



MARITIME SECURITY CENTRE OF EXCELLENCE



An Analysis of NATO's CBRN Defence Policy and the Vilnius Summit Decisions, and Their Implications for Maritime Security in the Context of the Proliferation of Weapons of Mass Destruction

STUDY PAPER ON
PROLIFERATION OF WEAPONS OF MASS DESTRUCTION

Editor in Chief

Capt.(TÜR-N) Didem SARIOĞLU

OPR.

Cdr. (TÜR-N) Mehmet Deniz ÇETİKLİ

Published By

Maritime Security Centre Of Excellence (MARSEC COE)

Cover Designer:

Cdr. (TÜR-N) Mehmet Deniz ÇETİKLİ



Address:Deniz Güvenliği Mükemmeliyet Merkezi Komutanlığı, Milli Savunma Üniversitesi
Yerleşkesi, 34330, Yenilevent – İstanbul / TÜRKİYE

Phone: +90 212 398 01 00 (5885)

E-Mail: info@marseccoe.org

Printed By

Çözüm Baskı Merkezi Ticaret Limited Şirketi

Emniyetevleri Mahallesi Güvercin Sokak No:7/1 Kağıthane / İSTANBUL

Phone:(0212) 281 49 48

Gsm:+90 543 297 43 59

© All rights reserved by the Maritime Security Centre Of Excellence (MARSEC COE).

This document, a product of the Maritime Security Centre Of Excellence (MARSEC COE), is intended solely for the recipient's use. Any unauthorized reproduction, distribution, or disclosure to third parties without the explicit consent of MARSEC COE is strictly prohibited. The views presented in the articles of this paper are those of the author alone and do not represent the opinions or policies of NATO or MARSEC COE. The Centre is not liable for any loss or harm arising from the use of the information contained in the paper and does not endorse or take responsibility for the content of external sources, including websites referenced in this paper.



MARITIME SECURITY CENTRE OF EXCELLENCE
Working Together for Maritime Security



STUDY PAPER ON

PROLIFERATION OF WEAPONS OF MASS DESTRUCTION

“An Analysis of NATO’S CBRN Defence Policy and the Vilnius Summit Decisions, and their Implications for Maritime Security in the Context of the Proliferation of Weapons of Mass Destruction”

Disclaimer: This is a product of Maritime Security Centre of Excellence (MARSEC COE). The views presented in this study paper are those of the authors alone, and they do not represent the opinions or policies of NATO or MARSEC COE. The Centre may not be held responsible for any loss or harm arising from the use of information contained in this study paper and is not responsible for the content of the external sources, including external websites referenced in this study paper.

DIRECTOR's REMARKS

Few topics in the annals of international security have generated as much concern, debate, and collective action as the proliferation of weapons of mass destruction (WMDs). Nowadays, as we stand on the precipice of vast geopolitical shifts and technological advancements, the maritime domain has emerged as both a beacon of global interconnectedness and a potential nexus of profound vulnerabilities. It is in this climate that the North Atlantic Treaty Organization (NATO), with its storied legacy of mutual defense, has taken decisive steps to address and preempt the complex challenges that loom ahead.

The study paper at hand, “An Analysis of NATO’s CBRN Defense Policy and the Vilnius Summit Decisions, and their Implications for Maritime Security in the Context of the Proliferation of Weapons of Mass Destruction,” contributes to our understanding of these multifaceted issues. Through meticulous research and analysis, it shines a light on the intricacies of NATO’s CBRN defense posture and the landmark decisions made during the 2023 Vilnius Summit. It serves not just as an academic exploration but emphasizes the critical intersections of policy, strategy, and collective action in the vast maritime arena.

For those engaged in international defense and security, the importance of maritime security against the backdrop of potential WMD threats cannot be understated. This study is a timely testament to that very urgency. It underscores the collaborative efforts of NATO and its Member States and emphasizes the importance of active and informed decision-making when the stakes are monumentally high.

It has been my privilege to witness the rigorous research and thought that has gone into this paper. This paper is recommended to readers—whether you are a seasoned expert, a policy-maker, or simply possessed of a curious mind eager to grasp the nuances of contemporary security challenges—MARSEC COE commends this work to you. It is more than just a study; it is a reflection of our shared commitment to a world where peace, stability, and security prevail in even the most challenging domains and circumstances.

Mehmet Cengiz EKREN
Captain, TÜR (Navy)
Director of MARSEC COE

An Analysis of NATO’S CBRN Defence Policy and the Vilnius Summit Decisions, and Their Implications for Maritime Security in the Context of the Proliferation of Weapons of MASS Destruction

By Deniz ÇETİKLİ¹

-18 April 2024-

¹ *Commander Turkish Navy-OF-4, Weapons of Mass Destruction (WMD) Staff Officer of MARSEC COE, İstanbul/Türkiye wmd.cdbranch@marseccoe.org*

Table of Contents

PREFACE	1
RESEARCH METHODOLOGY	2
1. Introduction	3
2. Legal Background	3
3. NATO's CBRN Defence Policy and it's Implications for Maritime Security	6
4. Commentary on the 2023 Vilnius Summit Decisions in the Context of Maritime Security and the Proliferation of WMDs	23
5. Conclusion	27

So long as any state has nuclear weapons, others will want them. So long as any such weapons remain, it defies credibility that they will not one day be used, by accident, miscalculation, or design... It is sheer luck that the world has escaped such catastrophe until now.

—Canberra Commission,¹ 1996

¹ The Canberra Commission was established in 1995 by the Australian government. It convened in 1996 and was tasked with examining the steps required for the global elimination of nuclear weapons. The commission comprised a group of international experts, former politicians, and military officers.

PREFACE

As we advance further into the 21st century, the world grapples with an ever more complex matrix of security challenges. Among the most pressing of these challenges are the threats posed by weapons of mass destruction (WMDs) and their potential proliferation. The vast and strategically significant maritime domain emerges as a critical frontier in this dialogue. Against this backdrop, NATO, a cornerstone of international defense cooperation, has been actively evolving its policies, especially in the arena of Chemical, Biological, Radiological, and Nuclear (CBRN) defense.

This study paper, entitled “An Analysis of NATO’s CBRN Defense Policy and the Vilnius Summit Decisions, and their Implications for Maritime Security in the Context of the Proliferation of Weapons of Mass Destruction” endeavors to provide an in-depth examination of NATO’s evolving stance and decisions, particularly those emanating from the pivotal 2023 Vilnius Summit. Examining the subject through a nuanced lens, the analysis explores the intricate interplay of policy decisions, strategic imperatives, and their potential ramifications on maritime security.

The maritime domain is not just a medium of global trade and communication but a multifaceted realm that intersects with geopolitics, defense strategies, and global stability. Recognizing its significance, the study endeavors to offer readers a comprehensive understanding of NATO’s strategic direction in the maritime domain, the collective aspirations of its Member States, and the broader implications of NATO’s maritime activities for global maritime security.

To students, scholars, policymakers, and general readers alike, this paper aspires to serve as a foundational resource, providing clarity and insight into the complexities of contemporary maritime security challenges in the context of WMD proliferation. As you navigate its pages, the author hopes that it will foster a deeper appreciation of the collective efforts underway and the challenges that lie ahead in our shared pursuit of a safer, more secure world.

RESEARCH METHODOLOGY

A robust methodology is essential for addressing the intricate relationship between the NATO CBRN Defense Policy, the outcomes of the Vilnius Summit, and maritime security in the context of WMD proliferation. This section delineates the methods employed in this study to ensure comprehensive analysis and the generation of meaningful insights.

1. Literature Review: This will provide a systematic review of both primary and secondary sources. These sources include official NATO documents, summaries from the Madrid and Vilnius Summits, policy papers, scholarly articles, and reports related to maritime security and WMD proliferation.

2. Comparative Analysis: A comparative study will be undertaken to ascertain the evolution and shifts in NATO's stance and policies, focusing on the decisions taken during the Madrid Summit and more recent developments. This will also involve an analysis of the broader geopolitical and security context of each summit.

In synthesizing the findings from the above methods, the study aims to provide a well-rounded understanding of NATO's role and its policy implications and offer recommendations for bolstering maritime security in the face of WMD proliferation.

1. Introduction

Maritime security challenges have grown in number and complexity in the modern age. Among these challenges, the proliferation of Weapons of Mass Destruction (WMDs) remains a grave concern due to its potential for catastrophic consequences on a global scale. The maritime domain is the likely avenue by which WMDs could be brought into the territories of the Allies and Partners. Defeating the threats to maritime security, including the threat or use of WMDs, requires a common understanding and a joint effort for action on a global scale.² All nations should share in the responsibility for maintaining maritime security by countering the threats in this domain.³ The United Nations highlights the transportation of arms and WMD trafficking as issues of concern at the global scale⁴ and the likelihood that the maritime domain will be the avenue by which WMDs will be transported. It is widely accepted that should terrorists smuggle a weapon of mass destruction inside a cargo container and target any major global port with it,⁵ the ripple effect on international trade and the world economy would be sudden and severe. This underscores the role of security alliances like NATO in promoting global safety and addressing common threats.

This paper concentrates on establishing a link between the NATO CBRN Defense Policy ratified at the 2022 Madrid Summit and the recent decisions made at the Vilnius Summit, specifically concerning maritime security in the context of the proliferation of WMDs. The first section presents the historical legal background, while the second offers insights to link the NATO CBRN Defense Policy with its ramifications for maritime security. The third section provides a commentary on the NATO Vilnius Summit that specifically addresses maritime security operations and the proliferation of WMDs.

2. Legal Background

The proliferation of weapons of mass destruction (WMDs) has concerned the international community for many decades. As a result, several multilateral treaties have been signed to prevent the spread of these weapons. These treaties include the Biological Weapons Convention (BWC)⁶ and the Chemical Weapons Convention (CWC).⁷ Certain multilateral treaties target the proliferation and testing of nuclear weapons, as well as promoting nuclear disarmament: examples include the Treaty on the Non-Proliferation of Nuclear Weapons

² [NATO - Topic: Weapons of mass destruction](#) accessed on 18.04.2024.

³ [National Strategy for Maritime Security \(maritime-cybersecurity.com\)](#) accessed on 09.08.2023.

⁴ United Nations Security Council Resolution 1540.

⁵ Bruce Taylor, Ph.D., 'Protecting America's Ports', [Protecting America's Ports \(ojp.gov\)](#) accessed on 09.08.2023.

⁶ [UNODA Treaties](#), Biological Weapons Convention

⁷ [UNODA Treaties](#), Chemical Weapons Convention

(NPT),⁸ the Treaty on the Prohibition of Nuclear Weapons (TPNW),⁹ the Treaty Banning Nuclear Weapon Tests In The Atmosphere, In Outer Space And Under Water (also known as the Partial Test Ban Treaty [PTBT]),¹⁰ and the Comprehensive Nuclear-Test-Ban Treaty,¹¹ which was signed in 1996 but has yet to enter into force. Several treaties also exist to prevent the proliferation of missiles and related technologies that can be used as WMD payload delivery vehicles. These treaties include the Hague Code of Conduct (HCoC)¹² and the Missile Technology Control Regime (MTCR).¹³

All NATO Allies are State Parties to the Nuclear Non-Proliferation Treaty (NPT), which entered into force in 1970. The NPT is the cornerstone of international efforts to prevent the spread of nuclear weapons and weapons technology and to achieve the goal of nuclear disarmament. It provides a legal framework by which nuclear-armed states can give security assurances against the use of nuclear weapons to non-nuclear weapon states that are parties to the treaty. It also provides a balanced, step-by-step framework for nuclear disarmament and is built around three mutually reinforcing pillars: non-proliferation (Art. I, II); nuclear disarmament (Art. VI); and the peaceful uses of nuclear energy, science, and technology (Art. IV).

The NPT represents the only binding commitment to the goal of nuclear disarmament in a multilateral treaty that includes both nuclear weapons possessor states and non-possessor states. On 5 March 2020, the 50th anniversary of its entry into force, the NATO Allies issued a statement in which they confirmed their strong commitment to the full implementation of the NPT in all its aspects and affirmed that there is no credible alternative to this Treaty. In the NATO's 2022 Strategic Concept, Allies underscored their strong commitment to the NPT as the essential bulwark against the spread of nuclear weapons and its full implementation, including Article VI.¹⁴

⁸ [UNODA Treaties](#), Treaty on the Non-Proliferation of Nuclear Weapons

⁹ [UNODA Treaties](#), Treaty on the Prohibition of Nuclear Weapons

¹⁰ [UNODA Treaties](#), Partial Test Ban Treaty

¹¹ [UNODA Treaties](#), Comprehensive Nuclear-Test-Ban Treaty

¹² [The Hague Code of Conduct against Ballistic Missile Proliferation \(HCoC\) | HCoC](#) accessed on 09.08.2023.

¹³ [MTCR Guidelines and the Equipment, Software and Technology Annex – MTCR](#) accessed on 09.08.2023.

¹⁴ [NATO - Topic: Arms control, disarmament and non-proliferation in NATO](#) accessed on 09.08.2023

However, NATO can no longer rely on international standards and bodies pertaining to the spread or use of WMDs¹⁵ to guarantee its safety. Scientific and technological advancements, along with other new trends, have heightened the CBRN threats faced by the Alliance.¹⁶

The Proliferation Security Initiative (PSI), initiated by the US in late May 2003, seeks to curb the transport of WMDs and associated technologies by enhancing global collaboration and coordination. The PSI sets up a collaborative structure for intercepting WMDs whether they are at sea, on land, or in the air. The primary objective of PSI is active interception, which involves halting and inspecting ships and aircraft as soon as they enter the territorial waters or airspace of PSI member states. This includes denying suspected aircraft the right to fly over, grounding aircraft for inspections during refueling stops in member or cooperating nations, and inspecting vessels registered to a PSI country or those sailing under the flag of another nation willing to permit an interception for a specific case. Some critics argue that since PSI is mostly confined to the territorial waters of its member countries, its effectiveness in stopping the proliferation of WMDs may be limited.¹⁷

United Nations Security Council Resolution (UNSCR) 1540, adopted in 2004, represents a landmark in global efforts to prevent the proliferation of WMDs to non-state actors, including terrorist groups. One of its core tenets is its call upon states to enact and enforce effective measures to prevent the spread of WMDs, their delivery systems, and related materials.

Regarding interdiction operations, particularly at sea, the resolution underscores the importance of states taking cooperative action to prevent illicit trafficking. Maritime interdiction presents both opportunities and challenges given the vast expanse of global waters and the complexity of international maritime laws. While UNSCR 1540 does not provide explicit authority for interdiction at sea, it reinforces the importance of state-level actions and international cooperation in this area. However, for such interdictions to be effective and consistent with international law, they often require consent from the flag state of the ship in question or a mandate from another applicable international legal instrument. Thus, while UNSCR 1540 lays the groundwork for collective state action against WMD proliferation, the

¹⁵ As stated in CBRN Policy, “WMD” refers to any weapon or weapon system employing CBRN materials that is able to cause widespread devastation and loss of life.

¹⁶ NATO’s CBRN Defense Policy, dated 14 June 2022.

¹⁷ Thanos P. Dokos, ‘Countering the Proliferation of Weapons of Mass Destruction: NATO and EU Options in the Mediterranean and the Middle East’, p.23 published on 2020

practicalities of maritime interdiction necessitate close international collaboration, clear legal guidelines, and strategic intelligence-sharing.

3. NATO’s CBRN Defense Policy and its Implications for Maritime Security

NATO is confronting an increasingly complex security landscape where CBRN threats¹⁸ are on the rise, both from state and non-state entities. Technological advances are further intensifying these risks. The Allies are committed to bolstering the international arms control, disarmament, and non-proliferation framework while also safeguarding NATO regions and forces from CBRN dangers. They acknowledge the evolving nature of these threats and are taking the necessary measures to maintain security amidst these challenges. Figure 1 shows NATO’s Principles and Commitments for CBRN Defense.



Figure 1: NATO’s Principles and Commitments for CBRN Defence

a. Core Principle and Commitment 1: Enhanced and Integrated CBRN Military Capabilities¹⁹

Given that the maritime environment offers potential pathways for the proliferation and movement of WMDs, it becomes imperative that NATO’s maritime forces are equipped and trained to prevent any potential threat or use of WMDs in maritime contexts.

Maritime operations require a proficient intelligence apparatus to identify and counter CBRN threats on or beneath the sea and at ports of entry. The training and exercises that focus

¹⁸ Russia, Non-State Actors, Cyber and Hybrid
¹⁹ NATO CBRN Defense Policy, Items 28-30

on CBRN threats in the maritime domain are vital, as ships and other naval assets might encounter these threats firsthand. Furthermore, collaboration through the Joint CBRN Defense Capability Development Group facilitates innovation in naval CBRN defense methods and equipment.

The vastness and complexity of the maritime domain mean that individual nations should prioritize their resources to address these unique challenges. While the progress made is commendable, the maritime environment's fluid nature demands continuous evaluation and investment to fill capability gaps. Each member state's naval forces should be equipped and trained to operate in CBRN-contaminated environments, ensuring the Alliance's overall strength and interoperability at sea.

Underpinning the principle and commitment to enhanced and integrated CBRN military capabilities are three core concepts: prevention, protection, and recovery. Each will be addressed in turn.

Prevent²⁰ NATO's dedication to preventing the "conceptualization, development, possession, and proliferation" of WMDs and CBRN agents have to include a strong maritime component. The ability to conduct maritime interdiction operations²¹ at sea is central to halting the movement of such materials. Maritime forces, equipped with specialized CBRN capabilities, can interdict ships suspected of transporting WMD materials, thereby disrupting potential supply chains.

Naval vessels patrolling the Area of Operations, equipped with CBRN response systems, send a clear message to potential adversaries about the comprehensive nature of NATO's defense. The assurance that NATO is prepared to deploy its naval capabilities to counteract WMD threats at sea deters adversaries and reassures member nations and global maritime trade entities.

The shared use of oceans means that a nuclear threat to one member state can have spill-over effects on others, especially neighboring coastal nations. In the vastness of maritime

²⁰ NATO CBRN Defense Policy, Items 31-33

²¹ This task calls for assets assigned to quick response actions being capable, where possible, of undertaking the full range of interdiction missions. It may involve a number of essential interdiction competencies, including the use of SOF and CBRN specialists to board suspect vessels. Maritime interdiction operations (MIOs) are operation conducted to enforce the prohibition on the maritime movement of specified persons or materials within a defined geographic area (ATP 71 Allied Tactical Publication for Maritime Interdiction Operations).

spaces, a nuclear incident, whether accidental or deliberate, can have catastrophic regional implications. Therefore, maintaining credible and united maritime nuclear deterrence is vital.

Protect:²² NATO's emphasis on equipping its forces with integrated CBRN defense capabilities is not only pertinent to land-based operations but is equally significant in the maritime domain.

Maritime assets often operate in isolated environments for extended periods. These forces may encounter threats ranging from smuggled WMD materials to potential CBRN threats. Consequently, those assets should be equipped with basic, enhanced, and specialized CBRN Defense mechanisms. As such, they will be adept in identifying, assessing, and responding to any CBRN threat while on water.

The Combined Joint CBRN Defense Task Force (CJ-CBRND-TF)²³ is a strategic asset indispensable in maritime scenarios. In the hypothetical scenario in which a NATO naval fleet is deployed in a region with heightened CBRN threats, the CJ-CBRND-TF could be rapidly deployed to support and bolster the naval fleet's CBRN defense capabilities, ensuring their safety and enhancing mission success.

Accurate identification of CBRN agents, understanding their behavior in marine settings, and determining appropriate containment and mitigation strategies require specialized expertise. The CBRN Reach Back Element (RBE) provides a robust scientific backbone to maritime forces dealing with CBRN threats.

Recover:²⁴ CBRN incidents at sea or in coastal areas carry the dual risks of both immediate threats to human life and potential long-term environmental degradation. The rapid recovery of sustainable naval operations following a CBRN incident is critical, not just for immediate operational continuity but for safeguarding marine ecosystems, trade routes, and coastal communities.

The ability of NATO maritime forces to recover swiftly from a CBRN incident ensures that adversaries do not perceive CBRN tactics as a valid method of disrupting or halting NATO

²² NATO CBRN Defense Policy, Item 34

²³ NATO's Combined Joint CBRN Defense Task Force (CJ-CBRND-TF), which consists of the CBRN Joint Assessment Team (CBRN-JAT) and the CBRN Defense Battalion, is a NATO body specifically trained and equipped to deal with CBRN incidents and/or attacks against NATO populations, territory or forces.

²⁴ NATO CBRN Defense Policy, Item 35

naval operations. The maritime environment is inherently challenging due to its vastness, isolation, and unpredictable nature. Therefore, having a structured recovery mechanism in place showcases naval resilience and can act as a deterrent.

Coastal communities are particularly vulnerable to the cascading impacts of a CBRN incident in maritime settings. The interconnection between the sea and land means that **a CBRN event at sea could quickly escalate into a broader humanitarian crisis onshore.** By prioritizing the recovery of affected populations and territories, NATO reinforces its commitment to protecting not just its member states but also the larger international community.

In the aftermath of a maritime CBRN incident, the provision of specialized medical capabilities will be paramount. Addressing CBRN-related injuries requires a different medical approach than that taken with conventional ones. Naval personnel and potentially affected civilians will need prompt and specialized care. Training military medical personnel to recognize and treat CBRN-related ailments ensures that the immediate medical aftermath of an incident is addressed efficiently. **Given the remote nature of many maritime operations, onboard ship medical capabilities that can address CBRN incidents are an essential component of a holistic defense strategy.**

Recovery, especially in the maritime domain, is not just about returning to a state of operational normalcy. It is about managing a complex web of challenges from treating affected personnel, securing and neutralizing threats and preventing ecological disasters, to reassuring and assisting coastal communities. NATO's commitment to underpinning its recovery capabilities with the necessary resources and training, especially in the medical domain, underscores the Alliance's comprehensive approach to maritime security and its understanding of the multi-dimensional nature of maritime CBRN threats.

To address those threats, NATO should be able to deliver the capabilities necessary to counter them and have available the doctrines and structures needed to comprehend, assess and respond appropriately to them. These are discussed below.

Capabilities Delivery:²⁵ In a maritime context, information exchange, training, and exercises are fundamental, as the domain to which they are applied is inherently more isolated and challenging than the land for operations. For instance, having real-time information

²⁵ NATO CBRN Defense Policy, Items 36-37

exchange mechanisms regarding CBRN threats at sea is essential for acting swiftly and efficiently, especially in confined spaces like naval vessels.

The NATO-wide network of Centers of Excellence,²⁶ especially the Joint CBRN Defense Center of Excellence (JCBRN Defense COE) in the Czech Republic, plays a pivotal role. These centers can be instrumental in curating specialized training modules focusing on maritime CBRN scenarios which include preparation of naval forces to detect, defend against, and neutralize CBRN threats in unique maritime environments, from deep-sea operations to coastal engagements.

The maritime domain offers a unique set of challenges due to the fluid nature of water, the vastness of the oceans, and the difficulties of securing and decontaminating large bodies of water after a CBRN event. This drives the search for innovative means to deliver CBRN defense capabilities. Technologies that can detect and neutralize underwater CBRN threats, or those that can prevent the spread of contaminants to broader marine areas, may yet prove essential.

Given that oceans and seas are shared spaces, multinational initiatives like the High Visibility Projects for CBRN defense, the Framework Nations Concept (FNC) Cluster CBRN Protection, and the Smart Defense Pooling CBRN Capabilities project are especially pertinent. Collaborative maritime CBRN exercises²⁷ can help to standardize procedures across different national naval forces and ensure a synchronized response to threats in open seas.

While CBRN defense remains a fundamentally national responsibility, the maritime domain, by its very nature, demands a collective approach. Waters are shared, and an incident in one national territory can quickly have ramifications for neighboring nations. NATO's strategy seeks to strike a balance between bolstering individual national capabilities and ensuring that there is a cohesive, collective response mechanism in place.

²⁶ Combined Joint Operations from the Sea (CJOS), Operations in Confined and Shallow Waters (CSW), Counter Improvised Explosive Devices (C-IED), Explosive Ordnance Disposal (EOD), Maritime Security (MARSEC) are the Centers of Excellence that can add value to any work focusing on maritime CBRN scenarios.

²⁷ Türkiye hosted PSI Exercise ANATOLIAN SUN-06 in 2006. The purpose of the exercise was to enhance action readiness and cooperation among national institutions as well as generating swift and effective cooperation between participating states, in order to counter illicit trafficking and proliferation of CBRN Weapons, missiles and materials that could be used to produce such weapons or delivery vehicles to terrorists and countries suspected to trying to acquire weapons of mass destruction. (Global Maritime Security Horizons [ISBN:9789754096750], p. 247, Sümer KAYSER)

Capability delivery in the realm of maritime CBRN defense requires a mix of specialized training, cutting-edge technology, and a deep understanding of the unique challenges posed by the maritime environment. NATO's initiatives and assets, tailored for maritime security, ensure that the Alliance remains ready to counter any CBRN threat at sea, safeguarding both its naval assets and the broader maritime ecosystem.

Doctrines and Structures:²⁸ In a maritime setting, CBRN expertise within NATO's Command and Forces Structure is not just beneficial—it is paramount. **The inclusion of maritime CBRN specialists within NATO structures will allow for nuanced decision-making tailored to these unique challenges.**

For naval vessels at sea, rapid response mechanisms informed by real-time CBRN data are necessary. Being able to quickly make decisions based on this data could mean the difference between containment and widespread contamination in a maritime scenario.

A functioning and tested CBRN warning and reporting network holds even more importance in the maritime domain. Sea routes are crucial for global trade, and a CBRN incident in major shipping lanes could disrupt not just security but the global economy. Moreover, given that oceans are shared spaces, an incident in one region can quickly impact neighboring nations, making a cohesive warning system essential.

The refinement of common doctrines, standards, and policies by the Joint CBRN Defense Capability Development Group²⁹ will directly benefit maritime security. Naval forces often work in multinational fleets or coalitions, and interoperability becomes even more crucial in CBRN scenarios. Ensuring that different national naval forces can effectively communicate, share intelligence, and coordinate their CBRN defense responses can be the key to mitigating threats.

Maritime medical responses should include not only medical responses but also rapid medical evacuations and treatments onshore.

The unique challenges posed by the maritime domain demand a specialized, nuanced approach, supported by real-time data, interoperable command structures, and tailored medical

²⁸ NATO CBRN Defense Policy, Item 38-39

²⁹ MARSEC COE hosted a JCBRND CDG meeting in its premises in October 2022. One staff officer from MARSEC COE is currently in the Team of Experts pool and provides support whenever needed.

response mechanisms. The integration of these elements will further solidify NATO's ability to respond effectively to maritime CBRN threats.

b. Core Principle and Commitment 2: Improved Resilience against CBRN Threats³⁰

Resilience in the maritime context, specifically regarding CBRN threats, goes beyond ships and naval assets—it affects ports, shipping lanes, and even civilian maritime activities like fishing and trade. The 2021 Strengthened Resilience Commitment, with its emphasis on continuity of government and dealing with mass casualties or disruptive health crises, finds a distinct relevance in maritime operations. For instance, a contaminated major port could disrupt global trade, impacting economies far beyond the incident site. Hence, in upholding the standards set by the Baseline Requirements—which outline essential protections and protocols for maritime infrastructure—maritime resilience efforts should also prioritize the safeguarding of key maritime hubs and trade routes against CBRN threats.

The maritime domain can amplify the consequences of a CBRN attack or incident. Contaminants can spread quickly in open waters, affecting multiple regions and even entire ecosystems. A CBRN incident in a key strait or chokepoint could disrupt international trade for an extended period. Moreover, maritime environments may lack immediate access to the resources needed to address CBRN incidents, complicating timely responses. Thus, even minor CBRN incidents at sea could disproportionately strain NATO's readiness and responsiveness, emphasizing the need for a comprehensive maritime CBRN response strategy.

The commitment by the NATO Allies to enhance resilience against threats from both state and non-state actors is especially pertinent in the maritime domain. Non-state actors, such as pirates or terrorists, could weaponize CBRN materials in sea-borne attacks, leveraging the maritime domain's size and vulnerabilities. Recognizing this, **the Alliance's commitment to resilience should also involve strategies tailored to detecting, deterring, and responding to maritime CBRN threats.** This entails not only enhancing the capabilities of naval assets and coastal defenses but also ensuring that all maritime stakeholders, from port authorities to shipping companies, are equipped and trained to respond to potential CBRN threats.

³⁰ NATO CBRN Defense Policy, Items 40-42

Underpinning the principle and commitment to improved resilience against CBRN threats are three core concepts: prevention, protection and recovery. Each will be addressed in turn.

Prevent:³¹ The preventive nature of CBRN resilience as described is particularly crucial in the maritime context. Reducing the advantage an adversary might seek by employing CBRN is vital to maritime security. Naval assets patrolling critical waterways, coupled with surveillance technology and international cooperation, can help deter potential adversaries from even considering CBRN attacks in maritime domains. Visible and effective maritime CBRN defenses, including detection and response capabilities aboard ships and in ports, can make the costs of an attempted CBRN attack too high for potential aggressors to countenance.

The maritime domain requires a comprehensive approach, involving not just the military but also customs, port authorities, and other civil agencies.³² This whole-of-government approach is essential to preventing the illicit trafficking of CBRN materials through long and complex maritime routes. Coordinated inter-agency efforts can prevent, detect, and respond to such threats more effectively than isolated actions.

NATO's potential role in bolstering national capabilities against CBRN threats extends prominently to the maritime domain. This could involve **sharing best practices among member states, conducting joint naval exercises focusing on CBRN scenarios, or providing technical support for enhancing CBRN detection and response mechanisms at key maritime chokepoints**. Also, given the global nature of maritime trade, NATO can play a pivotal role in facilitating multinational cooperation to secure key trade routes against CBRN threats.

NATO, with its collective capabilities and expertise, stands as a bulwark against such threats, ensuring not just the security of its member states but also global maritime stability.

Protect:³³ Ports, shipping routes, offshore energy installations, and underwater communication cables³⁴ represent vital maritime infrastructures. Their smooth operation ensures the steady flow of trade, energy, and information—the lifeblood of modern economies.

³¹ NATO CBRN Defense Policy, Item 43

³² MARSEC COE can act as a bridge among relevant stake holders.

³³ NATO CBRN Defense Policy, Items 44 and 45

³⁴ Diren DOĞAN & Deniz Çetikli 'MARSEC COE Study Paper on Maritime Critical Infrastructure Protection in a Changing Security Environment', p10.

An attack, especially a CBRN incident, on or around these assets can disrupt these lifelines and have cascading consequences for regional or global stability.

NATO's potential involvement in bolstering national civilian capabilities in the maritime context could involve sharing best practices on CBRN preparedness with port authorities; offering technical expertise in CBRN detection and response in maritime settings; or even deploying specialized teams to assist in maritime CBRN incidents.

The interdependence between civilian and military domains in maritime security is highlighted by the reliance of NATO's military forces on secure civilian services and infrastructure, particularly in the context of a CBRN incident. For example, military naval operations rely heavily on civilian ports for resupply, repair, and refueling. A CBRN incident in a significant port could not only disrupt civilian trade but also impair naval operations, thereby affecting the country's (and NATO's) overall deterrence and defense posture.

Given the global nature of maritime trade and its importance for NATO member states' economies and security, the Alliance's role in enhancing maritime CBRN preparedness and response capabilities, both for civilian and military assets, becomes pivotal. By ensuring resilient maritime infrastructure and supply chains, NATO not only safeguards its member states' economic interests but also bolsters its collective defense and deterrence posture against an increasingly broad spectrum of threats.

Recover:³⁵ The necessity of being prepared to recover from a CBRN incident has distinct maritime implications. Ports, sea lanes, and naval assets are crucial nodes in the global transportation network, and a CBRN incident affecting these can have ripple effects far beyond the immediate region. The recovery of such maritime assets following a CBRN incident does not just involve reinstating normal operations; recovery is also crucial for global trade and military readiness.

NATO's commitment to supporting recovery efforts through deployable assets, training, and exercises emphasizes the need for specialized marine and naval capabilities. These could include deployable decontamination units for maritime settings, specialized naval units trained for CBRN incident response, or training exercises simulating CBRN incidents in port or at sea.

³⁵ NATO CBRN Defense Policy, Item 46

Effective recovery from a maritime-based CBRN incident necessitates seamless civil-military coordination. Ports, for instance, are civilian infrastructures but are also essential for naval operations. A CBRN incident in a port would thus require a harmonized response from both civilian agencies (like port authorities) and military units, possibly with NATO's assistance.³⁶

Civil-military medical cooperation in the aftermath of a CBRN mass casualty incident is particularly noteworthy in the maritime context. Ships at sea, especially those away from immediate medical assistance, would rely heavily on specialized medical response in the event of a CBRN incident. NATO's guidelines could encompass best practices for such medical responses in maritime scenarios, ensuring timely medical care and evacuation for affected individuals.

c. Strategic Enablers³⁷

“The following strategic enablers facilitate NATO's efforts to defend against CBRN threats and WMD: capacity-building for military and civilian personnel; intelligence- and information-sharing; partnerships and outreach; strategic communications and public diplomacy; scientific and technical collaboration; and medical support.”

Shared Understanding:³⁸ The maritime domain is vast, making it a potential arena for the illicit transportation of CBRN materials or for clandestine WMD activities. Integrating maritime intelligence with CBRN defense mechanisms is essential. Early detection of CBRN threats on maritime routes or in ports can significantly reduce the potential impact of an incident. If a CBRN incident were to occur in a maritime setting, timely and accurate intelligence sharing becomes essential not only for tactical response but also to counter any disinformation campaign(s). Ensuring that accurate information reaches stakeholders and the public can prevent panic and mitigate the secondary effects of an incident.

Given the significance of shared awareness, maritime assets, especially commercial vessels and port authorities, should be equipped and trained to detect and promptly report any

³⁶ NATO MC 0588, ‘Critical Infrastructure (CI) vulnerabilities exist in the maritime environment both in and beyond the Euro-Atlantic area. Support to the protection of CI will be at a NATO, or non-NATO nations’ request in accordance with directions from the NAC.’

³⁷ NATO CBRN Defense Policy, Section VI, Item 50.

³⁸ Idem, Items 51-53.

CBRN-related irregularities. This would enable quicker decision-making responses from NATO and its member states.

Russia's 2022 invasion of Ukraine, which had significant maritime dimensions, emphasizes the importance of integrating CBRN preparedness in maritime operations. Threats could materialize in the form of hybrid tactics, combining conventional, irregular, and potentially CBRN strategies in maritime contexts.

Many of NATO's Partners are significant maritime players³⁹. Strengthening intelligence-sharing mechanisms with these Partners, especially in the maritime domain, can enhance the collective capability to detect, deter, and respond to CBRN threats. Ensuring Partners contribute effectively to this intelligence pool, especially those with strategic maritime locations, can significantly extend NATO's situational awareness.

Capacity-building for military and civilian personnel:⁴⁰ Education and training are fundamental in preparing naval forces for potential CBRN incidents at sea. Given the unique challenges of maritime operations, specialized training for maritime personnel is paramount. This ensures they can effectively identify, contain, and respond to CBRN threats, whether they are on a naval ship, commercial vessel, or at a port facility.

The maritime environment poses many challenges for naval forces, such as the effects of waves, currents, and wind on the ship's movement and stability. These factors can reduce the ship's ability to change course, speed, or direction quickly and precisely, especially in confined or congested waters. When faced with a chemical, biological, radiological, or nuclear (CBRN) threat, naval forces need to be able to react swiftly and effectively, without relying on land-based support or facilities. Therefore, it is essential that naval forces train and practice how to deal with maritime CBRN incidents in realistic scenarios. **By incorporating maritime CBRN situations in major strategic exercises, NATO will enhance its readiness and capability to respond to real-world maritime CBRN incidents.**

The role of the JCBRN Defense COE is undeniably vital. However, specific emphasis should also be placed on the Maritime Security COE and the NATO Maritime Interdiction Operational Training Center. These entities play crucial roles in linking traditional maritime

³⁹ Diren DOĞAN & Deniz Çetikli 'MARSEC COE Study Paper on Maritime Critical Infrastructure Protection in a Changing Security Environment', p8.

⁴⁰ NATO CBRN Defense Policy, Items 54-57.

security efforts with specialized CBRN defense needs. Collaborative exercises and training modules involving these centers will provide a holistic approach to maritime CBRN defense. The ability to tap into a reservoir of CBRN expertise quickly is essential during incidents, especially in maritime settings where isolation can be a challenge. NATO's reachback capability⁴¹ ensures that naval forces have access to timely and authoritative advice. This is vital when dealing with unfamiliar CBRN materials, and when quick decision-making is required in the constrained space of a ship or offshore facility.

Given the transnational nature of maritime operations, fostering interoperability and collaboration among NATO Allies in the maritime domain is critical. Exercises should encourage different NATO navies to work together, sharing best practices and combining resources to tackle CBRN threats. This will ensure seamless operations during real-world incidents.

Ports, civilian shipping companies, and other maritime entities play a significant role in the overall maritime ecosystem. Collaborating with these entities, providing them with training and integrating them into exercises, will ensure a comprehensive maritime CBRN defense posture.

Partnerships and Outreach:⁴² In the maritime context, this extends to entities such as the International Maritime Organization (IMO), regional maritime bodies, and port authorities worldwide. Collaborating with these organizations provides a comprehensive understanding of maritime CBRN challenges, given the global nature of maritime commerce and potential transit routes of illicit materials.

Ports act as key nodal points in the global supply chain. Engaging in bilateral partnerships with nations to elevate port security can affect CBRN defense directly. Strengthened CBRN measures at ports can prevent the illicit transit of CBRN materials, ensuring that they do not make their way into the maritime domain or further inland.

Joint training and exercises between NATO and its Partners in the maritime space are critical. They not only ensure interoperability among navies but also offer an opportunity to

⁴¹ NATO's CBRN reachback capability provides an on-demand source of authoritative technical analysis and expert guidance that facilitates efforts to strengthen deterrence and defence, support operations, conduct exercises and respond to CBRN incidents through a dedicated network. The NATO CBRN reachback network provides actionable, full spectrum CBRN defence expertise and analysis to support operations and specified organisations.

⁴² NATO CBRN Defense Policy, Item 58.

simulate real-world maritime CBRN scenarios, enhancing the collective response capabilities of all involved. Such exercises can also incorporate commercial vessels, ensuring the broader maritime community is prepared for potential CBRN incidents.

Countless vessels transit sea lanes daily. Exchanging information on suspicious vessels, unusual cargo, or suspected WMD and CBRN material movements enhances maritime situational awareness.⁴³ Leveraging shared intelligence platforms or databases can ensure rapid responses to threats even in international waters.

CBRN threats in the maritime domain require harmonized response strategies due to the international nature of maritime operations. It is essential to engage in policy and standard exchanges to establish a cohesive response mechanism. This becomes particularly important when a vessel suspected of carrying CBRN materials navigates through the territorial waters of multiple countries.

Given the interconnected nature of maritime operations, even nations outside NATO's traditional partnership framework can be vital in CBRN defense. Engaging with such nations,⁴⁴ especially those with significant maritime interests, can provide broader coverage against CBRN threats.

Strategic Communications and Public Diplomacy:⁴⁵ Maritime operations often take place far from public view, so effective communication helps to ensure that populations understand the importance and role of maritime forces in CBRN defense.

Moreover, in a maritime CBRN incident, such as the release of hazardous material from a vessel or the discovery of a ship carrying illicit CBRN materials, clear and transparent communication from NATO can help prevent panic, misinformation, and economic disruption in global trade routes.

⁴³ MC 0588 Military Concept for Maritime Security Operations (Where possible, Alliance assets, capable of contributing to MSA [maritime situational awareness], should share data and/or information aimed at enhancing the NATO Recognized Maritime Picture (RMP), with other Allies and civilian agencies as appropriate.)

⁴⁴ Singapore, India, South Africa, Indonesia, Brazil, and Saudi Arabia, with their significant maritime interests and strategic locations, can substantially bolster global CBRN maritime defense. Engaging even outside the traditional NATO framework can lead to a more comprehensive and secure maritime environment.

⁴⁵ NATO CBRN Defense Policy, Items 64-66.

Maritime incidents, by their very nature, can lead to international complexities given the potential involvement of often-shared waters and overlapping jurisdictions. Hostile information activities can easily exploit such incidents, sowing distrust among Allies or projecting false narratives about the intent and actions of naval forces. The 2018 Salisbury Novichok attack⁴⁶ and Russia's actions in 2022 underscore the importance of having an effective strategy to counter such disinformation, especially if a maritime CBRN incident is involved. This is especially important for incidents that might occur in contentious waters or near strategic chokepoints, where disinformation can escalate tensions significantly.

A clear understanding of the information environment, including the origins and tracking of vessels, is crucial for identifying the perpetrators of CBRN incidents. For instance, knowledge of a ship's last port of call, its registered owner, and its cargo manifest can aid in attributing responsibility. **Given the covert nature of many maritime CBRN threats, NATO's role as a hub for information sharing is invaluable.** To enhance its effectiveness in this role, particularly for CBRN scenarios, it is imperative to update the NATO HQ Strategic Communications Framework. This update should address the specific challenges of maritime operations, including the potential for false-flag operations, and the necessity for rapid and clear communication to prevent escalations at sea.

Scientific and Technical Collaboration:⁴⁷ Innovation is driving the evolution of the CBRN threat, including by enabling new chemical and biological threats, lowering the barriers to proliferation, and introducing destabilizing new delivery systems for WMDs. At the same time, new capabilities in detection, forensics, decontamination, personal and collective protection, knowledge management, medical countermeasures, et cetera, offer new avenues for countering CBRN threats. Armed with the best available scientific guidance, NATO will effectively identify and navigate the interlinked risks and potential that innovation and Emerging and Disruptive Technologies⁴⁸ present for CBRN defense. Figures 2 and 3 below show the potential areas for focused research, as analyzed by the NATO Science and Technology Organization.

⁴⁶ The offences include conspiracy to murder Sergei Skripal; the attempted murder of Sergei Skripal, Yulia Skripal and Nick Bailey; the use and possession of Novichok contrary to the Chemical Weapons Act; and causing grievous bodily harm with intent to Yulia Skripal and Nick Bailey., <https://www.bbc.com/news/uk-45421445>, accessed on 18 April 2024

⁴⁷ NATO CBRN Defense Policy, Items 67-68.

⁴⁸ NATO Science & Technology Organization, Science & Technology Trends 2023-2043, Volume 1 (Novel CBRN sensors, DATA-AI Biotechnologies)

Conjecture Card: Bio and Human Enhancement Technologies













<p>A. Super Sensings</p>  <p>Enhance human senses and cognitive abilities to super-human levels to increase the speed of learning/comprehension and reduce reaction times.</p>	<p>B. Body Self-Repair</p>  <p>Heal wounds, injuries or illnesses using DNA restructuring or synthetic biology solutions (e.g. artificially grown body parts).</p>	<p>C. Bio-Databases</p>  <p>Store or process massive amounts of data in living organisms.</p>
<p>D. Human-Machine</p>  <p>Mechanically augment the human body with an exoskeleton or internal mechanical parts to gain super strength, balance and speed.</p>	<p>E. Chem or Bio Analysis</p>  <p>Instantly analyse and identify chemical or biological substances remotely or using hand-carried or unmanned systems.</p>	<p>F. Health Monitoring</p>  <p>Continuously monitor the health and well-being of entire populations at the individual level, activating drugs, hormones, or genes on demand.</p>
<p>G. Train in Reality</p>  <p>Deploy realistic virtual or augmented reality training environments to prepare soldiers in realtime for mission tasks.</p>	<p>H. Psychotic Effects</p>  <p>Remotely induce mass hysteria or hallucinations in groups or individuals.</p>	<p>I. Genetic Targeting</p>  <p>Design and develop targeted pathogens, antidotes or neutralising CBRN agents from materials and knowledge available at low cost and to everyone.</p>
<p>J. Grow an Airfield</p>  <p>Using bio-concrete, grow an entire stealth airfield and infrastructure in austere conditions with RED forces unaware.</p>	<p>K. Living Sensors</p>  <p>Design and deploy living bacterial sensors for mine detection, intrusion monitoring and early detection of CBRN threats.</p>	<p>L. Super Soldiers</p>  <p>Genetically modify and create super soldiers for maximum efficiency on the battlefield.</p>

Figure 2: Biotechnology and Human Enhancement⁴⁹

⁴⁹ NATO Science & Technology Organization, Science & Technology Trends 2023-2043, Volume 2, 74

Conjecture Card: Quantum Technologies

<p>A. Transparent Ocean</p>  <p>Obtain the position of any submarine, at any depth, everywhere on Earth, through ultra-sensitive magnetic, gravity or acoustic sensors.</p>	<p>B. Quantum Cryptography</p>  <p>Crack certain types of encryption in microseconds. Overcome cyber defences to disrupt or destroy others' computer systems.</p>	<p>C. Quantum Radar</p>  <p>Use air and space-based covert ultra-sensitive very low-power radar systems to track and identify air targets at the extreme line-of-sight ranges.</p>
<p>D. Computational Dominance</p>  <p>Utilise novel quantum algorithms (optimisation, neural networks, etc.) to provide a decision edge supporting military and enterprise operations and functions.</p>	<p>E. GPS Denied Environment</p>  <p>Operate for weeks in a GPS-denied environment with complete geospatial and temporal awareness equivalent to today's GPS systems at sea, in the air or on land.</p>	<p>F. Precision Navigation</p>  <p>Conduct under-ice precision navigation with unmanned underwater vehicles for months, without GPS updates, in the deep ocean and littoral areas.</p>
<p>G. Quantum Illumination</p>  <p>Short-range, very low-power noninvasive imaging for security or biomedical applications.</p>	<p>H. Quantum Communications</p>  <p>Communicate instantaneously at long range without being prone to eavesdropping.</p>	<p>I. Chemistry & Materials</p>  <p>Simulate the quantum structure and behaviour of new chemicals and materials to create new biochemicals and materials important for CBRN countermeasures.</p>
<p>J. Subterranean Mapping</p>  <p>Precision sensors allow for high-resolution mapping of underground structures.</p>	<p>K. Quantum Game Theory</p>  <p>Quantum game theory supports new approaches to strategic deterrence.</p>	<p>L. Quantum Neural Networks</p>  <p>Quantum neural networks supports a revolutionary leap in AI effectiveness.</p>

Figure 3: Quantum Technologies⁵⁰

The unique challenges of maritime security highlight the importance of a body like the NATO Science and Technology Organization (STO) leading research and collaboration efforts. By maintaining a world-leading network of expertise, NATO can stay ahead of potential threats, especially those that use the maritime domain for transportation or deployment. For example,

⁵⁰ NATO Science & Technology Organization, Science & Technology Trends 2023-2043, Volume 2, 163

understanding how certain CBRN materials interact with saltwater or identifying how to detect submerged CBRN threats requires specialized knowledge and collaboration.

Medical Support:⁵¹ An outbreak or exposure incident aboard a vessel could easily become a ship-wide problem, affecting many crewmembers in a short period of time. Maritime healthcare systems, whether on board larger vessels or within port facilities, must be equipped to rapidly detect and respond to potential CBRN exposures.

In particular, any biological incident on a vessel, such as a contagious disease outbreak, can be indicative of a deliberate CBRN event. Rapid response and identification are critical in these cases, not only for the treatment of affected individuals but also to prevent the spread of the biological agent to other vessels or ports. The quick and efficient identification of such an incident by a ship's medical personnel can potentially prevent a localized event from becoming a regional or even global crisis.

Moreover, the fact that many ports receive international vessels means that medical personnel in these ports need to be especially vigilant. An incident detected in one port could provide vital intelligence about a broader CBRN threat, with the port acting as an early warning system.

Maritime operations face unique challenges and ethical dilemmas in medical responses to CBRN events. For example, deciding whether to quarantine a contaminated ship or allow it to dock can significantly impact both the passengers and the port nation. This underscores the critical importance of robust CBRN medical capabilities.

International waters, competing jurisdictions, and diverse maritime laws complicate the decision-making process. In this context, having NATO provide guidance on the development of operational and strategic capabilities becomes invaluable. **Research aimed at specifically addressing the unique challenges of maritime CBRN incidents can help in formulating best practices, treatment protocols, and containment strategies that consider the maritime environment's intricacies.**

⁵¹ NATO CBRN Defense Policy, Items 69 and 70

4. Commentary on the 2023 Vilnius Summit Decisions⁵² in the Context of Maritime Security and the Proliferation of WMDs

The 2023 Vilnius Summit underscores the significance of NATO's nuclear capability in its broader security framework. While the primary focus of the Summit on the strategic use and deterrence value of nuclear weapons, the implications for maritime security and CBRN defense are substantial.

In the maritime domain, nuclear capabilities have historically played a significant role, with submarines equipped with ballistic missiles forming a crucial component of second-strike capabilities.⁵³ Maintaining a credible and secure maritime nuclear deterrent ensures that potential adversaries recognize the costs of aggression in the maritime environment. While NATO emphasizes its commitment to a world without nuclear weapons, **the reality of present geopolitical tensions requires the Alliance to maintain its nuclear arsenal.** In the maritime context, this means continuing patrols by nuclear-armed submarines while also participating in arms control dialogues and confidence-building measures.

By committing to a world without nuclear weapons, NATO indirectly emphasizes the need to prevent WMD proliferation. This involves ensuring that maritime chokepoints, trading routes, and ports are secured against illicit activities related to WMDs. The maritime environment is crucial for global non-proliferation efforts. While the actual employment of nuclear weapons is seen as a distant possibility, the potential for limited or regional conflicts escalating due to the use of other WMDs is conceivable. For instance, **chemical or biological attacks launched from maritime platforms or through shipping routes can serve as triggers for wider WMD usage.** Hence, **maritime security efforts must consider these broader WMD threats and not just the nuclear dimension.** To deter adversaries and ensure that the costs of aggression are high, NATO have to maintain a comprehensive maritime surveillance and interdiction capability.⁵⁴

⁵² [NATO - Official text: Vilnius Summit Communiqué issued by NATO Heads of State and Government \(2023\), 11-Jul.-2023](#), accessed on 15.08.2023

⁵³ The term "second-strike capability" emerged during the Cold War and became a foundational concept in nuclear deterrence theory. The exact individual who first coined the term is not definitively known, but it arose from strategic thinking about ensuring that a nuclear power could retaliate after sustaining a nuclear first strike, thus deterring such a strike in the first place. For this study, "Second-strike capability" means that even if a country's land-based nuclear weapons are destroyed in a first strike, their submarines can still retaliate with a second nuclear attack.

⁵⁴ Deniz ÇETİKLİ, The Role of CBRN Defense in Maritime Security Operations.ppt, dated 17 April 2023 for NATO School Oberammergau. "Intercepting maritime threats early and at range is significantly more effective than waiting for them to reach home waters or territory. Early interception allows for timely action, minimizing the potential impact of the threat, and providing security forces with the ability to coordinate an appropriate

The assertion that the Alliance's strategic nuclear forces act as the “supreme guarantee” of NATO’s security inherently integrates maritime operations. A portion of these strategic forces, SSBNs (i.e., ballistic missile submarines),⁵⁵ operate within the maritime realm. The US’s forward-deployed nuclear weapons in Europe,⁵⁶ though primarily land-based, have maritime security implications. Their proximity to major seas and oceans necessitates robust maritime defense mechanisms to counter potential threats, especially from adversarial naval assets.

The mention of exercising “strong political control at all times” is a subtle nod to the strategic importance of ensuring that any deployment or use of nuclear assets, including maritime-based ones, is coordinated and in alignment with the broader political objectives of the Alliance. This ensures a unified stance, particularly when countering maritime-based WMD threats. The reference to ensuring broad participation by Allies in sharing NATO’s nuclear burden reflects the importance of a collective maritime security effort. In the realm of preventing WMD proliferation, this could mean **shared patrolling responsibilities, intelligence sharing on maritime movements of WMDs, or joint exercises to simulate responses to maritime-based WMD threats.**

The commitment to uphold existing disarmament and non-proliferation agreements, like the Non-Proliferation Treaty (NPT) and the Chemical Weapons Convention (CWC), entails a tacit understanding of NATO’s role in ensuring that these materials are not transported illicitly via maritime routes. It places a responsibility on NATO’s naval forces to work in tandem with other international agencies to uphold these agreements in the maritime domain. In an age where technological advancements can rapidly change the nature of WMD threats, this commitment requires NATO’s maritime assets to be at the forefront of technological and tactical evolution. The maritime forces need to be adaptive and prepared for changing proliferation trends, emerging threats, and evolving maritime landscapes.

The stance taken during the 2023 Vilnius Summit concerning Russia’s approach towards arms control treaties and commitments serves as a sobering reminder of the complexity of the Euro-Atlantic security landscape. Russia’s alleged selective approach to arms control

response. NATO’s capabilities allow for effective surveillance, monitoring, and response to potential threats, enhancing the overall security and stability of the maritime domain.”

⁵⁵ SSBN refers to Ship, Submersible, Ballistic and Nuclear and is a nuclear-powered ballistic missile submarine. Examples include the US Ohio Class, UK Vanguard class, etc.

⁵⁶ [NATO NSNW factsheet.pdf \(armscontrolcenter.org\)](#), accessed on 16.08.2023. “It is estimated that there are 100 U.S.-owned nuclear weapons stored in five NATO member states across six bases: Kleine Brogel in Belgium, Büchel Air Base in Germany, Aviano and Ghedi Air Bases in Italy, Volkel Air Base in the Netherlands, and Incirlik in Türkiye. Today, under NATO’s nuclear sharing program, the remaining bombs complement the Alliance’s collective security deterrent against threats, principally Russia.”

agreements amplifies concerns about potential covert maritime operations involving the transportation or proliferation of WMD materials. Russia's purported suspension of the New START treaty,⁵⁷ which focuses on nuclear weapons, underscores the importance of monitoring the movements of submarines and surface vessels that might be equipped with strategic arms. This suspension may embolden other states or non-state actors to consider maritime routes for nuclear material proliferation. Russia's decision to pull out from the Treaty on Conventional Armed Forces in Europe (CFE)⁵⁸ has immediate implications for maritime operations. This treaty limited the quantities of conventional military equipment in Europe, ensuring a balance. Russia's withdrawal could lead to an increase in maritime movements of military equipment, warranting comprehensive maritime surveillance and reconnaissance operations by NATO. NATO's commitment to consult on the implications of Russia's CFE treaty withdrawal highlights the importance of collective intelligence-sharing, especially in the maritime context. **Because maritime routes might be used to bolster Russia's conventional military assets, NATO's maritime forces should remain vigilant and responsive.**

The discussions held during the 2023 Vilnius Summit, which emphasized especially the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), are important for maritime security, especially when viewed through the lens of potential WMD proliferation via maritime routes. Maritime security operations⁵⁹ play a role in enforcing compliance with such treaties, particularly by monitoring and preventing any illegal transport of nuclear materials by sea. Russia's decision to block consensus at the Tenth NPT Review Conference⁶⁰ raises concerns about potential covert maritime operations linked to nuclear materials. Consequently, **NATO's maritime forces should be on heightened alert for any unusual or suspicious naval activities associated with Russia.**

The Vilnius Summit's dual focus on the overarching aspiration of a nuclear-free world and NATO's commitment to the NPT is an affirmation of the Alliance's dedication to global peace and security. The principle of "undiminished security for all" resonates particularly well with maritime security. The high seas are a shared resource, and ensuring that they remain free from WMD-based threats is paramount for global commerce, communications, and stability. Maritime security operations are essential to achieving this, especially in chokepoints and

⁵⁷ [New Start Treaty \(nti.org\)](https://www.nti.org), accessed on 16.08.2023

⁵⁸ [Treaty on Conventional Armed Forces in Europe \(CFE\)](https://www.cfe.cepa.org), accessed on 16.08.23

⁵⁹ NATO MSO Concept, MC 0588. "NATO Maritime Security Operations (MSOs) are those operations conducted in co-operation with national authorities and International Organizations as appropriate, or by the Alliance alone when directed, to counter the threats, and mitigate the risks, of illegal or threatening activities, in order to help safeguard Allies' strategic interests, security and stability by contributing to mitigating gaps in current national civilian and/or military law enforcement capacity."

⁶⁰ [NPT Conference 2020 - EN | United Nations](https://www.un.org/press/en/2020/20200814.npt.htm), accessed on 16.08.2023.

crucial sea lanes. The goal of a nuclear-free world, realized in a “verifiable way,” underscores the importance of advanced detection and monitoring capabilities. This is where maritime assets equipped with sensors, surveillance tools, and inspection teams come into play. These assets are integral to ensuring that the proliferation of nuclear materials does not (literally) go “under the radar” in maritime routes.

The Vilnius Summit’s position on the Treaty on the Prohibition of Nuclear Weapons (TPNW) reflects NATO’s commitment to its longstanding nuclear deterrence policy and the significance it places on the Non-Proliferation Treaty (NPT). By rejecting the notion that the TPNW contributes to customary international law, NATO emphasizes that its maritime security operations, especially those related to nuclear deterrence, will continue to be guided by established practices and conventions, ensuring clarity in operational mandates. NATO’s appeal to other countries to assess the TPNW’s true impact suggests an invitation to collaborate on verifiable, tangible measures to ensure nuclear disarmament. In the maritime context, this could involve multinational naval exercises, intelligence sharing, or the establishment of joint maritime surveillance mechanisms to prevent the covert movement of WMDs.

The maritime domain remains a primary route for the illicit trafficking of hazardous materials. The summit’s emphasis on the CBRN threat indicates a heightened awareness of the risks posed by unchecked cargo, fishing, and merchant vessels that might transport these materials covertly. **Implementing NATO’s new CBRN defense policy seems to demand the existence of a more tight-robust maritime component, in terms of the increased number of naval patrols, improved surveillance capabilities at ports, and further deployments of advanced technological applications, like underwater drones to detect and track suspicious behaviors.** Given the transnational nature of maritime threats, NATO member states will probably increase joint naval exercises focused on CBRN detection, containment, and response. This might also involve collaboration with non-NATO states in shared waters. Ports are vulnerable chokepoints when it comes to the proliferation of WMDs. NATO’s renewed focus on CBRN threats might lead to more stringent security measures, enhanced screening technologies, and specialized training for port personnel. The emphasis on resilience implies preparing to prevent potential CBRN incidents and mitigate their consequences in the maritime domain. This could involve developing protocols for the containment of ship-borne CBRN incidents, safeguarding crucial maritime trade routes, and ensuring rapid response mechanisms in the event of an incident. Given that civilians perform a large proportion of maritime operations, NATO might look to engage more closely with commercial shippers and other maritime stakeholders. These collaborations could enhance intelligence-sharing, threat detection, and the overall security landscape.

5. Conclusion

The global security landscape, particularly as it concerns weapons of mass destruction, is intricately woven and deeply complex. The emphasis placed on multilateral treaties like the NPT, BWC, and CWC, as well as initiatives such as the PSI, reflects the international community's concerted effort to address the inherent dangers of WMDs. The staunch commitment of NATO to these foundational principles, especially the NPT, showcases its significant role in nuclear disarmament and non-proliferation. However, as we navigate an era characterized by rapid technological advancements and the complexities of maritime interdiction, it is imperative that we adopt adaptive and strategic collaborations. The Canberra Commission's 1996 assertion regarding the looming threat of WMDs use drives home the urgency of this matter. The existing protocols and initiatives, while commendable, must be periodically reassessed and reinforced to stay ahead of new challenges and guarantee a world shielded from WMDs' catastrophic potential.

Highlighting the comprehensive nature of today's security threats, NATO's current stance on maritime CBRN dangers reveals its profound grasp of these challenges. Its holistic strategy, which encompasses prevention, protection, recovery, and the successful delivery of capability, not only bolsters the defense of its member states but also ensures the protection of global maritime commerce and ecosystems. Such a multifaceted approach, backed by collaborative initiatives, accentuates NATO's unwavering dedication to a secure maritime environment amid evolving CBRN risks.

Maritime environments, owing to their expansiveness and interconnectedness, serve as critical hubs for global stability beyond just trade and communication. The potential global consequences of CBRN incidents within these environments underline the importance of prevention, protection, and recovery as interlinked strategies. By championing resilience against CBRN threats in maritime sectors, NATO showcases its dedication to the broader global community beyond its member states.

Furthermore, the intertwining of civilian and military realms in maritime endeavors necessitates a holistic approach. Addressing potential maritime CBRN threats requires extensive cooperation across diverse sectors, from military forces and civilian agencies to port authorities. NATO, emphasizing capacity-building and international cooperation, epitomizes a spirit of collective security in the face of multifaceted threats. In an age when non-state actors can cause widespread disruption, a shared commitment to resilience against CBRN threats goes beyond defense; it reflects our collective determination to maintain a harmonious and interconnected world.

Maritime domains, given their vastness and the intricacies of CBRN threats, demand specialized defense strategies, such as capacity-building, partnerships, and scientific collaborations. The multifaceted relationship between maritime operations and CBRN defense becomes more evident with incidents like Russia's 2022 Ukraine invasion. To ensure maritime safety, a unified understanding among all stakeholders, coupled with robust maritime intelligence and CBRN defense mechanisms, is essential. This collective approach extends to various global entities, emphasizing the importance of public communication in managing CBRN aftermaths and preserving public trust. With threats constantly evolving due to scientific and technological advances, NATO should leverage these very advances for innovative defense tactics, ensuring prompt post-incident recovery.

The 2023 Vilnius Summit accentuated discussions on maritime security in relation to WMD proliferation. The Summit's outcomes highlight NATO's dual commitment to maintaining a credible nuclear deterrent while also envisioning a world free from nuclear weapons. This balance is crucial in the maritime context, where WMD challenges persist. By emphasizing joint exercises, intelligence-sharing, and resilience against CBRN threats, the Summit championed the collaborative spirit of NATO. The highlighted need for heightened vigilance, especially concerning Russia's treaty stances, further cements the maritime domain's importance, while NATO's engagement with civilian stakeholders signifies its comprehensive view of maritime security.

In summary, the 2023 Vilnius Summit delineated a focused trajectory for maritime security concerning WMD threats. The shared responsibility to secure the seas, which are crucial for peace and global stability, now demands concrete actions from NATO and its member states to address the pressing challenges of our era.



MARITIME SECURITY CENTRE OF EXCELLENCE
“Working Together for Maritime Security”

