



# Raising the Costs of Access

## Active Denial Strategies by Small and Middle Powers Against Revisionist Aggression

**Authors: Paul van Hooft, Nora Nijboer, Tim Sweijs**

The Hague Centre for Strategic Studies (HCSS)

December 2021





## Raising the Costs of Access

Active Denial Strategies by Small and Middle Powers Against Revisionist Aggression

**Authors:**

Paul van Hoof, Nora Nijboer, Tim Sweijs

**Editors:**

Paul van Hoof and Tim Sweijs

December 2021

The analysis presented in the paper, including the conclusions and recommendations, is the product of independent research. The responsibility for the content of this paper lies with the authors and the authors alone. The research was made possible through a grant from the Taipei Representative Office in the Netherlands to The Hague Centre for Strategic Studies.

© *The Hague* Centre for Strategic Studies. All rights reserved. No part of this report may be reproduced and/or published in any form by print, photo print, microfilm or any other means without prior written permission from HCSS. All images are subject to the licenses of their respective owners.

Cover photo source:  
Ministry of Defense of the Netherlands

The Hague Centre for Strategic Studies  
info@hcss.nl  
hcss.nl  
Lange Voorhout 1  
2514EA The Hague  
The Netherlands

# Contents

|  |           |
|--|-----------|
| <b>Deterrence by denial and anti-access and area denial</b>                        | <b>3</b>  |
| <b>Why would A2/AD be a solution for conventionally inferior states?</b>           | <b>7</b>  |
| <b>Examples of A2/AD capabilities in the European theater : Poland and Finland</b> | <b>8</b>  |
| <b>Examples of A2/AD capabilities in the Asian theater: Japan and Taiwan</b>       | <b>11</b> |
| <b>Conclusion</b>  | <b>14</b> |

The 2021 Zapad military exercise, focused on the Western Military District cooperation with Belarus, and its deployment of over 100,000 forces along the Ukrainian border in December of that year, is another signal of Russia's increasingly advanced military capabilities and overall improved readiness.

Small and middle powers in Europe and Asia are under increasing threat for two interrelated reasons: (1) the threat of revisionist aggression from Russia and China and (2) the increasing structural and domestic limitations on US external power projection.

First, Russia and China have become increasingly revisionist over the past decade. In Europe, the annexation of Crimea by the Russian Federation in 2014 demonstrated Russia's willingness to use force to change the post-war national borders. Russia continues to challenge NATO allies with anti-access area denial (A2/AD) capabilities.<sup>1</sup> It also uses hybrid strategies in the Baltics, a region that is vulnerable because it is relatively isolated and harbors significant Russian-speaking minorities.<sup>2</sup> Russia has increased its submarine cruise missile capacity in its Baltic and Black Sea fleets.<sup>3</sup> The 2021 Zapad military exercise, focused on the Western Military District cooperation with Belarus, and its deployment of over 100,000 forces along the Ukrainian border in December of that year, is another signal of Russia's increasingly advanced military capabilities and overall improved readiness.<sup>4</sup> In parallel, in Asia, China can increasingly mount a military challenge to the US command of the maritime commons in the Western Pacific.<sup>5</sup> Though Chinese maritime primacy within the region is deemed unlikely for the foreseeable future, China's enhanced military capabilities over the past years allow it to threaten and hold at risk US' vessels and bases relatively close to the Chinese mainland.<sup>6</sup> There are growing signs that China aims to use force to reunify Taiwan with the mainland. The Biden administration has reiterated that China is the US Department of Defense's priority and direct cause for the establishment of a China Task Force in February 2021.<sup>7</sup>

Second, due to its multi-regional commitments, the maneuver space of the US is increasingly limited, presenting it with stark choices between regions during the advent of a crisis.<sup>8</sup>

1 Alexander Lanoszka and Michael A Hunzeker, "Confronting the Anti-Access/Area Denial and Precision Strike Challenge in the Baltic Region," *The RUSI Journal* 161, no. 5 (September 2, 2016): 12–18, <https://doi.org/10.1080/03071847.2016.1253367>; Andrew Radin, "Hybrid Warfare in the Baltics: Threats and Potential Responses," February 23, 2017, [https://www.rand.org/pubs/research\\_reports/RR1577.html](https://www.rand.org/pubs/research_reports/RR1577.html). Experts note that Russia will be successful in seizing territories along NATO's eastern flank when its adversaries fail to provide adequate counter-mobilization and invest in area-access assets. David A. Shlapak and Michael Johnson, "Reinforcing Deterrence on NATO's Eastern Flank: Wargaming the Defense of the Baltics," January 29, 2016, [https://www.rand.org/pubs/research\\_reports/RR1253.html](https://www.rand.org/pubs/research_reports/RR1253.html); Robert Dalsjö and Michael Jonsson, "More than Decorative, Less than Decisive: Russian A2/AD Capabilities and NATO," *Survival* 63, no. 5 (2021), <https://www.tandfonline-com.ezproxy.its.uu.se/doi/epub/10.1080/00396338.2021.1982204?needAccess=true>.

2 Loic Burton, "Bubble Trouble: Russia's A2/AD Capabilities," *Foreign Policy Blogs*, October 25, 2016, <https://foreignpolicyblogs.com/2016/10/25/bubble-trouble-russia-a2-ad/>.

3 H. I. Sutton, "Russia Increasing Submarine Cruise Missile Capacity as US Navy Decreases Its Own," *RUSI*, August 19, 2021, <https://rusi.org/explore-our-research/publications/commentary/russia-increasing-submarine-cruise-missile-capacity-us-navy-decreases-its-own>.

4 Michael Kofman, "Zapad 2021: What We Learned From Russia's Massive Military Drills," *The Moscow Times*, September 23, 2021, <https://www.themoscowtimes.com/2021/09/23/zapad-2021-what-we-learned-from-russias-massive-military-drills-a75127>.

5 Paul Van Hooft, "Don't Knock Yourself Out: How America Can Turn the Tables on China by Giving up the Fight for Command of the Seas," *War on the Rocks*, February 23, 2021.

6 Evan Braden Montgomery, "Contested Primacy in the Western Pacific: China's Rise and the Future of US Power Projection," *International Security* 38, no. 4 (2014): 115–149; Eric Heginbotham et al., *The US-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power, 1996–2017* (Rand Corporation, 2015); Stephen Biddle and Ivan Oelrich, "Future Warfare in the Western Pacific: Chinese Antiaccess/Area Denial, U.S. AirSea Battle, and Command of the Commons in East Asia," *International Security* 41, no. 1 (July 2016): 7–48, [https://doi.org/10.1162/ISEC\\_a\\_00249](https://doi.org/10.1162/ISEC_a_00249); Michael Beckley, "The Emerging Military Balance in East Asia: How China's Neighbors Can Check Chinese Naval Expansion," *International Security* 42, no. 2 (2017): 78; Paul Van Hooft, "All-in or All-out: Why Insularity Pushes and Pulls American Grand Strategy to Extremes," *Security Studies*, 2020.

7 Jim Garamone, "Biden Announces DOD China Task Force," U.S. Department of Defense, February 10, 2021, <https://www.defense.gov/Explore/News/Article/Article/2500271/biden-announces-dod-china-task-force/>.

8 Hal Brands and Evan Braden Montgomery, "One War Is Not Enough: Strategy and Force Planning for Great Power Competition," *Texas National Security Review* 2, no. 3 (2020); Paul Van Hooft, "The United States May Be Willing, but No Longer Always Able: The Need for Transatlantic Burden Sharing in the Pacific Century," in *The Future of European Strategy in a Changing Geopolitical Environment: Challenges and Prospects*, ed. Michiel Foulon and Jack Thompson (The Hague, Netherlands: The Hague Centre for Strategic Studies, 2021).

Moreover, adversaries could make use of the US focusing its assets in one region to deter a crisis by initiating a crisis in another region.<sup>9</sup> The US also looks likely to remain domestically polarized in the near-future, undermining its ability to craft coherent strategy. The foreign policy elite consensus on the US role as a protector of the global commons is less certain. For European and Asian states these two developments interact: Russia and China are emboldened and look to make use of the growing US limitations.

What conventional options exist for small and middle powers in Europe and Asia to raise the costs of aggression towards regional threats? We focus specifically on conventional options, because acquiring nuclear weapons is off the table for most states – though doors once thought permanently closed are cracking open again.<sup>10</sup> Beyond undermining the global nonproliferation regime and beyond unsettling relations with allies, the risks of a nascent nuclear state's weapons program being discovered and preemptively attacked by the very power it is trying to deter are considerable.<sup>11</sup> The road to a survivable second strike is generally long and arguably more dangerous than remaining a non-nuclear power.

In this essay, we argue that investing in conventional deterrence, specifically the ability to deter by denial, is the more feasible route for small and middle powers in Europe and Asia under current conditions. Deterrence is about raising the costs of a potential adversary's aggression-strategies of "active denial" seek to prevent the adversary from fully using or exploiting the domain in question. In this context, we specifically look at the utility of so-called anti-access area denial (A2/AD) capabilities to underpin deterrence by denial.<sup>12</sup> Though A2/AD is often framed as primarily a threat to the US and its allies and partners from Russia and China, conversely, investments in these capabilities would make large-scale aggression more difficult and time-consuming for any aggressor. Given the likelihood that the US will be distracted during the early stages of a conflict, the ability to buy time becomes more attractive than ever for the allies and partners of the US. Moreover, as we will argue, specific A2/AD capabilities, if deployed wisely, are less prone to the risk of inadvertent escalation associated with deterrence by punishment.<sup>13</sup> At the same time, they may help bridge the tactical nuclear gap that currently plagues NATO's nuclear deterrence posture.<sup>14</sup> Finally, should A2/AD capabilities fail to dissuade an adversary from launching an attack, they are relevant warfighting tools that can help "shape adversaries' behavior by placing limits on the scope, nature and/or

9 Hal Brands and Evan Braden Montgomery, "Opportunistic Aggression in the Twenty-First Century," *Survival* 62, no. 4 (2020): 157–182.

10 Discussion has emerged in small and middle powers in Europe and Asia regarding previously rock-solid non-proliferation pledges. Eric Heginbotham and Richard J. Samuels, "Vulnerable US Alliances in Northeast Asia: The Nuclear Implications," *The Washington Quarterly* 44, no. 1 (January 2, 2021): 157–75, <https://doi.org/10.1080/0163660X.2021.1894709>; Patrick Porter, "Australia Needs a Bomb in the Basement," *Australian Financial Review*, April 8, 2021, <https://www.afr.com/policy/foreign-affairs/australia-needs-a-bomb-in-the-basement-20210329-p57eya>; Bruno Tertrais, "Will Europe Get Its Own Bomb?," *The Washington Quarterly* 42, no. 2 (2019): 47–66; Bert Thompson, Ulrich Kühn, and Tristan Volpe, "Tracking the German Nuclear Debate," Carnegie Endowment for International Peace, August 15, 2018, <https://carnegieendowment.org/2018/08/15/tracking-german-nuclear-debate-pub-72884>.

11 Vipin Narang, "Strategies of Nuclear Proliferation: How States Pursue the Bomb," *International Security* 41, no. 3 (2017): 110–150.

12 Whether A2/AD is still an appropriate term, is a matter of some debate. In this essay, we simply stick with the term for the sake of accessibility. For a critique, see: Chris Dougherty, "Moving Beyond A2/AD," Center for a New American Security (CNAS), December 3, 2020, <https://www.cnas.org/publications/commentary/moving-beyond-a2-ad>.

13 Patrick M. Morgan, "Chapter 1: Deterrence by Denial from the Cold War to the 21st Century," in *Deterrence by Denial. Theory and Practice*, ed. Alex Wilner and Andreas Wenger, Rapid Communications in Conflict and Security Series (Amherst, New York: Cambria Press, 2021), 29.

14 Matthew Kroenig, "A Strategy for Deterring Russian Nuclear De-Escalation Strikes" (Atlantic Council - Scowcroft Center for Strategy and Security, April 2018), 10.

Though A2/AD is often framed as primarily a threat to the US and its allies and partners from Russia and China, conversely, investments in these capabilities would make large-scale aggression more difficult and time-consuming for any aggressor.



ferocity of a conflict,” and bring the war to an end on more favorable terms.<sup>15</sup> At the very least, they could give an aggressor reason to pause, given that overcoming denialist strategies is likely to significantly drain their resources, leaving an aggressor weakened when confronted by other major powers.

The essay proceeds as follows. First, we discuss the difference between deterrence by punishment and by denial. Second, we examine how so-called active denial strategies through A2/AD capabilities can contribute to “active denial” strategies, as a form of deterrence by denial, specifically for small and middle powers. Third, we make a quick inventory of what broadly constitutes A2/AD capabilities that are already present in key European and Asian states. Fourth, we outline a series of recommendations going forward.

## Deterrence by denial and anti-access and area denial

At its core, deterrence is about raising the costs of aggression to outweigh its benefits in the mind of the adversary. Deterrence strategies exist in two forms: denial and punishment.<sup>16</sup> The latter implies one threatens an adversary with severe penalties if unwanted, aggressive behavior were to occur. It is focused on consequences *after* the action. Deterrence by denial (DBD) presents an alternative approach, with the temporal focus *before* a potential act of aggression. DBD seeks to “deter an action by making it infeasible or unlikely to succeed [and] deny a potential aggressor confidence to attain its objectives.”<sup>17</sup> Strategies of active denial through A2/AD capabilities do so by preventing the adversary from fully using or exploiting the domain in question, not preventing the adversary from operating in it entirely. In the maritime domain, sea denial has typically been the answer of weaker powers that could not hope to wrest sea control away from more powerful naval powers (though powerful states have made use of denial as a strategy as well at times or in regions where their capabilities were limited).<sup>18</sup> In the air and land domains, denial functions along similar lines: air defenses and artillery can limit an adversary from exploiting its strengths so that the latter expects it to be less feasible or less likely to achieve its objectives at reasonable cost. As Andreas Wenger and Alex Wilner remind us, “defenses need not to be perfect; they need only be good enough to convince a challenger that an attack will fail or be very costly”.<sup>19</sup>

While punishment-based deterrence tends to have become conceptually equated to nuclear weapons, it could also take on others forms, such as economic sanctions or cyberattacks. In

15 Alex Wilner, “Chapter 2: Dawn of a New Deterrence,” in *Deterrence by Denial: Theory and Practice*, ed. Alex Wilner and Andreas Wenger, Rapid Communications in Conflict and Security Series (Amherst, New York: Cambria Press, 2021), 44.

16 Glenn Herald Snyder, *Deterrence and Defense* (Princeton, United States: Princeton University Press, 1961), 14–16, <http://ebookcentral.proquest.com/lib/uu/detail.action?docID=4071297>. Snyder, 14–16.

17 Michael J. Mazarr, “Chapter 2 - Understanding Deterrence,” in *NL ARMS 2020 Deterrence in the 21st Century - Insights from Theory and Practice* (Berlin: Springer, 2020), 15.

18 Please note that this is not necessarily limited to weaker powers alone: also more powerful military states make use of denial strategies.

19 Andreas Wenger and Alex S. Wilner, “Into the Next Century,” in *Deterrence by Denial: Theory and Practice*, ed. Alex S. Wilner and Andreas Wenger (New York: Cambria Press, 2021), 215, <https://carleton.ca/npsia/2021/deterrence-by-denial-theory-and-practice/>.

Though less terrifying than nuclear weapons, conventional forces have their own advantages in terms of bolstering credibility. Physically present in or near to contested areas, they signal the deterrer's intentions more clearly and the present, opposed to the future-oriented and much more drastic nature of nuclear deterrence by punishment.

turn, deterrence by denial is chiefly associated with conventional capabilities.<sup>20</sup> All forms of deterrence rely on assessments of capability and will, which are thus shaped by the balance of forces, balance of interests, and reputation based on past behavior.<sup>21</sup> Though less terrifying than nuclear weapons, conventional forces have their own advantages in terms of bolstering credibility. Physically present in or near to contested areas, they signal the deterrer's intentions more clearly and the present, opposed to the future-oriented and much more drastic nature of nuclear deterrence by punishment.

In practice, deterrence by denial can be difficult to distinguish from other strategic concepts. The 'denial' vs. 'control' dichotomy predominates in naval strategic literature, but has spread to other domains as well.<sup>22</sup> Likewise, 'denial' and defense are often conceptually equated. However, the terms differ analytically, since defense has the goal of outright halting aggression and deterrence by denial instead aims to raise the costs relative to the gains and, on that basis, change the decision calculus of the aggressor.<sup>23</sup> It should be noted that DBD does not necessarily require technologically spectacular capabilities. Cold War-era Finland, while remaining neutral from both NATO and the Soviet Union, is a clear example of deterrence by denial in practice. Finnish forces deterred Soviet attacks through its maintenance of "small but well-trained forces to advertise indigestibility to predators."<sup>24</sup> Another form of a DBD strategy aimed at raising the costs is the *poison-shrimp* strategy pursued by Singapore in the 1960s and 1970s.<sup>25</sup>

We use the term "active denial",<sup>26</sup> to distinguish these from other strategies that might, inadvertently, raise the costs of access and underline the deliberate purpose of the strategy. Eric Heginbotham and Richard Samuels describe active denial as a strategy that seeks "to maintain a force in being and continue the fight until exogenous conditions [...] tip the balance."<sup>27</sup> Denial can raise the costs beyond what an aggressor can support domestically, divert resources away from other desired strategic objectives, or weaken the aggressor to an extent

20 Although low-yield nuclear weapons could deny states the ability to operate in a specific geographic area (and indeed, in Cold War Europe, they were assigned such a role). Lawrence Freedman, "Introduction - The Evolution of Deterrence Strategy and Research," in *NL ARMS 2020 Deterrence in the 21st Century - Insights from Theory and Practice* (Berlin: Springer, 2020), 5; J Mearsheimer, *Conventional Deterrence* (Ithaca: Cornell University Press, 1983).

21 Daryl Grayson Press, *Calculating Credibility: How Leaders Assess Military Threats* (Cornell University Press, 2005); Jonathan Mercer, *Reputation and International Politics* (Cornell University Press, 2010); Alex Weisiger and Keren Yarhi-Milo, "Revisiting Reputation: How Past Actions Matter in International Politics," *International Organization* 69, no. 2 (2015): 473–495; Thomas Schelling, *The Strategy of Conflict* (Harvard, 1960), 6.

22 A strategy of 'control' is one that attempts to prevent adversaries from interfering in one's own use of a particular physical area and, thereby, secure unchallenged access. It differs from a strategy of denial, because of its total nature; denial has the limited aim of preventing an opposing force from fully manoeuvring in a specific region. See for example: Jonathan S. Lockwood, "Space Control versus Space Denial in 21st Century Warfare: Achilles Heel of the RMA?," *Defense & Foreign Affairs Strategic Policy* 28, no. 8 (August 2000): 4–6; Geoffrey Till, "11 Multipolarity, Navies, and the Post-Cold War World," in *Navies in Multipolar Worlds. From the Age of Sail to the Present.*, ed. Paul Kennedy and Evan Wilson (London: Routledge, 2020), 5.

23 Mazarr, "Chapter 2 - Understanding Deterrence," 2.

24 A. Wess Mitchell, "The Case for Deterrence by Denial," *The American Interest* (blog), August 12, 2015, <https://www.the-american-interest.com/2015/08/12/the-case-for-deterrence-by-denial/>.

25 Peng Er Lam, "Singapore as a Small State: Surmounting Vulnerability," in *The Sage Handbook of Asian Foreign Policy* (55 City Road: SAGE Publications Ltd, 2020), 753, <https://doi.org/10.4135/9781526436078>. Michael Raska, *Military Innovation in Small States: Creating a Reverse Asymmetry* (Abingdon, Oxfordshire: Routledge, 2020), 141.

26 Eric Heginbotham and Richard J. Samuels, "Active Denial: Redesigning Japan's Response to China's Military Challenge," *International Security* 42, no. 4 (2018): 128–69.

27 Heginbotham and Samuels, 138.

that other states feel invited to predate on it. The latter could be termed a “catalytic” posture.<sup>28</sup> In this context, neither in the Pacific nor in the European theater can small and middle powers (SMPs) expect to win the war against either China or Russia respectively by themselves, but A2/AD capabilities can provide much needed time for reinforcements to arrive, and opportunity to weaken the aggressor.

A2/AD approaches for SMPs clearly fall within the logic of active denial. An A2/AD strategy aims to prevent an adversary from fully using or exploiting its superior military forces in the proximity of, into, or within a contested area (or domain).<sup>29</sup> In other words, it blunts the effective concentration of military forces to accomplish a successful offensive action. Likewise, it allows for blocking the opponent’s forces outside the contested zone from granting support or assistance to forces from within that zone.<sup>30</sup> Access can be defined as the ability to occupy or traverse an area of land, sea or air, but may also imply facility use such as ports and airbases. Denial strategies do not always present themselves in the shape of A2/AD, but A2/AD can be categorized as an active denial strategy, since it covers the denial of attaining the particular objective of accessing and exploiting a certain area (though this objective itself can be part of an offensive strategy; see Russian and Chinese uses of the approach).<sup>31</sup>

The current fashionability of the term notwithstanding, as an approach A2/AD has actually been used throughout military history.<sup>32</sup> Andrew Krepinevich and Barry Watts’ study on countering A2/AD presented one of the initial in-depth discussions of the concept in the Chinese-American context.<sup>33</sup> Despite its current association with Russia and China,<sup>34</sup> the US already conceptually incorporated facets of A2/AD as a solution to Soviet conventional preponderance within its ‘Second Offset Strategy’ in the 1970s.<sup>35</sup> This strategy expanded the US’ conventional capabilities with long-range precision-guided missiles to defend allies and partners inside adversary territory more comprehensively and to target Warsaw Pact follow-on forces. The current multi-domain character of A2/AD can be traced back to the US army’s ‘AirLandBattle’ (ALB) concept from the 1980s.<sup>36</sup> Similarly, the Defense Department’s ‘Third Offset Strategy’ from 2014 also hailed superior technologies like unmanned, autonomous strike aircrafts and unmanned underwater vehicles. As a result of the ‘precision revolution’,

28 Though our meaning is slightly different, we allude here to Vipin Narang’s use of “catalytic” nuclear postures designed to involve outside powers into a conflict. Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton University Press, 2014), 13–54. The small and middle power essentially know it is itself playing the bait in a “bait and bleed” (in John Mearsheimer’s memorable phrasing) strategy for a larger power. John J. Mearsheimer, *The Tragedy of Great Power Politics* (WW Norton & Company, 2001), 153–54.

29 Sam Tangredi, *Anti-Access Warfare: Countering Anti-Access and Area-Denial Strategies* (Annapolis, United States: Naval Institute Press, 2013), 2, <http://ebookcentral.proquest.com/lib/uu/detail.action?docID=1381905>.

30 Tangredi, 3.

31 In the maritime sphere, A2/AD is “characterized by the threat of a previously unachievable degree of coordination between different tools of national defense, geared towards winning the freedom of movement in a constrained space.” Robert Farley, “A2/AD Is Dead, Long Live A2/AD,” October 11, 2016, <https://thediplomat.com/2016/10/a2ad-is-dead-long-live-a2ad/>.

32 By 2016, the U.S. Navy banned the ‘A2/AD’ term from its internal strategy documents, because it gave adversaries too much credit for their ability to threaten with domination of war theatre.

33 Andrew Krepinevich F. and Barry Watts, “Meeting the Anti-Access and Area-Denial Challenge,” Center for Strategic and Budgetary Assessments, May 20, 2003; Philip M Ruhlmann, *War Winning: Paradigms and Visions for High-End Warfare* (Washington, D.C: National Defense University, 2000), [http://archive.org/details/DTIC\\_ADA393922](http://archive.org/details/DTIC_ADA393922).

34 Michael J. Mazarr, *Mastering the Gray Zone: Understanding a Changing Era of Conflicts*, Advancing Strategic Thought Series (Carlisle: United States Army War College Press, 2015), 11.

35 Andreas Schmidt, “Countering Anti-Access / Area Denial - Future Capability Requirements in NATO,” *Joint Air Power Competence Centre* (blog), January 27, 2017, <https://www.japcc.org/countering-anti-access-area-denial-future-capability-requirements-nato/>. “plainCitation”: “Andreas Schmidt, “Countering Anti-Access / Area Denial - Future Capability Requirements in NATO,” *Joint Air Power Competence Centre* (blog)

36 Donn A. Starry, “Extending the Battlefield,” *Military Review* 77, no. 1 (February 1997): 151–61.

Despite its current association with Russia and China, the US already conceptually incorporated facets of A2/AD as a solution to Soviet conventional preponderance within its ‘Second Offset Strategy’ in the 1970s.



satellite-based navigation and targeting has become more precise and more cost-efficient (reducing the loss of lives and monetary means), and deterrence by denial has by implication become more effective.<sup>37</sup>

In the 21<sup>st</sup> century, A2/AD is primarily accomplished through long-range, stand-off weapons, and an Intelligence Surveillance and Reconnaissance (ISR) infrastructure that includes ground-, sea-, air-, and space-based radars, command and control, and artificial intelligence, to ensure the weapons can be delivered with high-level precision. This includes the ability to defend against the adversary's long-range missiles with counter-missiles,<sup>38</sup> and to disrupt the adversary's ISR systems.<sup>39</sup> Missiles capable of carrying out A2/AD tasks include surface-to-air missiles, (anti-ship) ballistic missiles (arched flight path, higher altitudes), cruise missiles (self-propelled and at lower altitudes), mines and drones. Elaborate and comprehensive sensing capabilities are also essential.<sup>40</sup>

A2/AD capabilities can serve both defensive and offensive objectives; it is both a medicine and poison. As an illustration of the Chinese threat to the US and its allies and partners overseas, China's A2/AD shield consists of components similar to the Russian Federation. For instance, both countries have developed hypersonic missiles, anti-missile defense systems, submarines, and advanced ISR capabilities. China has developed anti-ship ballistic missiles which have ranges that include Guam and other US bases in the Western Pacific. The DF21 and DF26 are self-guided ballistic missiles that are the most probable instruments that China would employ if it would attempt to destroy American or allied/partnered aircraft carriers.<sup>41</sup> The artificial islands China has constructed in the South China Sea further extend the range of its radars and missiles. In turn, Russia's A2/AD current arsenal combines mobile S-300 and S-400 anti-aircraft systems, coastal anti-ship systems (Bastion systems), submarines, and electronic interference systems.<sup>42</sup>

Missiles capable of carrying out A2/AD tasks include surface-to-air missiles, (anti-ship) ballistic missiles (arched flight path, higher altitudes), cruise missiles (self-propelled and at lower altitudes), mines and drones. Elaborate and comprehensive sensing capabilities are also essential.

37 Syed Muhammad Irteza Imam and Sufian Ullah, "Anti-Access Area Denial Capabilities: Implications for Strategic Stability," *Journal of Security and Strategic Analyses* 6, no. 1 (August 2020): 15; Thomas G. Mahnken, "Weapons: The Growth & Spread of the Precision-Strike Regime," *Daedalus* 140, no. 3 (July 2011): 45–57, [https://doi.org/10.1162/DAED\\_a\\_00097](https://doi.org/10.1162/DAED_a_00097).

38 Sebastien Roblin, "A2/AD: The Phrase That Terrifies the U.S. Military (And China and Russia Love It)," Text, *The National Interest* (The Center for the National Interest, April 9, 2019), <https://nationalinterest.org/blog/buzz/a2ad-phrase-terrifies-us-military-and-china-and-russia-love-it-51597>.

39 Schmidt, "Countering Anti-Access / Area Denial - Future Capability Requirements in NATO"; Thomas G Mahnken et al., "Implementing Deterrence by Detection: Innovative Capabilities, Processes, and Organizations for Situational Awareness in the Indo-Pacific Region," CSBA, 2021, 2, <https://csbaonline.org/research/publications/implementing-deterrence-by-detection-innovative-capabilities-processes-and-organizations-for-situational-awareness-in-the-indo-pacific-region>.

40 D Brookes et al., "A Hybrid Active-Passive Radar System Concept for Extending Target Detection Range," March 2019, 49.

41 Harry J. Kazianis, "China's DF-21 And DF-26 'Carrier Killer' Missiles: How Dangerous?," Text, *The National Interest* (The Center for the National Interest, August 30, 2020), <https://nationalinterest.org/blog/reboot/chinas-df-21-and-df-26-carrier-killer-missiles-how-dangerous-167940>.

42 Tomasz Smura, "Russian Anti-Access Area Denial (A2AD) Capabilities - Implications for NATO," Pulaski Policy Papers, November 27, 2016, [https://www.pulaski.pl/wp-content/uploads/2015/02/Pulaski\\_Policy\\_Paper\\_No\\_29\\_16\\_EN.pdf](https://www.pulaski.pl/wp-content/uploads/2015/02/Pulaski_Policy_Paper_No_29_16_EN.pdf).

## Why would A2/AD be a solution for conventionally inferior states?

Despite the A2/AD discussion's primary focus on the competition between the great powers, A2/AD as part of a DBD posture potentially offers advantages to conventionally inferior states, or states that are relatively weak in specific geographic areas or domains, as it can hamper conventionally superior adversaries from amassing their forces near their territories. While not cheap, active denial strategies through A2/AD capabilities can be relatively cost-effective financially as well, at least compared to defensive or punitive options. It can focus scarce resources towards specific geographic areas within which the adversary's forces must operate – specifically when they must amass forces for naval actions, amphibious assaults, or moving forces over limited roads or railways. It is arguably less politically controversial than a strict punishment-oriented strategy, and more feasibly than attempting to regain suffered losses through coercion. Finally, A2/AD remote standoff capabilities limit risks of inadvertent escalation associated with nuclear deterrence by punishment strategies also because the effects of A2/AD capabilities can be clearly communicated to the adversary through demonstration – similar to how both Russia and China have demonstrated their A2/AD capabilities over the past decade.

Difficulties exist with active denial strategies, and specifically A2/AD capabilities, regarding costs, technical difficulties, and application to gray zone aggression. A2/AD approaches to active denial can be expensive on the technological high-end due to its dependence on continuous, long-term investments and the modernization of conventional arsenals (due to geopolitical and technological changes) relative to cheaper nuclear punitive deterrent capabilities.<sup>43</sup> After all, nuclear weapons have been characterized as attractive “weapons of the weak” that negate the conventional advantages of powerful neighbors.<sup>44</sup> Yet, DBD is arguably more cost-effective than nuclear deterrence by punishment, and probably less casualty-intensive than perimeter defense of a specific territory.<sup>45</sup> Specifically, in a maritime environment, where attackers have cover from the terrain, A2/AD capabilities are likely to be highly effective.<sup>46</sup> Moreover, signaling the strength of A2/AD capabilities, especially based on existing technologies, can be done in a clear and straightforward way.<sup>47</sup> There are technical difficulties to realistically acquire targets that surpass hundreds of miles across the horizon due to Earth's curvature, unless the necessary investments in one's surveillance assets are made to

While not cheap, active denial strategies through A2/AD capabilities can be relatively cost-effective financially as well, at least compared to defensive or punitive options.

43 Jonathan D. Caverley and Peter Dombrowski, “Cruising for a Bruising: Maritime Competition in an Anti-Access Age,” *Security Studies* 29, no. 4 (August 7, 2020): 679, <https://doi.org/10.1080/09636412.2020.1811460>.

44 French Cold War nuclear doctrine was one of “weak to strong” deterrence. Celine Jurgensen et al., *Resistance and Deterrence. From the Origins of the French Nuclear Programme until Today* (Paris, France: Odille Jacob, 2018).

45 For instance, the current nuclear weapons programs of the United Kingdom, one of Europe's two nuclear powers, is estimated to cost GBP 60 billion and on average GBP 2.5 billion in maintenance costs annually. This covers the period from 1980 until the future completion of the nuclear submarine program ‘Dreadnought’. The ‘Trident’ program replaced the ‘Polaris’ system in 1980 and ‘Dreadnought’ nuclear submarines, which will enter service in the early 2030s, will replace the four current ‘Vanguard Class’ submarines. Claire Mills and Noel Dempsey, “The Cost of the UK's Strategic Nuclear Deterrent,” March 2, 2021; Ministry of Defence and Defence Nuclear Organisation, “Dreadnought Submarine Programme,” GOV.UK, October 28, 2016, <https://www.gov.uk/government/collections/dreadnought-submarine-programme-the-facts>.

46 Caverley and Dombrowski, “Cruising for a Bruising,” 679.

47 Evan Braden Montgomery, “Signals of Strength: Capability Demonstrations and Perceptions of Military Power,” *Journal of Strategic Studies* 43, no. 2 (February 23, 2020): 309–30, <https://doi.org/10.1080/01402390.2019.1626724>; Alexander L. George and Richard L. Smoke, *Deterrence in American Foreign Policy: Theory and Practice* (New York: Columbia University Press, 1974), 81, 1974.

Consequently, advantages achieved through A2/AD capabilities are “strongest over controlled landmasses and weaken over distance.” This suggests that such capabilities are best placed within or close to the contested region, yet dispersed to diminish vulnerabilities.

form a kill chain.<sup>48</sup> Such a chain, however, is vulnerable to disruptions along the way, involving a higher exposure to risks for allied operations. Consequently, advantages achieved through A2/AD capabilities are “strongest over controlled landmasses and weaken over distance.”<sup>49</sup> This suggests that such capabilities are best placed within or close to the contested region, yet dispersed to diminish vulnerabilities.<sup>50</sup> Moreover, there are clear limits to the extent to which conventional capabilities can address the more fluid hybrid threats that benefit from exploiting ambiguity rather than from amassing sizeable numbers of conventional forces. Yet, arguably, the former category is less of an existential threat than large-scale aggression. After all, the minimum requirement for a state is to survive as a sovereign entity.

While not overselling active denial strategies backed with A2/AD capabilities as a one-size-fits-all, end-all-be-all solution, what role can they play for smaller and middle powers? We focus on archetypical cases in both regions that are exposed to the threat of both Russia and China: Poland and Finland in Europe, Japan and Taiwan in Asia. These pairings are illustrative because each includes a state that relies on an explicit US security guarantee (Poland, Japan) and one that does not (Finland, Taiwan). We argue that A2/AD capabilities can fulfill essential functions in both cases. In a broad sense, it can buy time for these states, to ensure the US and their other allies can reinforce them. In doing so, A2/AD adds to general deterrence, ensuring it would be possible to maintain a regional balance of power that ensures the continuation of the territorial status quo.<sup>51</sup> However, A2/AD can also be useful to SMPs that cannot count on a formal alliance agreement. First, A2/AD can directly deter aggressors by raising the costs of their aggression. Second, aggressors can be deterred because an attack will likely drain resources from the aggressor, and thus leave them more vulnerable to an outside power. Put differently, for non-allied SMPs strong A2/AD capabilities could fulfil a catalytic role that leaves the attacking power exposed and weaker when facing other (major) powers.<sup>52</sup>

## Examples of A2/AD capabilities in the European theater : Poland and Finland

Within NATO Europe, Russian A2/AD is discussed in the context of NATO's Readiness Action Plan.<sup>53</sup> Yet, we are looking for A2/AD as an indigenous capability – either for the US itself or individual allies or partners.<sup>54</sup> Due to the more central role of land-based warfare in the European theater, precision strike would be coupled with forward positioned NATO forces.<sup>55</sup> A forward presence of NATO ground troops would be able to demonstrate the Alliance's

48 Roblin, “A2/AD.”

49 Biddle and Oelrich, “Future Warfare in the Western Pacific,” 12.

50 Eric Heginbotham and Richard J. Samuels, “Active Denial: Redesigning Japan's Response to China's Military Challenge,” *International Security* 42, no. 4 (2018): 128–69.

51 Beckley, “The Emerging Military Balance in East Asia.”

52 In that sense, A2/AD could take a catalytic role, similar to that of minor nuclear powers. Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict*, 13–53.

53 Smura, “Russian Anti-Access Area Denial (A2AD) Capabilities - Implications for NATO,” 6.

54 Terrence Kelly, David Gompert, and Duncan Long, *Smarter Power, Stronger Partners, Volume I: Exploiting U.S. Advantages to Prevent Aggression* (RAND Corporation, 2016), 128–33, <https://doi.org/10.7249/RR1359>; Alexander Lanoszka and Luis Simon, “The Post-INF European Missile Balance: Thinking About NATO's Deterrence Strategy,” *Texas National Security Review* 3, no. 3 (2020), <https://tnsr.org/2020/05/the-post-inf-european-missile-balance-thinking-about-natos-deterrence-strategy/>.

55 Burton, “Bubble Trouble”; Elbridge Colby and Walter Slocombe, “The State of (Deterrence by) Denial,” *War on the Rocks*, March 22, 2021, <https://warontherocks.com/2021/03/the-state-of-deterrence-by-denial/>.

commitment to the Baltics and could deny Russia an easy invasion of the region.<sup>56</sup> Yet, while European experts underscore the importance of exploring and enforcing this strategy, domestic political opposition remains, and can partly be attributed to diverging perceptions about the Russian threat. This makes the coordination of a response significantly more complex.<sup>57</sup> For the neutral states outside of NATO that are in Russia's proximity, the solutions to enhance credibility are even less obvious.

Poland has been a member to NATO since 1999 and relies heavily on the alliance to deter the Russian threat directed at the Polish coastline and the Southern Baltic Sea, and via Kaliningrad and the Russian ally, Belarus.<sup>58</sup> Poland has been heavily exposed to Russian aggression in the past centuries, which has underlined that its military is unlikely to be able to singlehandedly resist Russian aggression. Consequently, Polish security remains dependent on the US acting as its guarantor; historical experiences have left Poland more skeptical of adequate and timely assistance from Western European states.<sup>59</sup> Conventionally, it relies on the multinational battlegroups forming the enhanced Forward Presence and NATO's Multinational Corps Northeast on Polish territory,<sup>60</sup> backed by security promises from the US.

In addition to its reliance on collective defense through NATO, and the extended deterrence the US provides, Poland is trying to strengthen its indigenous deterrence capabilities. At the moment, Poland owns a spectrum of missiles and missile defense systems. These include the R27T AA-10B *Alamo* air-to-air missile, with a maximum range of up to 63 km and infrared homing, and the AIM-120 AMRAAM.<sup>61</sup> Additional air defense capabilities come in the shape of the ground-based SA-5 *Gammon* (S-200) with a semi-active radar and range of 60-300 km, and a number of short-range missile systems.<sup>62</sup> In a forward view of the Polish armed forces in 2032, the Polish Air Force will be equipped with long-range precision weapons and 5<sup>th</sup> generation combat aircraft with stand-off precision weaponry.<sup>63</sup> Following this ambition, Poland signed a \$4.75 billion deal with the US for five Patriot ballistic missile defense batteries, two of which should be delivered in 2022.<sup>64</sup> Poland continues to invest in improved ISR capabilities as well.<sup>65</sup> The PIAST (Polish Imaging Satellites) project began the construction of national nanosatellites for the Polish armed forces in August 2021, and the first satellites are expected

56 Lanoszka and Hunzeker, "Confronting the Anti-Access/Area Denial and Precision Strike Challenge in the Baltic Region," 13.

57 Sten Rynning, "Deterrence Rediscovered: NATO and Russia," in *NL Arms Netherlands Annual Review of Military Studies 2020: Deterrence in the 21st Century - Insights from Theory and Practice*, 1st ed. (The Hague: T.M.C. Asser Press, 2021), 32; Robert M. Klein et al., "Baltics Left of Bang: The Role of NATO with Partners in Denial-Based Deterrence," *Strategic Forum*, no. 301 (November 2019): 1.

58 Ministry of National Defense, "Defense Concept of the Republic of Poland" (Warsaw: Ministry of National Defense, May 2017), <https://www.gov.pl/attachment/78e14510-253a-4b48-bc31-fd11db898ab7>.

59 Anton Moldovan, "Poland's National Security Policy in a New Regional Security Environment. Case Study: National Security Strategy of Poland," *Torun International Studies* 1, no. 11 (December 31, 2018): 89–102, <https://doi.org/10.12775/TIS.2018.008>; Alexander Lanoszka, "Thank Goodness for NATO Enlargement," *International Politics* 57, no. 3 (June, 2020): 457, <https://doi.org/10.1057/s41311-020-00234-8>.

60 Luis Simón, "Assessing NATO's Eastern European 'Flank,'" *Parameters* 44, no. 3 (Autumn 2014): 68.

61 IISS, "The Military Balance 2021" (London, United Kingdom: International Institute for Strategic Studies, February 2021), 132–34, <https://www.iiss.org/publications/the-military-balance>.

62 Missile Defense Advocacy Alliance, "Poland – Missile Defense Advocacy Alliance," June 26, 2018, [https://missiledefenseadvocacy.org/intl\\_cooperation/poland/](https://missiledefenseadvocacy.org/intl_cooperation/poland/).

63 Ministry of National Defense, "Defense Concept of the Republic of Poland," 51.

64 Lidia Kelly, "Poland Signs \$4.75 Billion Deal for U.S. Patriot Missile System Facing Russia," *Reuters*, March 28, 2018, sec. Aerospace and Defense, <https://www.reuters.com/article/us-raytheon-poland-patriot-idUSKBN-1H417S>. Kelly.

65 Ministry of National Defense, "Defense Concept of the Republic of Poland," 50.

In a forward view of the Polish armed forces in 2032, the Polish Air Force will be equipped with long-range precision weapons and 5th generation combat aircraft with stand-off precision weaponry. Following this ambition, Poland signed a \$4.75 billion deal with the US for five Patriot ballistic missile defense batteries, two of which should be delivered in 2022.

to be in space by 2024.<sup>66</sup> Finally, while Poland notes the vulnerabilities along its coastline, there is a discrepancy between its land- and sea-based A2/AD capabilities. Investments in anti-ship missiles and submarines could ameliorate these vulnerabilities. For Russia, pressuring Poland and other exposed NATO members could expose fissures within the alliance. Indigenous capabilities can therefore only take Poland so far; allied support remains key for the political calculus.

Finland is arguably a small-scale exception in Europe of a state that has invested in significant indigenous A2/AD capabilities. As a neutral state, Finland formally cannot rely on support from NATO, though it is linked to other EU states through article 42.7 of the Lisbon Treaty.<sup>67</sup> Finland is exposed to Russian A2/AD threats because of the relative proximity of their islands in the Baltic Sea to the Iskander missile brigade (400 – 500 km range) in Kaliningrad, and to potential conventional Russian aggression across the land border they share. The absence of sufficient military capabilities to counter A2/AD aggression alone, due to previous disinvestment and their shared non-membership of NATO, has led to a deepened military collaboration between Finland and Sweden.<sup>68</sup> Finland has invested in short-range anti-ship missile- and air missile defense systems.<sup>69</sup> Its (further) development of A2/AD capabilities rests on the improvement of the Finnish Army's long-range fire capabilities by extending the 80 km range of its heavy multiple rocket launchers.<sup>70</sup> The Finnish Army is “developing capabilities that enable command, control and targeting of the long-range strikes of the other Services” and the acquisition of more light UAV's (currently Finland owns a medium-range 11 ADS-95 *Ranger*).<sup>71</sup> For maritime defense, the Finnish Navy focuses on “readiness, fires, a recognized maritime picture (RMP), survivability, long-range strike, and underwater warfare” as well as an improvement of its command and control capabilities through mobile C2-systems.<sup>72</sup> Current A2/AD capabilities Finland possesses include AIM-120 Advanced Medium-Range Air-to-Air Missiles (AMRAAM), with active radar homing (ARH) and a range of more than to 105 km.<sup>73</sup> These capabilities raise the costs of aggression against Finland; arguably, the lack of political-strategic benefits of aggression that Russia could accrue further benefit Finnish security.

The Finnish Army is “developing capabilities that enable command, control and targeting of the long-range strikes of the other Services” and the acquisition of more light UAV's (currently Finland owns a medium-range 11 ADS-95 *Ranger*)

66 Susan Hall, “The PIAST Project, i.e. National Nanosatellites for the Polish Army. Construction Starts - BBC-Edition,” August 30, 2021, <https://bbc-edition.com/the-piast-project-i-e-national-nanosatellites-for-the-polish-army-construction-starts/>.

67 European Union, “Consolidated Versions of the Treaty on European Union and the Treaty on the Functioning of the European Union,” EUR-Lex (OPOCE, 2007), [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12012M/TXT&from=FR.European Union.](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12012M/TXT&from=FR.European%20Union.;); This mutual defense clause obliges certain EU Member States to provide aid and assistance “by all the means in their power” to another MS, in the case it would be the victim of an act of aggression. The Article also highlights the need for consistency with Member States' commitments to NATO. It has been invoked for the first time by France following a spike of terrorist attacks in 2015.

68 Robert Dalsjö, Christofer Berglund, and Michael Jonsson, “Bursting the Bubble? Russian A2/AD in the Baltic Sea Region: Capabilities, Countermeasures, and Implications,” text, March 4, 2019, 67–71, <https://www.foi.se/rapporter/rapportsammanfattning.html?reportNo=FOI-R--4651--SE>.

69 As has Sweden. Lanoszka and Simon, “The Post-INF European Missile Balance: Thinking About NATO's Deterrence Strategy,” 25. Sweden has recently (March 2021) reactivated its mobile Air and Missile Defences (AMD), to launch surface-to-air missiles from Gotland island, and bought American Patriot missile defense systems (in 2019) to target Russian launchers. Airforce Technology, “Sweden Reactivates Air Defence Missile System 23 in Gotland,” March 18, 2021, <https://www.airforce-technology.com/news/sweden-reactivates-air-defence-missile-system-23-in-gotland/>; The Local.se, “Sweden Boosts Gotland Air Missile Defence: ‘Quick Solution,’” *The Local Sweden* (blog), July 1, 2019, <https://www.thelocal.se/20190701/sweden-boosts-gotland-air-missile-defence-quick-solution/>.

70 Finnish Ministry of Foreign Affairs, “Government's Defence Report” (Helsinki: Finnish Government, September 9, 2021), 31, [https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/163407/VN\\_2021\\_80.pdf?sequence=4&isAllowed=y](https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/163407/VN_2021_80.pdf?sequence=4&isAllowed=y).

71 Finnish Ministry of Foreign Affairs, 31; IISS, “The Military Balance 2021,” 99–101.

72 Finnish Ministry of Foreign Affairs, “Government's Defence Report,” 32.

73 IISS, “The Military Balance 2021,” 99–101.



## Examples of A2/AD capabilities in the Asian theater: Japan and Taiwan

There is no Asian equivalent to NATO to facilitate a comprehensive approach to deterrence against China. The hub-and-spokes model of US-led alliances in the Asian theater, though becoming more networked,<sup>74</sup> does not offer the same institutional opportunities for a region-wide approach. A2/AD can therefore also offer contribution to deterrence by denial, in the case of formal US ally Japan, but especially in the case of Taiwan.

Japan's relationship with China remains wrought with tension, partly, as is the case with many of Japan's neighbors, due to Japan's imperial legacy. Current issues vary from those historical resentments to the concrete – the disputed status of the Senkaku islands. China primarily poses a maritime and air threat to Japanese interests, including Japan's control over the maritime approaches to the islands. Unlike Taiwan, Japan is a formal ally of the US. It remains heavily reliant on the US; it is also a target of China's ire due to the alliance with and the facilities it provides to the US.

Negating Japan's role as a springboard for the US power projection into the region – due to its location in the Western Pacific and its hosting of US naval and air forces – is therefore a central objective in China's strategy. China's A2/AD capabilities specifically target ports and airfields on the Japanese islands that the US needs to maintain access to the region. Japan's ability to independently use military power, theoretically, continues to be limited by Article 9 of its constitution.<sup>75</sup> Despite its formal commitment to only pursue forces for self-defense, Japan has built up an extensive arsenal of longer-range missiles, as well as other capabilities that previously were formally declared to be illegal.<sup>76</sup> The Japan Maritime Self-Defense Force has invested in Type-90 ship-to-ship missiles, that can reach targets at a 150 km distance at subsonic speed. Another anti-ship missile that is operated by the Japan Air Self-Defense Force is the ASM-1 Type 80, with a 50 km operational range.<sup>77</sup> Japan's 2020 defense budget mentions a possible replacement of the ASM-1 to the extended-range (>400 km) ASM-3 to counter the Chinese Navy's long-range capabilities, but the weapon's acquisition has yet to be implemented.<sup>78</sup> Japan's air-launched missile arsenal also includes the AIM-120 AMRAAM and the native-produced, active radar homing AAM-4 Type 99 with a 100 km range. The 2021 defense budget foresees the procurement of additional Patriot PAC-3 surface-to-air defense systems to the ones it already hosting for the US.<sup>79</sup> Japan also owns Aegis sea-based missile defense systems, which are capable of intercepting short to intermediate-range ballistic

Despite its formal commitment to only pursue forces for self-defense, Japan has built up an extensive arsenal of longer-range missiles, as well as other capabilities that previously were formally declared to be illegal.

74 Matteo Dian and Hugo Meijer, "Networking Hegemony: Alliance Dynamics in East Asia" (Springer, 2020).

75 Article 9 of the Japanese constitution instrumentally renounces the country's maintenance of war potential and limits its Self-Defense Forces (SDF) accordingly. However, many measures that were deemed illegal before, like longer-range strike capabilities and collective self-defense missions abroad, have been fulfilled by the SDF (without constitutional amendments) under different Prime Ministers in the twentieth century.

76 Advanced intelligence-gathering arguably remaining the one last taboo that has not fallen with regards to Japanese national security. Richard J. Samuels, *Special Duty: A History of the Japanese Intelligence Community* (Cornell University Press, 2019). Intelligence arguably remaining the one last taboo that has not fallen with regards to Japanese national security.

77 IISS, "The Military Balance 2021," 269–74.

78 Ministry of Defense, "Defense Programs and Budget of Japan. Overview of JFY2020 Budget" (Tokyo: Ministry of Defense, 2020), 15.

79 Ministry of Defense, "Defense Programs and Budget of Japan. Overview of FY2021 Budget." (Tokyo: Ministry of Defense, 2021), 15, [https://www.mod.go.jp/en/d\\_act/d\\_budget/pdf/210331a.pdf](https://www.mod.go.jp/en/d_act/d_budget/pdf/210331a.pdf).

Chinese conventional capabilities vastly outnumber those of Taiwan. Yet, to invade and occupy Taiwan, the Chinese would have to transport perhaps as many as two million troops across the Strait.

missiles.<sup>80</sup> In terms of ISR that can facilitate active denial, Japan possesses nine Information Gathering Satellites and has started procuring SSA satellites, which can keep track of objects in orbit and predict their exact, timed location.<sup>81</sup> It also hosts two US Transportable Radar Surveillance systems.<sup>82</sup> Under US Pacific Command, Japan receives surveillance reinforcements in the shape of a RC-135 Rivet Joint surveillance aircraft and 5 RQ-4A Global Hawk UAVs.<sup>83</sup> The 2021 budget also holds space for research on infrared sensors for UAVs and satellites to ensure continuous surveillance.<sup>84</sup> In other words, Japan's capabilities remain reliant on the US. The South Korean case is similar to that of Japan.<sup>85</sup> Japan also has policies in place to deal with the hybrid threat of Chinese fishing boats within Japanese territorial waters, disputes about island-ownership, and the demarcation of Economic Exclusive Zones (EEZs).<sup>86</sup>

The challenge from Chinese aggression faced by Taiwan is entirely different than what Japan faces. Reunification of Taiwan with the mainland is, or has been made, an existential issue for China by chairman Xi Jinping. As the crackdown on activism in Hongkong and the severed diplomatic ties with Lithuania over exchanging diplomatic offices with Taipei have shown, Chinese attitudes have hardened, especially towards any "independence incidents" related to Taiwan.<sup>87</sup> Chinese conventional capabilities vastly outnumber those of Taiwan. Yet, to invade and occupy Taiwan, the Chinese would have to transport perhaps as many as two million troops across the Strait.<sup>88</sup> To do so, the PLAN would need to control the Taiwan Strait, and have secured beachheads on Taiwanese territory through complex and dangerous amphibious assault. Vast numbers do not singlehandedly compensate for what is a demanding military mission under the best of circumstances. Besides massive pre-emptive fire from Chinese missile, rocket and air forces, an amphibious assault on Taiwan would require large numbers of forces that would be amassed close on the coast, then taken onboard landing crafts and helicopters, and transported across the Strait to a hostile coastline, which would give advanced warning in the current information environment.<sup>89</sup> China has invested heavily in capabilities that would be needed for an invasion of Taiwan, such as building expensive and attack-applicable helicopter carriers.<sup>90</sup> Despite these investments, the basic task remains dangerous, and could be made more so, depending on the force posture choices Taiwan makes.

80 Missile Defense Advocacy Alliance, "Japan – Missile Defense Advocacy Alliance," June 2018, [https://missiledefenseadvocacy.org/intl\\_cooperation/japan/](https://missiledefenseadvocacy.org/intl_cooperation/japan/).

81 IISS, "The Military Balance 2021," 269–74; Ministry of Defense, "Defense Programs and Budget of Japan. Overview of FY2021 Budget," 4.

82 Missile Defense Advocacy Alliance, "Japan – Missile Defense Advocacy Alliance."

83 IISS, "The Military Balance 2021," 269–74.

84 Ministry of Defense, "Defense Programs and Budget of Japan. Overview of FY2021 Budget," 28.

85 South Korea uses the 4D concept (detecting, disrupting, destroying, and defending). It has built a "strategic strike system," which is meant to realize both deterrence by denial and punishment. Ministry of National Defense, Republic of Korea, "2020 Defense White Paper" (Seoul: Ministry of National Defense, Republic of Korea, December 31, 2020), 75–76, [https://mnd.go.kr/user/mnd/upload/pblicitn/PBLICTNE-BOOK\\_202106300300426680.pdf](https://mnd.go.kr/user/mnd/upload/pblicitn/PBLICTNE-BOOK_202106300300426680.pdf).

86 Sugio Takahashi, "Development of Gray-Zone Deterrence: Concept Building and Lessons from Japan's Experience," *The Pacific Review* 31, no. 6 (November 2, 2018): 801, <https://doi.org/10.1080/09512748.2018.1513551>.

87 "Deputy Guo Boxiong: Vigilance against 'Taiwan Independence' Forces," China National People's Congress, 2008, [http://www.npc.gov.cn/zgrdw/englishnpc/Special1/2008-03/06/content\\_1406956.htm](http://www.npc.gov.cn/zgrdw/englishnpc/Special1/2008-03/06/content_1406956.htm).

88 Ian Easton, "Why a Taiwan Invasion Would Look Nothing Like D-Day," May 26, 2021, <https://thediplomat.com/2021/05/why-a-taiwan-invasion-would-look-nothing-like-d-day/>.

89 Kelly, Gompert, and Long, *Smarter Power, Stronger Partners, Volume I*, 183.

90 Sebastien Roblin, "Bad News: China Is Building Three Huge Helicopter 'Aircraft Carriers,'" Text, *The National Interest* (The Center for the National Interest, July 27, 2019), <https://nationalinterest.org/blog/buzz/bad-news-china-building-three-huge-helicopter-aircraft-carriers-69472>. Michael Beckley and Hal Brands, "Into the Danger Zone: The Coming Crisis in US-China Relations," *American Enterprise Institute Research Papers*, January 4, 2021, 4, <https://www.proquest.com/docview/2474757274/abstract/5F7EA53A0E1D4CD0PQ/1>.

Chinese capabilities certainly can overwhelm those of Taiwan if the latter accepts fighting in an enlarged battlespace rather than a narrow one more conducive to Taiwan's capabilities and where China's numbers do not count for as much anymore. Part of Taiwan's approach accords with such a conceptualization.

Yet Taipei's military capabilities are seesawing between an appropriately asymmetric approach that leverages denial on the one hand, and capabilities better suited for control on the other.<sup>91</sup> China may not achieve domination over maritime Western Pacific, its capabilities could achieve more limited goals such as inhibiting or delaying US intervention in armed conflict with Taiwan.<sup>92</sup> Chinese capabilities certainly can overwhelm those of Taiwan if the latter accepts fighting in an enlarged battlespace rather than a narrow one more conducive to Taiwan's capabilities and where China's numbers do not count for as much anymore. Part of Taiwan's approach accords with such a conceptualization. Taipei increased its defense budget,<sup>93</sup> raised threat awareness among the Taiwanese public, and is pushing an asymmetric defense strategy.<sup>94</sup> It has indigenously developed the Skysword I, II and IIA (anti-ship) medium-range guided air-to-air missiles with active radar homing.<sup>95</sup> Taiwan harbours a range of versatile and multipurpose missiles like the Mica RF with a 500 m to 60 km operating range, and the native air-to-surface *Wan Chien* cruise missile, which is capable of reaching a range of 240 km.<sup>96</sup> Moreover, they possess the native-produced surface-to-surface missile *Hsjung Feng IIE*, which has a forward-looking imaging infrared seeker with autonomous target recognition.<sup>97</sup> For missile defense, they have the native-produced *Tien Kung III* (or *Sky Bow III*), another surface-to-air anti-tactical ballistic missile.

Yet, such an asymmetric denial-centric approach has not been pursued consistently. Senior defense officials seemed to have remained unconvinced of the need to implement military reforms and to speed up the acquisition of the necessary capabilities to accommodate such a strategy. Instead, Taiwan has invested in high-end US capabilities, where, in some cases, the models are more advanced than those of the US armed forces. In addition, the current Taiwanese deterrence concept is focused on long-range retaliatory missile strikes, but lacks sufficient ISR capabilities to accurately perform distant target strikes.<sup>98</sup> Taiwan has developed a wide range of early warning systems on its own territory, in the air, in space and on the Chinese mainland in the form of spies. Moreover, they inhibit a tactic of dispersing its navy and air force in the case of impending attack, durable defensive and offensive strike capabilities, and a willingness to use these if need be.<sup>99</sup>

91 William Murray, "Revisiting Taiwan's Defense Strategy," *Naval War College Review* 61, no. 3 (March 29, 2018); Michael A. Hunzeker, "Taiwan's Defense Plans Are Going Off the Rails," November 18, 2021, <https://warontherocks.com/2021/11/taiwans-defense-plans-are-going-off-the-rails/>.

92 Kelly, Gompert, and Long, *Smarter Power, Stronger Partners, Volume I*, 75; Heginbotham et al., *The US-China Military Scorecard*; Office of the Secretary of Defense, "Military and Security Developments Involving the People's Republic of China 2021. Annual Report to Congress." (Washington, D.C: Department of Defense, November 3, 2021), 89,99,116.

93 Su-Ping Yeh, Yu-Chen Lai, and Kao Evelyn, "Cabinet approves central government's NT\$2.2391 trillion budget bill - Focus Taiwan," August 26, 2021, <https://focustaiwan.tw/politics/202108260012>.

94 An 'asymmetric defense strategy aims at amplifying one's defense advantages, and target aggressive forces at their weakest points with smaller, more covert and technologically superior capabilities. See: Michael A Hunzeker, "Taiwan's Defense Plans Are Going Off the Rails," *War on the Rocks*, November 18, 2021, <https://warontherocks.com/2021/11/taiwans-defense-plans-are-going-off-the-rails/>.

95 IISS, "The Military Balance 2021," 301–4.

96 On the ISR front, Taiwan has a Formosat-5 satellite and a range of light and medium UAVs. IISS, 276–80.

97 Like Germany, Taiwan also has Patriot PAC-3 surface-to-air missile systems. Another surface-to-air missile Taiwan holds is the medium-range (45-50 km) MIM-23 Hawk.

98 Hunzeker, "Taiwan's Defense Plans Are Going Off the Rails."

99 Beckley, "The Emerging Military Balance in East Asia," 85–95.

## Conclusion

Overall, at a time when revisionist states pose a clear and present danger to regional stability more generally and to the territorial integrity of small and middle powers specifically, active denial represents an important strategy for SMPs to strengthen their overall deterrence postures and protect their territorial security and sovereignty. Investment in active denial strategies backed through A2/AD capabilities will help SMPs fill important gaps in the current extended deterrence commitments of the US. Deterrence by denial is less dangerous than other options, including continued underinvestment that opens windows of opportunity to Russia and China to create *faits accomplis*. It also represents an alternative route to the re-nuclearization of regional security architectures, with new nuclear powers or increased reliance on nuclear weapons by the US, both coming with real risks of inadvertent escalation and further proliferation. While not a one-solution-fits-all, developing more effective active denial and A2/AD approaches thus holds much promise in both Europa and Asia. Yet, in Europe, the obstacles for implementing more effective active denial strategies in Europe are due to decades of underinvestment in precision-strike capabilities and in integrated air and missile defense,<sup>100</sup> as a consequence of a continuing limited political willingness to spend on defense. However, this might be changing: in November 2020 the Council of the European Union adopted a list of projects to be conducted under its permanent structured cooperation (PESCO) framework,<sup>101</sup> which includes conventional long-range weapons including artillery, medium-range missile system (EU BLOS), and a missile defense system (TWISTER).<sup>102</sup> In Asia, the resource constraints and political will are less obvious obstacles to developing more robust active denial capabilities. Given the maritime nature of most of the conventional security challenges, it should be easier to execute strategies of denial in the Asian theater.<sup>103</sup> Yet, institutional constraints towards cohesive denialist approaches remain, both at the domestic and regional level. These obstacles are formidable, but not insurmountable. In short, the time to simply wait for the American cavalry to arrive is over – it may still gallop across the hill, but in the meantime digging in is the way forward.

Deterrence by denial is less dangerous than other options, including continued underinvestment that opens windows of opportunity to Russia and China to create *faits accomplis*.

100 Paul Van Hooft and Lotje Boswinkel, "Surviving the Deadly Skies: Integrated Air and Missile Defence 2021-2035" (The Hague, Netherlands: The Hague Centre For Strategic Studies, December 2021).

101 Council of the European Union, "Council Decision (CFSP) 2020/1746 of 20 November 2020 Amending and Updating Decision (CFSP) 2018/340 Establishing the List of Projects to Be Developed under PESCO," *Official Journal of the European Union*, November 23, 2020, <https://pesco.europa.eu/wp-content/uploads/2020/12/2020-11-23-Council-Decision-PESCO-projects-list-2020.pdf>.

102 Regarding conventional arms, including long-range weapons, the Council set up a number of projects. In the artillery department, Indirect Fire Support Capability (or 'Euroartillery') will directly provide a contribution to the EU's "combat capability requirement in military operations" in the short to mid-term by developing a mobile precision artillery platform. PESCO, "Indirect Fire Support Capability (EuroArtillery) | PESCO," 2020, <https://pesco.europa.eu/project/indirect-fire-support-capability/>. PESCO. ESCO, 'EU Beyond Line Of Sight (BLOS) Land Battlefield Missile Systems (EU BLOS) | PESCO', 2020, <https://pesco.europa.eu/project/eu-beyond-line-of-sight-blos-land-battlefield-missile-systems/>. TWISTER, aims at the effective detection, tracking and countering of missile threats by i.a. a space-based early warning system and contributing to NATO's Ballistic Missile Defense (BMD). PESCO, "Timely Warning and Interception with Space-Based Theater Surveillance (TWISTER) | PESCO," 2020, <https://pesco.europa.eu/project/timely-warning-and-interception-with-space-based-theater-surveillance-twister/>. PESCO.

103 Biddle and Oelrich, "Future Warfare in the Western Pacific."



The Hague Centre  
for Strategic Studies

**HCSS**

Lange Voorhout 1  
2514 EA Hague

**Follow us on social media:**

@hcssnl

**The Hague Centre for Strategic Studies**

Email: [info@hcss.nl](mailto:info@hcss.nl)

Website: [www.hcss.nl](http://www.hcss.nl)