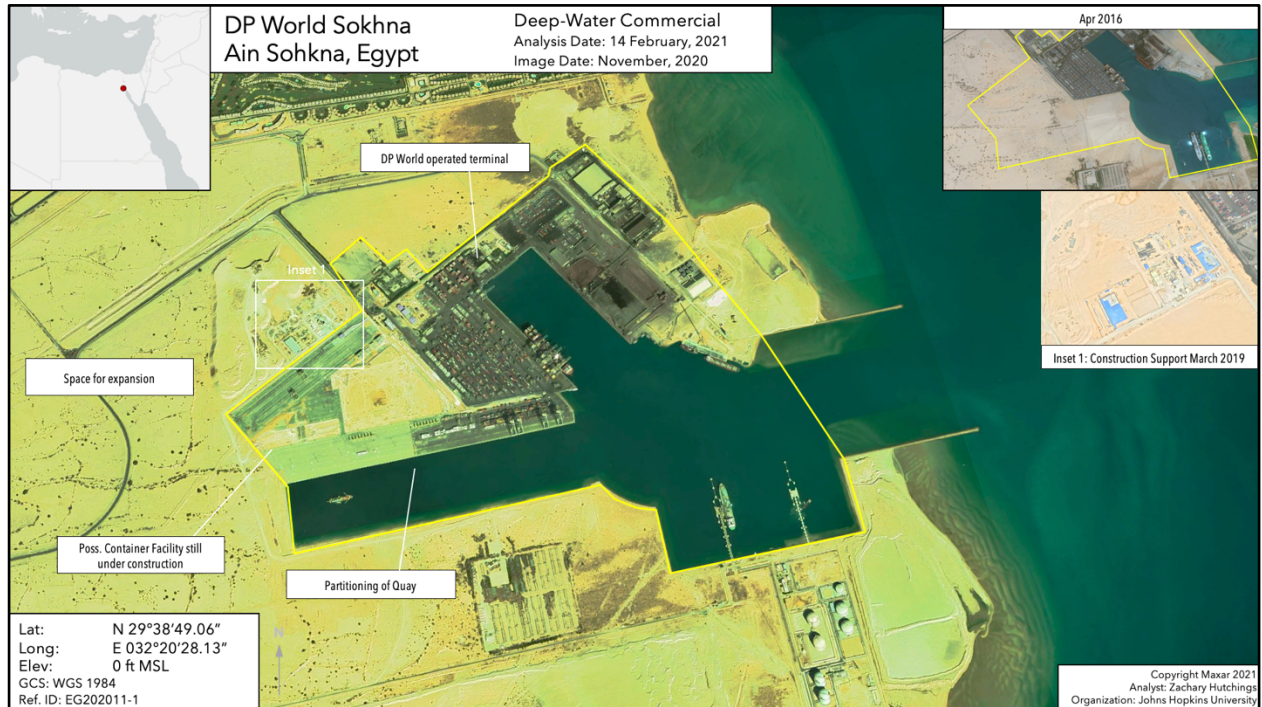


Image 5.2.3: Port of Sokhna Graphic

The Port of Sokhna is arguably one of the more benign and lower profile investments of the BRI. The port itself is owned and operated by *DP World*, an Emirati shipping conglomerate based in Dubai. However, in 2018, *DP World* began construction on a second basin of Sokhna, which was contracted to *CHEC*.<sup>90</sup> The project is nearing completion, with final infrastructure being put in place. Though this was initially only a construction agreement, *DP World* began a partnership with a *COSCO* and *CSCEC* (China State Construction Engineering Corporation) to utilize the newly constructed basin as the primary port for material deliveries destined for other inland BRI projects in the region.<sup>91</sup> This has resulted in an expected expansion of PRC shipping operations at the yet unused second basin. Based on these factors, it is

<sup>90</sup> Xinhua. 2018. *China Harbour builds new terminal south of Egypt's Suez Canal*. August 29. Accessed March 1, 2021. [http://www.xinhuanet.com/english/2018-08/29/c\\_137428464.htm](http://www.xinhuanet.com/english/2018-08/29/c_137428464.htm).

<sup>91</sup> Port Strategy. 2019. *DP World Sokhna Enters Trilateral Partnership*. December 09. Accessed March 1, 2021. <https://www.portstrategy.com/news101/world/middle-east/dp-world-sokhna-enters-trilateral-partnership>.

assessed that the Port of Sokhna will expand its operations and is capable of hosting containerized threats. Given the lack of operations, it is not possible to determine the extent of mobile or naval threat hosting at this time. Subsequent collection should be conducted to monitor shipping presence and operations details at the second basin location with the intent of developing greater fidelity of threat capabilities.

#### 5.2.4 Port of Gwadar:

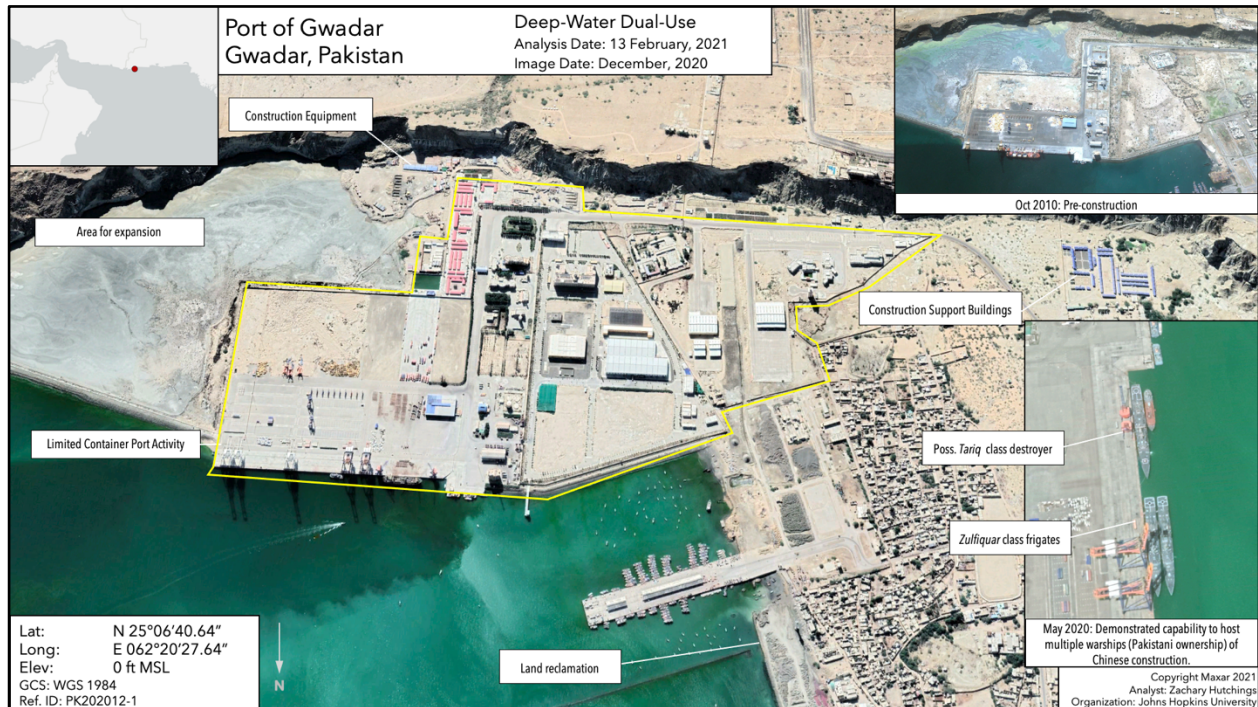


Image 5.2.4: Port of Gwadar Graphic

The Port of Gwadar is a flagship BRI project. As a function of its location, it is a critical node of the CPEC and also a significant strategic outpost for maritime shipping transiting to/from the Persian Gulf. The port itself is operated by *COPHC*, the *CCCC* subsidiary, and has been actively developed since 2013 as part of an extensive BRI plan. This includes the construction of several highways, secondary piers, industrial zones, and an international airport.<sup>92</sup> Consequently, the location has seen significant development to date, both within and without the fence line of the existing port. Notably, the existing multipurpose port, despite being touted as a significant component of BRI, has experienced limited commercial activity to date. Equally notable, several Pakistani Naval vessels have been observed at the

<sup>92</sup> 2015. *China Overseas Ports Holding Company Pakistan Ltd.* Accessed February 20, 2021. <http://cophcgwadar.com/about.aspx>.

port, identified as *Zulfiqar* class frigates and *Tariq* class destroyers. The port's ability to host such vessels is significant because the *Zulfiqar* class is an export variant of the Chinese Type 53H3 (Jiangwei) frigates.<sup>93</sup> This implies the ability to support Chinese warship requirements, both in draft and logistical requirements. Additionally, the Pakistani Navy has purchased further naval vessels from China: four Type 54A/P frigates, a variant of the Jiangkai 2 class.<sup>94</sup> As mentioned earlier, Chinese commercial ships have engaged in underway replenishment of Jiangkai 2 frigates. Thus, the port's ability to host Pakistani warships may indicate a willingness, or at least capability, to host Chinese warships of similar construction. Based on these factors, it is assessed that the Port of Gwadar will expand its operations and is capable of hosting naval, mobile, and containerized threats. Given the lack of operations, it is not possible to determine the extent of mobile or naval threat hosting at this time. Subsequent collection should be conducted to monitor operations, expansion efforts, and warship presence.

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<sup>93</sup> Quwa Defence News & Analysis Group. 2021. *Zulfiqar-Class (F-22P) Frigate*. March 25. Accessed March 28, 2021. <https://quwa.org/2020/06/06/pakistan-navy-ships-zulfiqar-class-f-22p-frigate/>.

<sup>94</sup> Xuanzun, Liu. 2021. *China launches 2nd Type 054A/P frigate for Pakistan*. January 29. Accessed March 1, 2021. <https://www.globaltimes.cn/page/202101/1214356.shtml>.



## 5.3 Europe:

### 5.3.1 El-Hamdania Port Project:



Image 5.3.1: El-Hamdania Port Project Graphic

El-Hamdania is a significant BRI investment, though at this time very little progress has been made. Construction began in late 2017/early 2018 and to date has yielded very few results with the conclusion being the project has stalled as of 2019.<sup>95</sup> The Memorandum of Understanding for the project entails construction requirements by *CSCEC* and *CHEC* with port operations to be retained by a yet undetermined Chinese firm for the first 25 years, post construction.<sup>96</sup> It is expected Chinese companies will retain a 49% stake in the port.<sup>97</sup> This is of particular significance because the militarization of El-Hamdania could pose a significant threat to the Strait of Gibraltar. While the agreement is commercial, the relationship between China and Algeria is one of increasing PRC leverage. Specifically, Algeria is the PRC's largest trading partner in Africa, with a very lopsided balance of trade.<sup>98</sup> Additionally, the proportion

<sup>95</sup> International Trade Administration. 2020. *Algeria's El-Hamdania Port*. March 3. Accessed March 1, 2021. <https://www.trade.gov/market-intelligence/algerias-el-hamdania-cherchell-project>.

<sup>96</sup> Ibid.

<sup>97</sup> Rogers, David. 2017. *Africa's Port Revolution: A Tale of Two Port Cities*. April 3. Accessed March 1, 2021. <https://www.globalconstructionreview.com/sectors/africas-ports-revolution-tale-t7wo-p7ort-citi7es/>.

<sup>98</sup> Zoubir, Yahia H. 2020. "Expanding Sino-Maghreb Relations: Morocco and Tunisia." *Chatham House*. February 26. Accessed February 6, 2021. <https://www.chathamhouse.org/2020/02/expanding-sino-maghreb-relation>, 4.

of trade made up of Chinese weaponry is reported to be “42% of exports to the continent.”<sup>99</sup> There have also been documented reports of Chinese naval vessels visiting the Algerian port of Algiers.<sup>100</sup> Based on these factors, it is assessed that the EI-Hamdania Port Project may expand its operations and will be eventually capable of hosting naval, mobile, and containerized threats. However, given the lack of development, it currently retains no threat hosting capability. Subsequent collection should be conducted to monitor construction and potential operations.

### 5.3.2 Port of Zeebrugge:



Image 5.3.2: Port of Zeebrugge Graphic

The Port of Zeebrugge is strategically located on the mainland Europe side of the English Channel. Consequently, the purchase of roughly 76% of the former APM terminal, gives COSCO shipping a controlling interest at a major intersection of sea lanes.<sup>101</sup> The rebranded CSP Zeebrugge Terminal “is the first terminal in Northwest Europe in which the Company holds a controlling stake and will facilitate

<sup>99</sup> Abdel Ghafar, Adel, and Anna L. Jacobs. 2019. "Beijing Calling: Assessing China's Growing Footprint in North Africa." *Brookings*. September 23. Accessed March 1, 2021. <https://www.brookings.edu/research/beijing-calling-assessing-chinas-growing-footprint-in-north-africa/>

<sup>100</sup> Ibid.

<sup>101</sup> 2017. *Cosco closes on \$42 million Zeebrugge port deal*. November 8. Accessed February 15, 2021. [https://www.joc.com/port-news/european-ports/port-zeebrugge/cosco-closes-42-million-zeebrugge-port-deal\\_20171108.html](https://www.joc.com/port-news/european-ports/port-zeebrugge/cosco-closes-42-million-zeebrugge-port-deal_20171108.html).



the Company in establishing its major hub ports and global strategic focal point.”<sup>102</sup> Based on imagery analysis, current operations at the terminal are strictly limited to container shipping. While the port does provide roll-on roll-off services, these serve mostly to carry traffic across the Channel via ferries. Roll-On Roll-Off car carriers are observed at the port but serve proprietary piers further inland and are thus not depicted. Of note, the CSP terminal is in close proximity to a Belgian Naval Base and thus could fulfill additional militarized requirements such as intelligence collection and non-kinetic application of effects, such as communications jamming. Based on these factors, it is assessed that the CSP Zeebrugge terminal is capable of only containerized threats. However, the proximity to a NATO facility may facilitate the use of the port for covert activities. Subsequent collection should be conducted to monitor operation

### 5.3.3 Port of Piraeus:

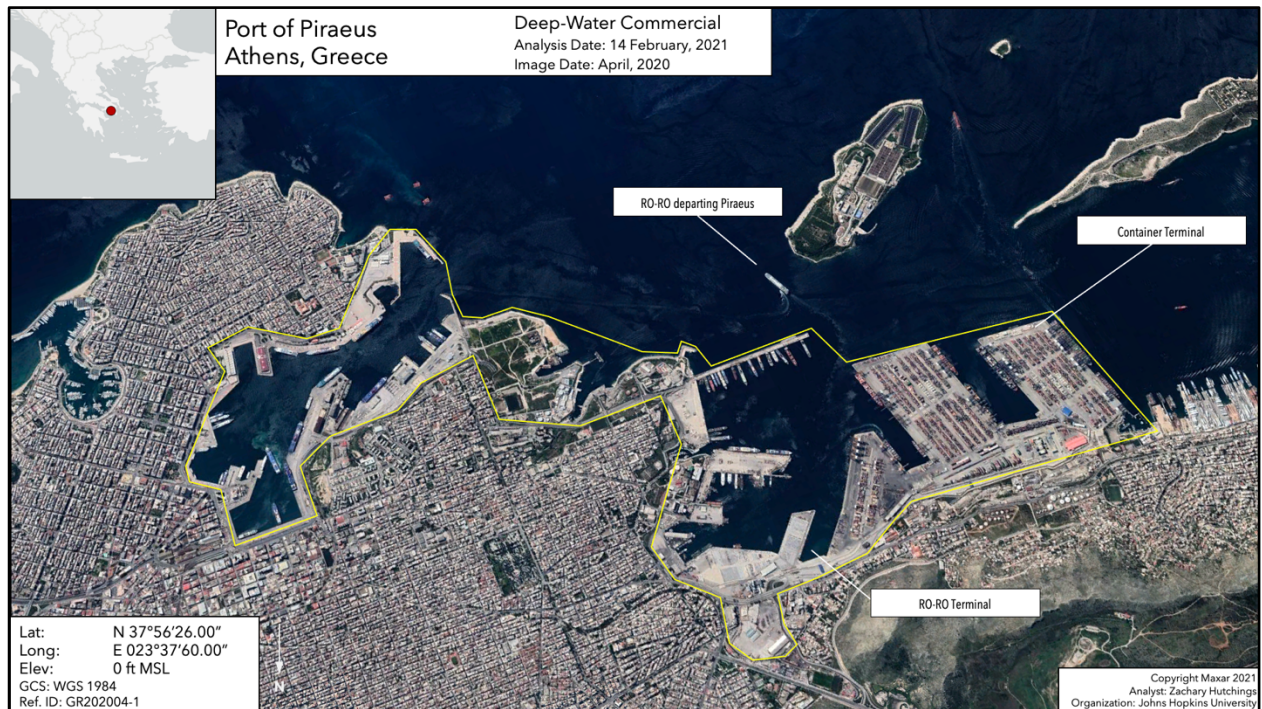


Image 5.3.3.1: Port of Piraeus Graphic

<sup>102</sup> COSCO Shipping Lines (Belgium) NV. 2018. *COSCO SHIPPING Ports Sign Concession Agreement with Port of Zeebrugge*. January 22. Accessed March 25, 2021. <http://www.coscoshippinglines.be/content/cosco-shipping-ports>.



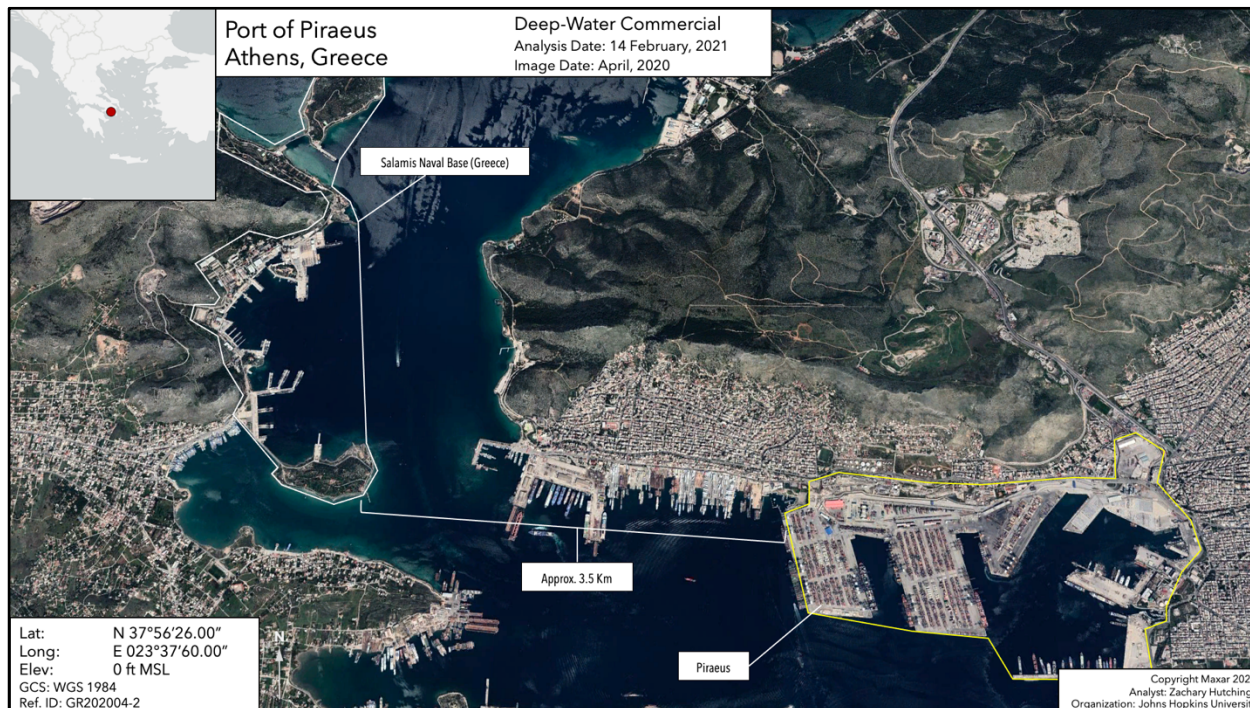


Image 5.3.3.2: Port of Piraeus Proximity Graphic

The Port of Piraeus is one of the more dramatic acquisitions the PRC has facilitated as part of BRI. While not an infrastructure project in and of itself, following the recession Greece encountered at the start of the 21<sup>st</sup> century, *COSCO*, via subsidiaries, has operated a container terminal since 2008.<sup>103</sup> However, in 2016, *COSCO* acquired a controlling 51% share of the Piraeus Port Authority, which manages the entire port, with a follow-on condition that another 16% be transferred in 2021 subject to investment goals being met.<sup>104</sup> Operationally, the port sees container and Roll-On Roll-Off operations regularly. Though the port is capable of hosting PLAN vessels, and has done so, the proximity to the Hellenic Naval Base at Salamis, approximately 3.5km to the east, makes the tactical feasibility of such hosting unlikely. However, much like Zeebrugge, this opens the door to facilitate non-kinetic and covert operations at Piraeus. Based on these factors, it is assessed that the Port of Piraeus is capable of hosting

<sup>103</sup> Chang, Gordon G. 2020. *China in The Mediterranean*. January 10. Accessed February 4, 2021. <https://www.hoover.org/research/china-mediterranean#:~:text=The%20port%20of%20Piraeus%20is,franchise%20rights%20for%2035%20years.>

<sup>104</sup> Kastner, Jens, and Giannis Seferiadis. 2020. *COSCO Faces Backlash as it Moves to Tighten Grip on Greek Port*. December 2. Accessed March 20, 2021. <https://asia.nikkei.com/Business/Transportation/COSCO-faces-backlash-as-it-moves-to-tighten-grip-on-Greek-port>

mobile and containerized threats, with naval threats unlikely. Subsequent collection should be conducted to monitor operations and cargo loading/unloading.

### 5.3.4 Port of Valencia:

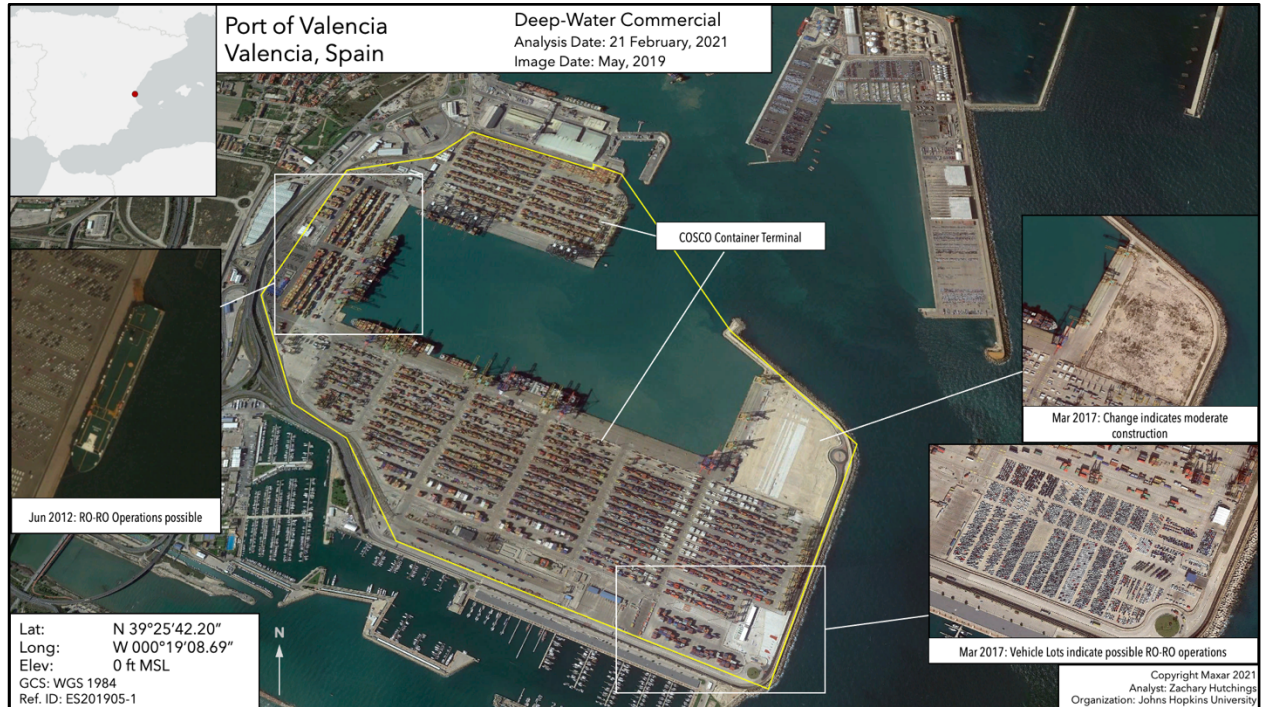


Image 5.3.4: Port of Valencia Graphic

Similar to the Port of Piraeus, the Port of Valencia is controlled by *COSCO*. *COSCO*'s purchase of the related port authority, *Noatum Port Holdings*, of which it owns a 51% stake, gave the shipping company control of the Port of Valencia and Port of Bilbao container terminals.<sup>105</sup> Consequently, this gives *COSCO* control of "the closest commercial port to the Suez-Gibraltar axis – the main route for interoceanic shipping lines."<sup>106</sup> The Port of Valencia has hosted both container vessels and Roll-On Roll-Off vessels, though since the purchase by *COSCO* most RO-RO operations have ceased. Though some minor construction activities have been observed, it is unlikely significant construction will take place in the immediate future. Additionally, no naval vessels have been observed. Based on these factors, it is assessed that the Port of Valencia is capable of hosting mobile and containerized threats. Subsequent

<sup>105</sup> COSCO Shipping Ports Limited. 2017. "COSCO SHIPPING Ports Limited Acquisition of Interest in Noatum Port Holdings in Spain ." *Press Releases*. June 12. Accessed March 25, 2021. <https://ports.coscoshipping.com/en/Media/PressReleases/content.php?id=20170612>.

<sup>106</sup> Port Authority of Valencia. 2021. *About Us*. Accessed March 25, 2021. <https://www.valenciaport.com/en/port-authority-valencia/about-valencia-port/about-us/>.



collection should be conducted to monitor operations, with emphasis on recognizing the resumption of RO-RO operations.

### 5.3.5 Port of Kumport:



Image 5.3.5: Port of Kumport Graphic

The Kumport Terminal, in Ambarli Turkey, is of particular significance to the Turkish Straits and holds a controlling position in the Sea of Marmara, at the southern mouth of the Bosphorus. While not as significant as other maritime chokepoints, this location enables complete control of shipping to and from many several European Countries. The port itself was purchased by a “Tripartite Consortium” comprised of *CMPort*, *COSCO*, and *CIC Capital*, which control 65% of Kumport via a 40/40/20 split.<sup>107</sup> Of note, *CIC Capital* is a PRC SOE, as are *COSCO* and *CMPort*.<sup>108</sup> Imagery indicates the port focuses primarily on container shipping, with a distinct lack of indicators typical of RO-RO operations. No military vessels are apparent at the facility, and given the restricted nature of the Dardanelles, the tactical risk involved in placing combatant vessels at Kumport is a significant factor. Based on these factors, it is assessed that

<sup>107</sup> China Merchants Ports Holding Company Ltd. 2015. "A CMHI-Involved Tripartite Consortium Agreed to Acquire 65% Equity Interests in Kumport Terminal in Turkey." *China Merchants Ports Holding Company Ltd.* September 17. Accessed March 27, 2021. <http://www.cmpport.com.hk/enTouch/news/Detail.aspx?id=10001628>.

<sup>108</sup> 2021. *China Investment Corporation - Articles of Association*. Accessed March 27, 2021. [http://www.china-inv.cn/chinainven/Governance/Articles\\_of\\_Association.shtml](http://www.china-inv.cn/chinainven/Governance/Articles_of_Association.shtml).

the Port of Kumport is capable of hosting containerized threats only. Subsequent collections should be conducted to monitor operations to establish pattern of life.

#### 5.4 Americas:

##### 5.4.1 Panama Colon Port Project:



Image 5.4.1.1: Panama Colon Port Project Graphic

The Panama Colon Port Project is a joint venture acquired by *Landbridge Group* in 2016 and developed by *Shanghai Gorgeous investment Development Group*.<sup>109</sup> The project is of particular significance due to its controlling location at the Caribbean entrance to the Panama Canal, visible in the image above yards from the acquired property. Such a location poses a credible threat to U.S. access to the Panama Canal, not only due to hypothetical placement of weapons systems on a dual-use facility, but also via more simple means such as basic channel blockage from deliberately placed obstacles in the event of conflict. Additionally, this location is significant because activity observed here confirmed earlier imagery analysis that identified a construction signature . The established pattern, that construction

<sup>109</sup> Panama Colon Container Port. 2018. *Panama Colon Container Port*. Accessed February 5, 2021. <http://www.pccp.com.pa/>

support facilities can be typically identified via blue roof signatures, has been reinforced by open source collection from the company website at this facility that supports this identification.<sup>110</sup>

According to various project publications, *Shanghai Gorgeous* intends to develop an extensive container terminal, and imagery analysis indicates significant progress to that extent has been made. However, since January 2020 no construction progress has been made, and construction equipment (barges and cranes) have been removed, while construction support buildings have degraded significantly and rapidly. Such indicators



Temporary work camp of the PCCP project  
*Image 5.4.1.2: Screenshot and caption of "work camp" from port website*

suggest that construction has stalled for some reason. One possible explanation may be workforce difficulties caused by the COVID-19 pandemic, while another may be contractual or funding difficulties. Based on these factors, the current assessment of the Panama Colon Container Port is one of no hosting capabilities, with no observed capability for naval, mobile, or containerized threats. Subsequent monitoring should be conducted with emphasis on monitoring construction status, as indicated by maintenance on support facilities or the return of construction equipment.

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<sup>110</sup> Ibid.

## 6. Application of Analysis

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### 6.1 Assessment of Key Intelligence Question:

By applying the analysis of each port, as well as the assessment of threat capabilities listed above, and through the use of readily available GIS techniques, this report has created two assessments. First, a hypothetical worst case projection of PRC threat capabilities for each BRI location has been developed to depict the potential threat each location poses to the U.S. and its allies if not properly managed through diplomatic, military, and economic channels. Second, an assessment of the current hosting capability of each location has been developed that matches current observed capabilities with the current threat estimate. This graphic conveys the current tactical significance Chinese covert prepositioning of threat weapons at dual-use facilities and assets would have on critical maritime chokepoints. ***It is currently assessed that the pre-placement of threat capabilities at the identified Belt and Road Initiative related maritime infrastructures would enable the PRC to deny freedom of navigation to U.S and Allied maritime activities via all of the identified critical maritime chokepoints, with the exception of the Panama Canal.***



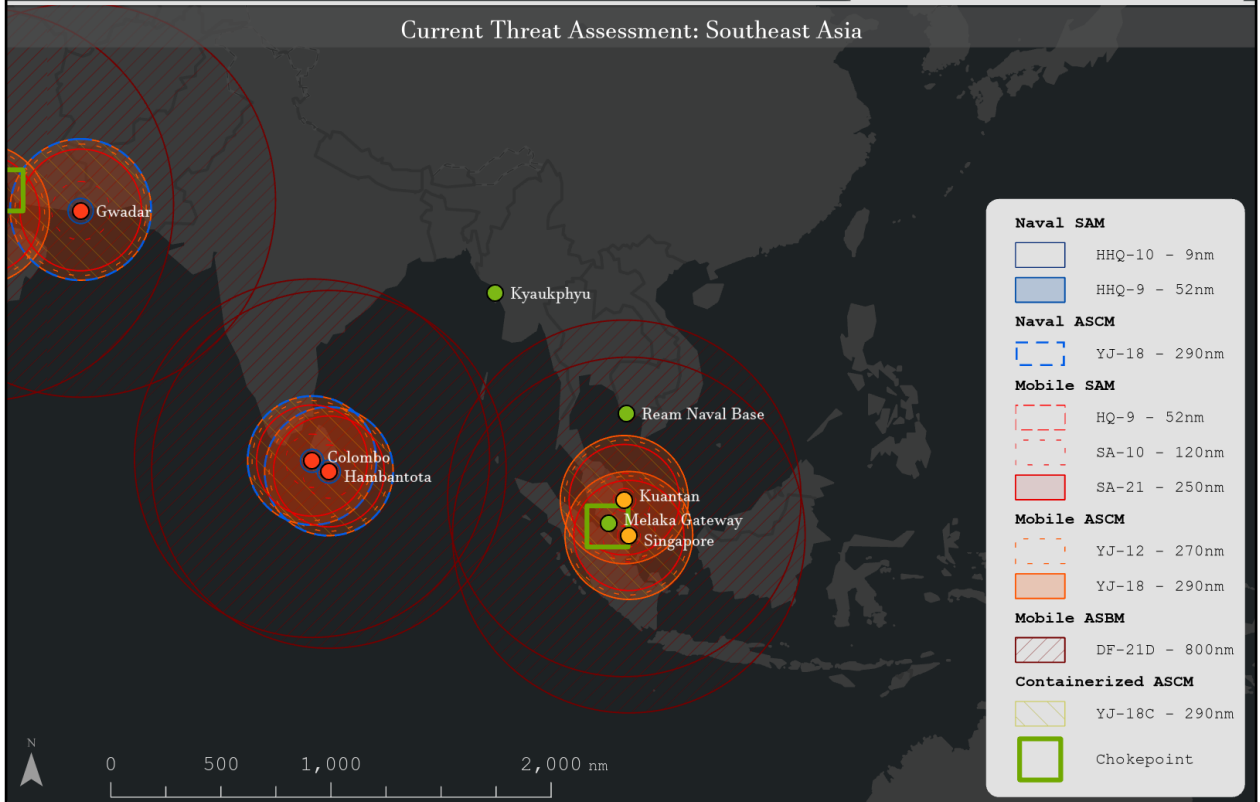
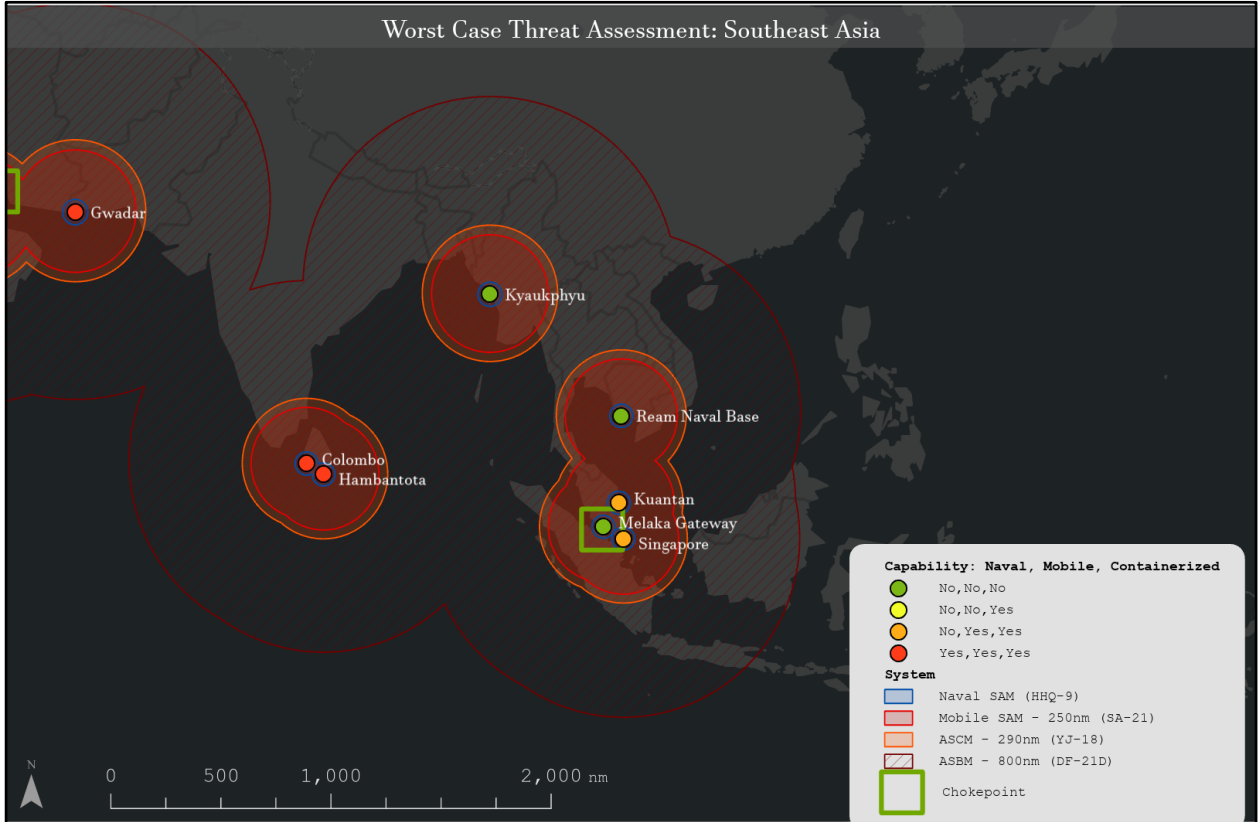
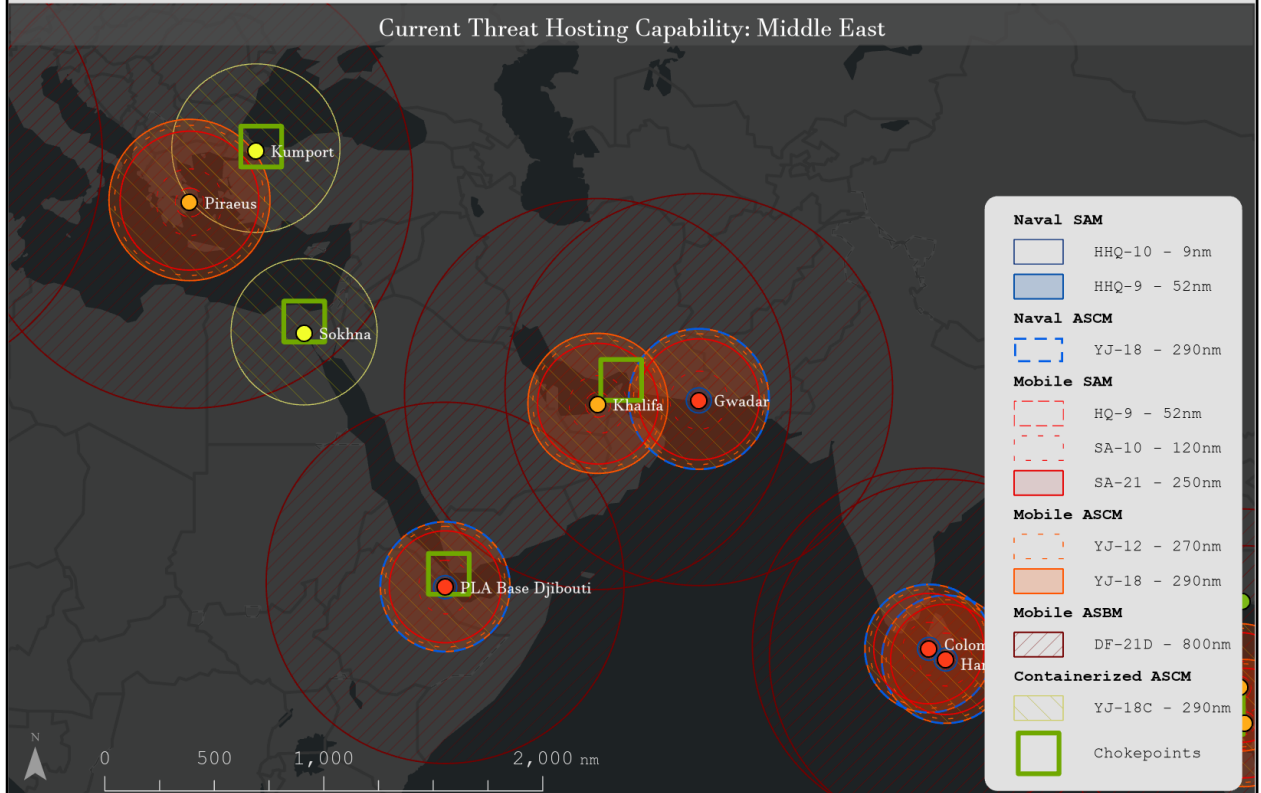
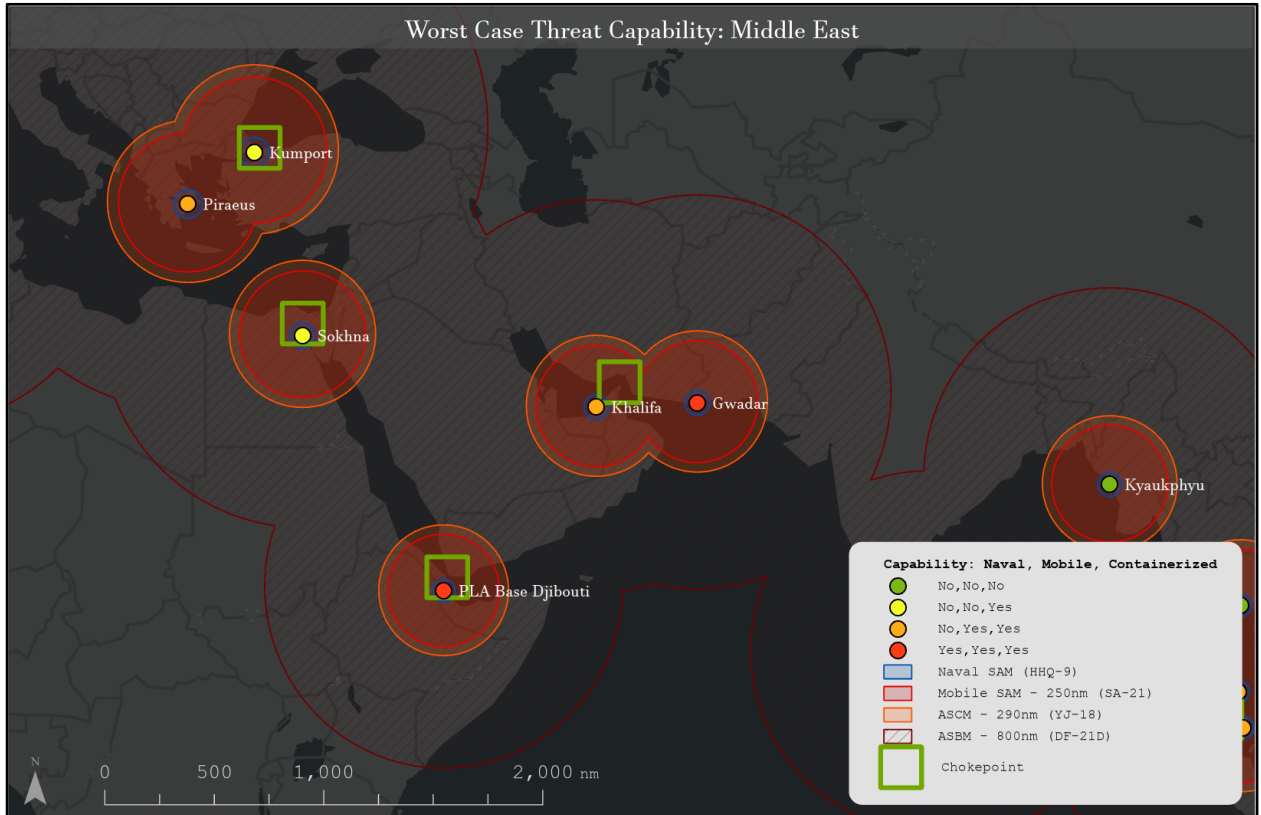


Image 6.1.1: Southeast Asia Assessment



*Image 6.1.2: Middle East Assessment*



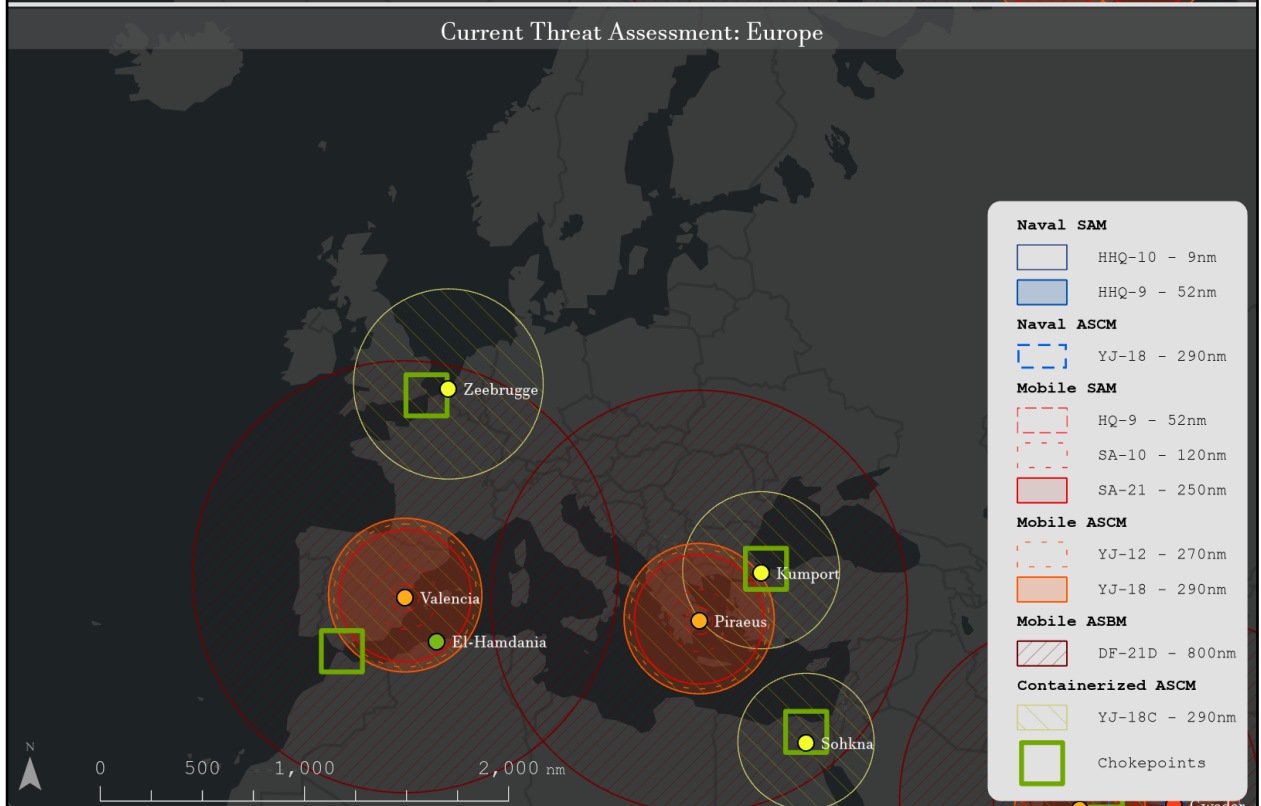
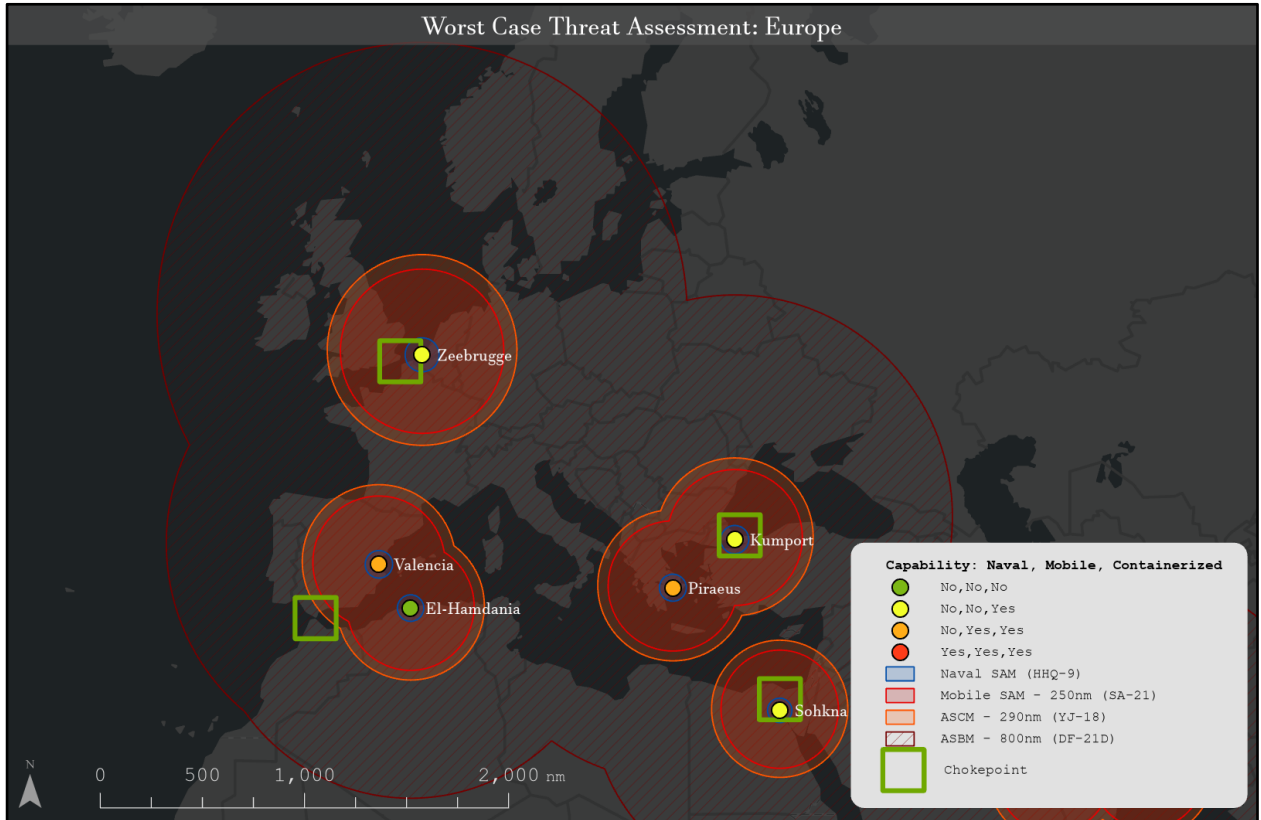


Image 6.1.3: Europe Assessment

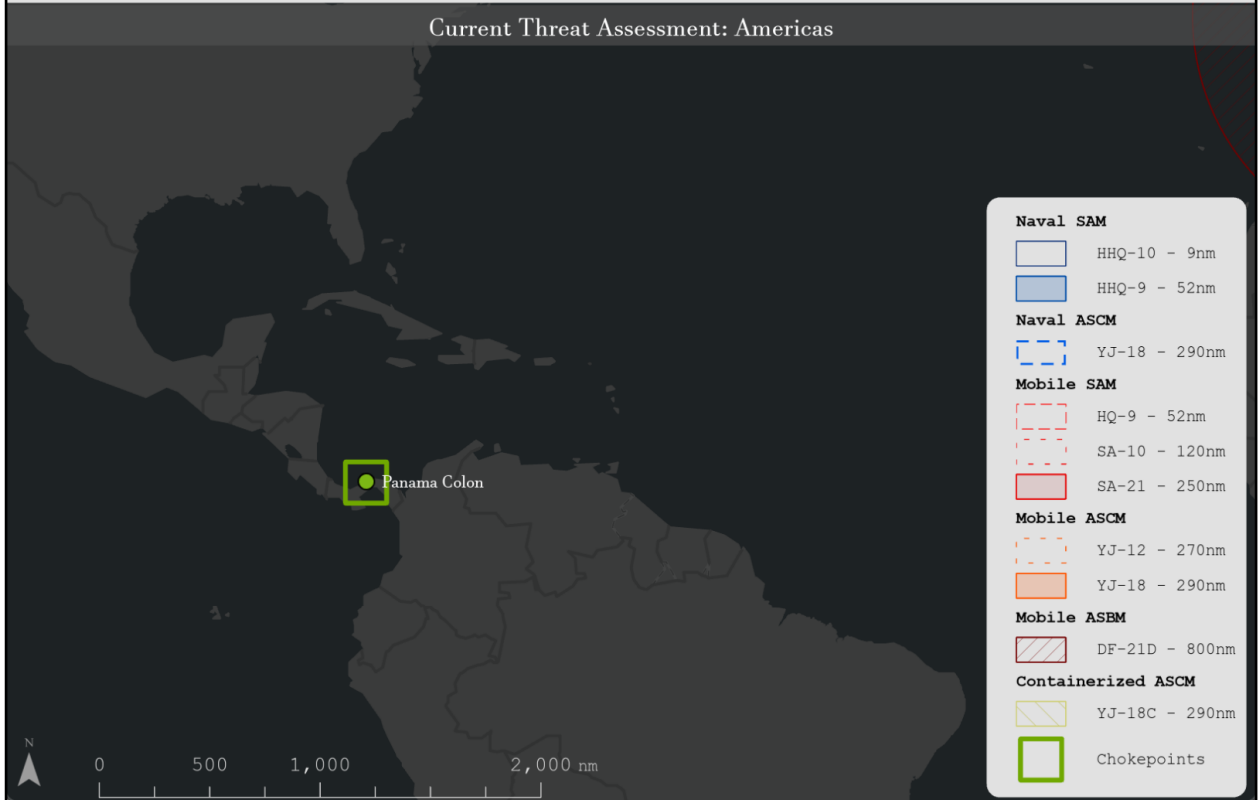
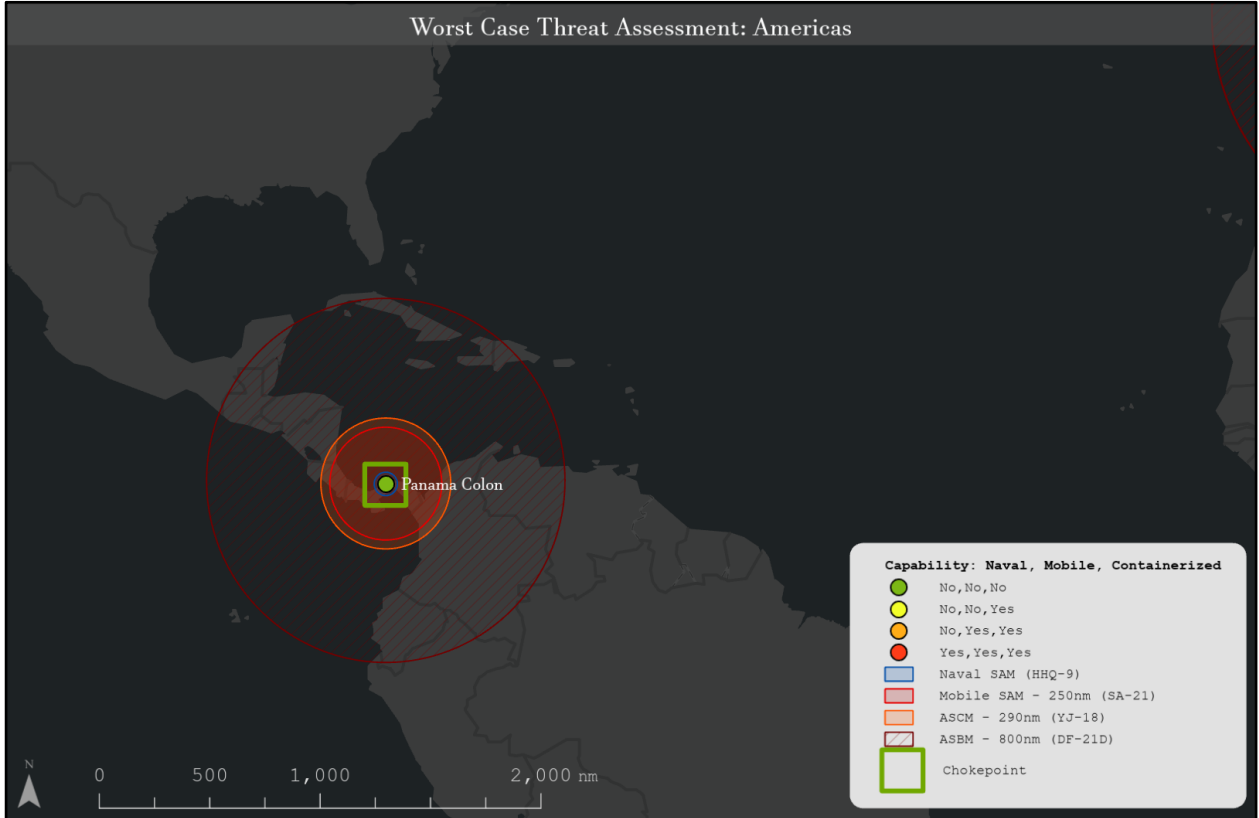


Image 6.1.4: Americas Assessment

## 7. Conclusion and Wrap-up

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### 7.1 Questions for Follow-on Collection:

In light of the analytic conclusions in this paper, the PRC's BRI program of expansion activities should continue to be monitored to ensure developments are tracked and addressed accordingly.

Specifically, the following intelligence questions may help guide the follow-on collection efforts:

1. **Monitoring:** At existing BRI maritime locations, what is the pattern of life (routine maritime operations)?
  - a. How do those patterns compare to traditional maritime operational practices?
    - i. Do shipping patterns reflect normal operations?
  - b. How do these patterns compare to overtly stated port operations?
  - c. Are those patterns changing?
  - d. What type of operations are observed?
  - e. Have any threats been observed? If so, what type?
  - f. Have any concealment measures been observed at these facilities, such as container movement or stacking, so as to obscure routine ground lines-of-sight?
2. **Monitoring:** At existing BRI maritime locations, what is the status of construction and pace of expansion?
  - a. Has new construction started?
    - i. What is the extent and direction of the new construction?
    - ii. How does this match with publicized information?
  - b. Has existing construction been completed?
    - i. How does completed construction compare to publicly stated intent?
    - ii. How does this construction change the threat hosting capability?
3. **Expanding:** Have there been any additional BRI expansion efforts or negotiated contracts?
  - a. Where are those locations?
    - i. How do they affect critical maritime chokepoints?
  - b. What are the infrastructure characteristics of those locations?

- i. What threat hosting capability do these locations have
- c. Does this indicate an expansion consistent with previously observed/stated facilities or efforts?

## **7.2 Requirements for Follow-on Collection:**

To answer these collection questions, follow-on efforts will require only moderate asset allocation. As monitoring of these facilities is largely possible with open source intelligence collection, the main impediment to depth, scope and quality of future assessments will be trained analysts. A sufficient number of personnel will be necessary for complete coverage of an expanding network of BRI points of interest. As such, should robust collection proceed, this report recommends the creation of four regional collection teams, with specific focus in each of the previously outlined AOR. This approach will allow for a degree of analytic familiarity within a given region of interest and accelerate the comprehension of the specific norms of activity at each facility, reduce the overall workload required of any single team, and multiply investigative efforts, from potentially one single analysis track to four. Such division of work will also enable the use of a greater amount of supplementary open source information to steer and verify collections. Large increases in PRC regional focuses may require a further division of these regional teams to focus on specific sectors of a given region, the Caribbean as an example. However, crucially, this work effort will require cohesive and coherent analytic supervision to ensure regional conclusions are tied to a larger global picture and assessment.

Asset allocation, as alluded to earlier, is fairly simple. Consistent open source imagery is required for the monitoring of BRI fixed locations and infrastructure. While panchromatic EO imagery is sufficient for the purposes of monitoring large activity, multi-spectral imagery, with a desired minimum of 4 bands would be desired. For developed locations, minimum EO NIIRS ratings of 5 or better is required for threat identification. For developing locations, such as El-Hamdania, minimum imagery of NIIRS 3 will suffice until construction begins in earnest at which point greater image detail will be required. Notably, however, imagery of this type is readily available via platforms such as Google Earth, as an example. However, should specific one-off collection be desired, potential platforms to satisfy these requirements are Maxar's

Worldview-3<sup>111</sup> and Planet Labs' Dove Constellations.<sup>112</sup> Additionally, if utilizing commercially contracted imaging assets, baseline SAR imagery should be collected for all identified locations. This could be accomplished via ICEYE<sup>113</sup> which can provide on demand SAR imaging via 25cm spotlight imaging. Lastly, assuming the clandestine requirements for prepositioning of munitions or weapons systems, various IR imagery sources should be considered, in conjunction with SAR, for monitoring of locations at night.

Finally, open source collection and analysis is crucial to monitoring BRI activities and the transition from civil to military use of identified facilities. As BRI is a flagship undertaking, it is characterized by large amounts of publicity. Monitoring available information can cue subsequent collection. Similarly, a break in public announcements or transparency may indicate a shift in operations, from those which can be justified on the world stage, to those requiring more opacity. Additionally, the monitoring of ship movements, via AIS (Automatic Identification System), can help develop a pattern of life for COSCO and CSC vessels. Developing this pattern of operations, in the form of regular sailing routes, can help identify anomalies that might indicate a shift in cargos, destinations, and priorities. As an example, a simultaneous convergence of Roll-On Roll-Off vessels at a single PRC port with a history of military embarkation might indicate the potential for coordinated loading and unloading of mobile threats in preparation for military mobilization. Finally, a robust campaign of open source social media monitoring can help corroborate and cue other collections. Platforms like Instagram, Twitter, and Facebook can provide insight into vessel movements via the activities of sailors, crewmembers, and supporting entities. What might be construed as innocent posts can help develop expected timelines for vessel departures, follow on routing, and ultimate destinations. This can be combined with corporate public relations stances to analyze if operating patterns are meeting publicized goals or pursuing undisclosed objectives.

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<sup>111</sup> Satellite Imaging Corporation. 2017. *WorldView-3 Satellite Sensor*. Accessed March 20, 2021. <https://www.satimagingcorp.com/satellite-sensors/worldview-3/>.

<sup>112</sup> Satellite Imaging Corporation. 2017. *Dove Satellite Constellation*. Accessed March 20, 2021. <https://www.satimagingcorp.com/satellite-sensors/other-satellite-sensors/dove-3m/>.

<sup>113</sup> 2021. *ICEYE*. Accessed March 20, 2021. [www.iceye.com](http://www.iceye.com).

Based on emerging analysis, in particular, open source AIS tracking, if required, additional methods of collection should be considered to determine the use and development of locations, such as SIGINT (via COMINT or ELINT) and HUMINT. However, care should be taken as this requires more active collection via asset placement in the vicinity of the identified locations and as such may compromise covert collection. Additionally, for locations in Allied/NATO nations, such as Zeebrugge and Valencia, to name a few, intelligence liaisons should be maintained and leveraged if possible, to alleviate the requirement for substantial proprietary asset management.

### **7.3 Suggested Timeline for Follow-on Collection:**

As this collection focuses on new and emerging products of BRI, the timeline for collection is fundamentally open. As an example, BRI began in 2013, yet the construction at Kyaukphyu is expected to continue for an estimated 20 years. Therefore, the collection timeline must focus on long-term collection, with more frequent collection as the exception to the rule. Asset preservation must be at the forefront of the collection strategy, while continual updating of baseline activities must occur on a periodic basis, subject to each location's unique developments.

As a basic outline, for currently undeveloped locations or those locations still under contract negotiation, collection at lower revisit rates will suffice, such as once per month. Specific triggers for additional collection will include the emplacement of construction equipment or the installation of construction support buildings. For ports under construction, bi-weekly imagery updates are recommended to monitor projects, materials, and pace of construction. For completed civil ports, collection should be managed on a workload dependent basis to focus on vessel traffic. While daily imagery might be excessive, cued collection based on expected maritime traffic (provided by AIS and shipping contracts, as an example) may help drive collection schedules. Finally, for confirmed military or suspect dual-use facilities, collection should be managed, up to real-time monitoring if required, based on the development of operations at those locations. Specific emphasis in this case could be placed on monitoring types of vehicles, their placement, unit preparations, etc. Such fast paced collection may be prohibitive, fiscally and temporally, via commercially available means.

#### **7.4 Suggested Budget for Follow-on Collection:**

The budget for collection will vary largely on the tools used by the collecting organization. In any case, however, the on-going analysis of BRI investments is likely to require substantial investments in analytic time and attention. Given the extent of the PRC's expansion overseas, as well as the expectation for decades of additional expansion, time requirements are arguably the greatest budgetary consideration. Assuming follow-on collection and analysis is pursued via open source collection and by independent organizations, the budget would be entirely composed of salary costs for personnel, which is directly related to workforce size, and costs for analytic hardware and software.

This report was conducted entirely from retrospective collection. As the developments at these facilities come to fruition and warrant more frequent monitoring, prospective collection at a greater periodicity than Google Earth updates will be required to monitor developments. When collection exceeds basic levels of open source collection, then the budget will necessarily expand. If commercial imagery is requested, budgetary expenses will include the requisite costs based on company specific prices per collection request. For government sponsored collection using proprietary assets, additional expense will be incurred via asset allocation and the corresponding lifespan costs. Furthermore, for active collection efforts additional salary costs, support costs, and asset use costs must be included. Finally, as the collection expands and the dataset increases, staffing will necessarily increase to include the employment of experts in specific collection disciplines, which will likely require a premium. As such, though no formal budget is proposed within this report, a thorough review of expected expenses is recommended for any organization attempting such collections.

## 8. Glossary

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ASBM: Anti-Ship Ballistic Missile	CSCEC: China State Construction Engineering Corporation
ASCM: Anti-Ship Cruise Missile	DOD: Department of Defense
AOR: Areas of Responsibility	EPC: Engineering Procurement Transfer
BOT: Build Operate Transfer	GEOINT: Geospatial Intelligence
BRI: Belt and Road Initiative	GPC: Great Power Conflict
CCCC: China Communications Construction Company	LOI: Locations of Interest
CHEC: China Harbor Engineering Company	MCF: Military-Civil Fusion
CIC Capital: China Investment Corporation Capital	NTM: National Technical Means
CMC: Critical Maritime Chokepoints	PLA: People's Liberation Army
CMI: Civil-Military Integration	PLAN: People's Liberation Army Navy
CMPort: China Merchants Port Holdings	PPP: Private Public Partnership
COPHC: China Overseas Port Holding Group	PRC: People's Republic of China
COSCO: China Overseas Shipping Corporation	PSA: Port of Singapore Authority Co. Ltd.
CPEC: China-Pakistan Economic Corridor	RO-RO: Roll-On Roll-Off
CSC: China Shipping Company	SOE: State-Owned Enterprise
	SAM: Surface to Air Missile
	UNREP: Underway Replenishment



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