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This Food for Thought paper is a document that gives an initial reflection on the theme. The content is not reflecting the positions of the member states but consists of elements that can initiate and feed the discussions and analyses in the domain of the theme. All our studies are available on www.finabel.org

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ABBREVIATIONS

CBRN Chemical, Biological, Radiological, and Nuclear
CBRNE CBRN and Explosive
CBRN CoE Chemical, Biological, Radiological and Nuclear Centre of Excellence
CBRN SaaS CBRN Surveillance as a Service Program
CDP Capability Development Plan
CEPC NATO Civil Emergency Planning Committee
CoE Centre of Excellence
DG Directorate General
DG DEVCO DG for International Cooperation and Development
DG ECHO DG for Humanitarian Aid and Civil Protection
EC European Commission
EDA European Defense Agency
EDF European Defence Fund
EEAS European Union External Action Service
ESS European Security Strategy
ERCC Emergency Response Coordination Center
EERC European Emergency Response Capacity
EU European Union
EUMS European Military Staff
IPCR EU Integrated Political Crises response capabilities
JCBRN Defence CoE The Joint CBRN Defence Centre of Excellence
JRC European Commission's Joint Research Centre
MS Member States (The EU)
MPCC Military Planning and Conduct Capability
PESCO Permanent Structured Cooperation
UCPM EU's Civil Protection Mechanism
UNICRI United Nations Interregional Crime and Justice Research Institute
WMD Weapons of Mass Destruction

INTRODUCTION

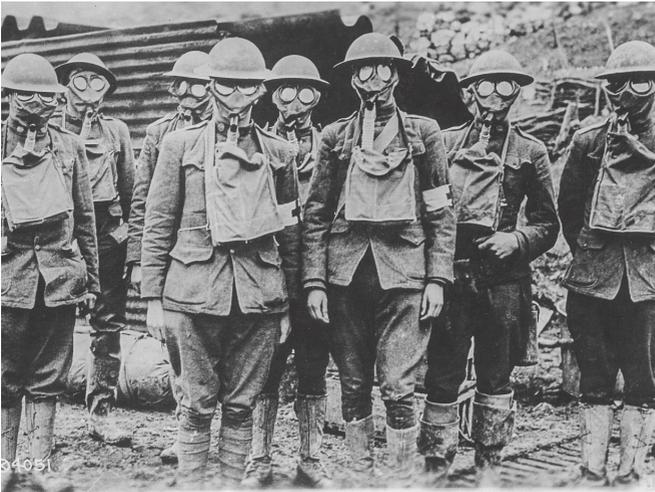
Chemical, biological, radiological, and nuclear (CBRN) technologies have evolved significantly during the past century. They are commonly characterised as posing a “low probability, high impact” threat to society either through their accidental or deliberate

release (European Commission, n.d.). Fortunately, there has never been a major CBRN incident occurring directly in the EU. Recent developments in Europe's neighbourhood, however, have increased the sense of urgency related to such threats. For instance, the use

of chemical warfare in Syria, the poisoning of a former Russian military intelligence officer in Salisbury, and the increasing accessibility of CBRN technologies by non-state and terrorist groups have all caused extensive concern. The destructive repercussions of a CBRN incident are considerable. Therefore, the European Union has taken steps to increase its resilience to reduce and anticipate CBRN risks as well as their impact (European Commission, 2020). Defending against CBRNs is a highly complex matter due to the numerous civil and military stakeholders who need to be involved on both a national and a supranational level. Actors participating in the active defence include border control, law enforcement, healthcare and intelligence, to name a few.

This paper will examine the EU's preparedness in terms of responding to CBRN-threats. The research question that will be addressed in the paper is: To what extent the European Union is capable of defending itself against external CBRN threats? To effectively evaluate the EU's defence capabilities concerning CBRN, the issue will be approached comprehensively starting with an examination of the historical and institutional background of the CBRN-sphere. Secondly, a comprehensive CBRN defence strategy includes both civilian and military preparedness. These two major components will be outlined, discussed, and analysed in their respective chapters. Finally, the future considerations of CBRN defence are examined in the last section.

CHAPTER I: HISTORICAL BACKGROUND



National Museum of Health and Medicine.

American soldiers wearing gas masks during World War One (1918).

Both of the world wars are infamous for the unscrupulous utilisation of cutting-edge technologies of the time. The First World War introduced an era of chemical warfare and simultaneously exposed the vulnerability of the globalised world to a pandemic. The Spanish Flu spread globally with disquieting rapidity, and estimates of the casualties vary between 20 and 50 million dead (Trilla, Trilla, & Daer, 2008). Almost three decades later,

the Second World War reached its harrowing climax with the incineration of two Japanese cities, Hiroshima and Nagasaki, by atomic bombs. The Cold War-era, for its part, ushered in a mass paranoia, as people across the globe dreaded the not-too-distant likelihood of a nuclear holocaust – by the time the Soviet Union withered away in 1991, the US alone had produced over 70,000 nuclear bombs and warheads (Kinsella, 2018). The negative consequences of the CBRN-technologies in the 20th century are multitudinous and harrowing. They have forced decision-makers and citizens alike to consider the ramifications of the utilisation of such technologies.

The nature of CBRN-threats has evolved throughout history and continues to do so. The technologies have been extensively exploited in the world wars. Still, in recent decades, the possibility of rogue states and terrorist groups that can employ such weaponry against civilians has increased. The European Parliament described CBRN as an “enduring threat” encompassing a wide range of events, “including naturally occurring disasters, accidental incidents at hazardous installations or during the transport of dangerous materials, as well as deliberate incidents, among which terrorist acts and state-sponsored uses.” (European Parliament, 2019). Recent years have displayed a concerning trend of increasingly deliberate CBRN-threats, which is a consequence of “scientific and technological advances, greater diffusion of technologies, easier dissemination of information and knowledge, and increasing flows of travellers and goods.” (Ibid.). As we have seen, during the 20th century, the technologies developed rapidly. Still, in the 21st century, the advances in CBRN can and will be exponential, as people streamline the processes with the help of increasingly competent artificial intelli-

gence and the expeditious spread of information. Therefore, the destructive potential that CBRN-technologies involve is omnipresent in the contemporary context.

Additionally, the accessibility of technologies has evolved significantly in the post-Soviet era. The latter half of the 20th century was dominated by bipolarity, the balance of power and assurances of mutual destruction. In contrast, the modern multipolar world has resulted in substantially more versatile threat perception. As states are losing the monopoly on CBRN-technology and weaponry, a black market has emerged in the distribution and selling of weapons of mass destruction, and the technical knowledge on how to weaponise CBRN-materials. Moreover, after the fall of the USSR, many post-Soviet biological and nuclear sites lack adequate safety measures, which enhances the security risks (Centre for Strategy & Evaluation Services, 2011, p. 2).

As it appears from the historical perspective, intentional CBRN-attacks occurred in situations of extreme instability. This trait is likely to dominate the European security environment in the upcoming decades. To begin with, the current COVID-19 pandemic has revealed the extent to which a virus can disrupt societies – an adversary deploying similar biological weapons can cripple the entire society and economy of the Union. Moreover, changes in Europe’s external environment have fundamentally changed the security posture of the EU. The crises that have battered the EU throughout the 2010s have far-reaching consequences that lead to ever-increasing instability in the region. Firstly, Russian annexation of the Crimean Peninsula in 2014 and the consequent war in Ukraine have profoundly deteriorated the relationship between the EU and Russia.

Moreover, the assertive foreign policies of the

authoritarian regimes in China and Russia further destabilise Europe's posture. Secondly, the war in Syria and the ensuing refugee crisis exposed the EU's vulnerability and internal discrepancies and divisions. Thirdly, the increasing isolationism of the United States has forced the EU to grasp its need to gain autonomy in terms of security and defence. All of the above-mentioned developments contribute to the deterioration of European security, each adding "layers of uncertainty" (European Parliament, 2019, p. 9). In such a conflict-prone environment, the adversary's discharge of CBRN-weapons to inflict maximum damage is likely.

To comprehend the contemporary CBRN-issues and debate, understanding the historical framework of the 20th century concerning these areas is essential. These issues permeate not only the defence and security sphere, but also have a profound impact on social, economic, and political life. The capacity for mass destruction with long-term consequences (e.g. exposure to radiation) when utilising CBRN-weaponry is remarkable. Therefore, the European Union has taken significant steps to enhance preparedness in the face of a possible CBRN-security risk. The European Commission acknowledges the broad scope of the areas that might be affected by a possible CBRN-threat: "tackling CBRN risks requires a horizontal approach, cutting across diverse areas and actors such as law enforcement, emergency management, protection of critical infrastructure and public spaces, public



health, and the private sector." (Ibid, 2017, p. 4). Moreover, the Commission emphasises the importance of enhanced resilience of the EU's critical infrastructures, particularly with regards to nuclear plants and chemical facilities (ibid). The human-made disasters – whether intentionally or unintentionally unleashed – that occurred in the 20th century have set an alarming precedent, and the inherently transnational nature of such disasters has obligated the EU to undertake considerable efforts to contain possible CBRN-threats.

Evolving CBRN threat scenarios

So far, there have not been major CBRN terrorist attacks on EU soil. Still, the interest that terrorist groups display toward utilising CBRN is a source of constant concern in terms of global security. Al-Qaeda attempted to acquire and weaponise CBRN-materials unsuccessfully – partly due to the difficulties in obtaining the necessary materials, and partly due to the complexity of building a functional nuclear bomb (Rathore, 2016). The likelihood of a terrorist group succeeding in making a nuclear weapon is small, but the

use of radiological dispersion devices (RDDs) is far more attainable to such groups. Simply defined, RDD “is any device that causes the purposeful dissemination of radioactive material without a nuclear detonation.” (US Department of Health and Human Services, 2020). For instance, the so-called “dirty bombs” are a subcategory of RDDs. A dirty bomb is significantly inferior vis-à-vis a nuclear weapon in terms of life and property, but still, a disruptive weapon that can spread mass panic and radiologically contaminate even large areas (Rathore, 2016). In addition to the use of dirty bombs, non-state actors may be capable of utilising improvised nuclear devices (INDs).

The growing concern of terrorists’ access to CBRN technology was enhanced during the short-lived “caliphate” of Daesh in Syria when in 2014 a laptop containing thousands of files on the production of biological weaponry was seized (Ibid). Moreover, Daesh has “recruited an army of experts in chemistry, physics, and biology and computer science” (Ibid). Despite the practical eradication of Daesh in 2019, the threat scenario of an extremist terrorist group gaining access to CBRN-weaponry pertains.

Institutional framework

Due to the inherent capacity of mass-destruction of CBRN-threats and the increasing uncertainty of Europe’s security environment, new strategies and tactics are required “to adequately prevent, detect, respond to, and mitigate potential risks” (Martelli-

ni, Novossiolova, & Malizia, 2017). The birth of the CBRN-security paradigm is an example of such evolution in the approach to the threats earlier known as weapons of mass destruction (WMD). The redefining of WMDs as CBRN-threats in the wake of sarin gas attacks in Japan in 1994 and 1995, the 9/11 attacks, and anthrax mail attacks in the US, allow a more thorough approach in combating such threats. As pointed out by Martellini et al., the CBRN-security paradigm “is underpinned by a comprehensive set of measures, policies, and practices aimed at addressing risks related to CBRN knowledge and materials, regardless of whether the origins of such risks are naturally occurring events, accidents, or acts of deliberate misuse.” (Ibid, 2017).

Before 2003, the EU lacked a clearly defined non-proliferation policy in terms of CBRN-threats (Zwolski, 2011, p. 478). Nevertheless, with the adoption of the European Security Strategy (ESS) in 2003, the EU took significant steps to become a global security actor and stated that proliferation posed the major threat to Europe. Throughout the first decade of the 21st century, the proliferation of CBRN-systems continued to be the main threat to European security, as stated in the



2009 ESS publication: “Proliferation by both states and terrorists was identified in the ESS as ‘potentially the greatest threat to EU security’. That risk has increased in the last five years, bringing the multilateral framework under pressure.” (Council of the European Union, 2009, p. 11).

The multilateral framework initiatives adopted in the early 2000s are numerous. On an EU-level, the first steps to counter the CBRN-threats were taken in 2001 in Ghent, when the establishment of a “Programme to improve cooperation in the European Union for preventing and limiting the consequences of chemical, biological, radiological or nuclear terrorist threats” was agreed upon (Commission of the European Communities, 2009, p. 4). Consequently, in the early 2000s, combating CBRN-threats was ingrained in the European Counter-Terrorism Strategy, the EU Strategy against the proliferation of weapons of mass destruction and their means of delivery, and in the Council and Commission’s EU Solidarity Programme (ibid).

A landmark in the development of the CBRN-security paradigm was the establishment of the EU CBRN Centres of Excel-

lence Initiative in 2010. Currently, 61 partner countries are participating in the CoE-initiative globally, with the primary aim “to address the need to strengthen the institutional capacity of Partner Countries to mitigate CBRN risks through, *inter alia*, enhancing local ownership, fostering local expertise, and promoting long-term sustainability” (Martellini, Novosiolova, & Malizia, 2017). The initiative, although led by European Commission’s Directorate-General for International Cooperation and Development, closely cooperates with multiple supranational bodies, such as the European External Action Service, Joint Research Centre, and UN’s Interregional Crime and Justice Research Institute (CBRN-COE, n.d.).

The multifaceted approach to CBRN is vital due to the combination of swift scientific and technological advances and the globalised and interconnected character of the modern world, which enables the CBRN landscape to evolve rapidly. Therefore, the EU must continue promoting dialogue, interaction, and cooperation between nations across the globe to produce a holistic and comprehensive shared approach to CBRN-threats.

CHAPTER II: EU CIVIL PREPAREDNESS AGAINST CBRN THREATS

The EU’s civilian security policy has changed tremendously since the foundation of the European Economic Community (EEC) in 1957. As an organisation initially centred around economic cooperation, the Treaty of Rome made no references to the Union’s current security policy or any kind of institutional cooperation “in terms of civil protection or collective crisis management” (Casa-

bona, 2019, p. 2). The process of building a common strategy to deal with natural or human-made disasters in the EU only gained prominence after the Treaty of Maastricht in 1992. The formation of the European Union enabled a swift expansion of cooperation beyond the economic sphere based on three pillars which also included security, foreign affairs and defence.

Several new Directorates-General (DG) have been created through which the EU has increased its preparedness against CBRN threats. In the domain of crisis management, the Treaty of Maastricht enabled the establishment of the European Community Humanitarian Aid Office which has developed the EU's civilian crisis management mechanisms to respond to natural and human-made disasters including CBRN threats. This institution is nowadays known as the DG for European Civil Protection and Humanitarian Aid Operations (ECHO). The treaty of Maastricht also laid the foundation of the DG for International Cooperation and Development DG (DEVCO) which has developed an ambitious project to enhance CBRN protection worldwide in the form of the EU CBRN Center of Excellence (CoE). Regarding domestic security, the DG for Migration and Home Affairs (HOME) developed two Actions plans (2010-2015 and 2017) relating to CBRN

preparedness and counter-terrorism efforts. Overall, these initiatives seek to enhance “coordination and information sharing mechanisms, capacity building, joint exercises, and sharing of best practices mechanisms” (Rofey, 2019, p. 15). Moreover, it should be noted that the EU is a responder of last resort when local resources have been used since the responsibility to protect still rests with national governments (Ibid. p. 25).

The complexity arising from CBRN threats entails that a horizontal approach encompassing numerous actors is required to enhance the EU's resilience against CBRN threats. These actors include Member States, the Council Presidency and the Council, the Commission, the EEAS, relevant EU agencies depending on the nature of the event, experts from Member States or international organisations. Various aspects need to be taken into account such as “law enforcement, emergency management, protection of critical infra-



structure and public spaces, public health, and the private sector” (The Commission of the European Union, Action Plan to enhance preparedness against CBRN security risks, 2017).

DG ECHO - THE EU'S Civil Protection Mechanism

Under the supervision of DG ECHO, the EU's Civil Protection Mechanism (UCPM) is the primary response system of the EU. It consists of the Emergency Response Coordination Centre (ERCC) and the European Emergency Response Capacity (EERC). The UCPM was created “to facilitate reinforced cooperation in civil protection assistance interventions” (Civil Protection Mechanism, 2007) to make emergency response more reliable and efficient. The UCPM is “the main legal instrument for disaster relief interventions inside and outside the EU, facilitating cooperation, applying to both natural and man-made disasters, including acts of terrorism” (Roffey, p. 25).

The overall objective of the EU Civil Protection Mechanism is “to strengthen cooperation between the EU Member States, 6 Participating States and the UK during the transition period, in the field of civil protection, to improve prevention, preparedness and response to disasters” by having the EU coordinated and finance transport and/or operation at least 75% of the costs (EU Civil Protection Mechanism, 2020).

Regardless of the incident's nature, the UCPM is the cornerstone of the EU's response architecture and provides its operational framework (EU Policy Department for External Relations, 2019, p. 9). Any country in the world, but also the United Nations and its agencies or a relevant international organ-

isation, can request the EU Civil Protection Mechanism for help (EU Civil Protection Mechanism, 2020).

Since its inception in 2001, The European Union Solidarity Fund is “an instrument financing operations in the field of Mechanism” (Glossary of summaries: Solidarity Clause, 2020) which has responded to over 330 requests for the assistance inside and outside the EU (EU Civil Protection Mechanism, 2020). In 2019, through the upgraded ECPM, ‘rescue reserve’ was created as a new emergency response reserve of additional capacities that “includes firefighting planes and helicopters, medical evacuation capacities and a medical team trained for setting up a field hospital” as well as medical stockpiles in light of the Covid-19 pandemic (EU Civil Protection Mechanism, 2020).

The European Emergency Coordination Centre (ERCC): Coordination Tool

The Emergency Response Coordination Centre (ERCC) operated by Directorate-General for Humanitarian Aid and Civil Protection (DG ECHO) since 2013 acts as the main 24/7 coordination and support platform for all crises under the EUCPM, the Solidarity Clause and the EU Integrated Political Crisis Response (IPCR) and plays a pivotal role in coordinating the EU response from the start (Roffey, p. 26).

The ERCC monitors events around the globe 24/7 and ensures rapid deployment of emergency support through a direct link with national civil protection authorities. Specialised teams and equipment, such as forest firefighting planes, search and rescue, and medical teams can be mobilised at short notice for deployments inside and outside Europe (EU Civil Protection Mechanism, 2020).

The ERCC “collects and analyses real-time information on disasters,” observers hazards, prepares plans for the distribution of experts, teams and equipment, and works with participating states to map available assets and coordinates the EU’s disaster response efforts by matching offers of assistance to the needs of the disaster-stricken country (Roffey, p. 25). Any country inside or outside the EU “when the scale of an emergency overwhelms its response capabilities (EU Civil Protection Mechanism, 2020), can call on for assistance through the ERCC. Following a request for assistance through the ECPM, the ERCC mobilises assistance or expertise from the ‘voluntary pool’ which consists of various pools (European Commission, 2015).

European Civil Protection Pool

Established in 2013, the Pool brings together resources from 24 Member States and Participating States and over 110 specialised response teams, ready for deployment to a disaster zone at short notice. This pool improves the planning and coordination of response activities at a European and a national level, which enables a faster and more reliable European response to disasters. These resources can be rescue or medical teams, experts, specialised equipment or transportation. Whenever a disaster strikes and a request for assistance via the UCPM is received, assistance is allocated from this Pool (European Civil Protection Pool, 2020).

Established in 2016 in the wake of the Ebola outbreak, the European Medical Corps (EMC) is part of the ECPP. It consists of all the medical response capacities committed by Member States to provide “a much faster and more efficient EU response to health crises when they occur” (European Commission, 2016). These teams include emergency medi-

cal and public health teams, mobile biosafety laboratories, medical evacuation capacities, medical assessment and coordination experts and logistical support teams (Roffey, p. 26).

The European Emergency Response Capacity (EERC): voluntary pool

Within the framework of the EUCPM, Member States and the European Commission created the European Emergency Response Capacity (EERC) in October 2014 which consists of “a voluntary pool of assets pre-committed by Member States for immediate deployment” (Nexon & Wachtel, 2019) (European Commission, 2015).

European Council - The EU Integrated Political Crises Response Capabilities (IPCRC)

“Rapid and coordinated decision-making at EU political level for such major and complex crises is ensured by the Integrated Political Crisis Response arrangements (IPCRC), designed to display more flexibility and scalability, and to build on existing EU resources.” (Nexon & Wachtel, 2019)

The management of a crisis at European level, including a CBRN terrorist incident, would involve a variety of instruments and stakeholders that may be involved to respond to a crisis requires an efficient coordination mechanism (EU Policy Department for External Relations, 2019, pp. 23-24).

Building on the EU Emergency and Crisis Coordination Arrangements (CCA) adopted in 2006 by the Council (EU Policy Department for External Relations, 2019, pp. 23-24), the EU Integrated Political Crisis Response Capabilities (IPCRC) is a further developed crisis coordination arrangement that

allows the EU to take rapid political decisions when facing major crises since approved in June 2013.

The IPCRC defines rules for interactions between EU institutions and affected MS (Roffey, p. 27) and is tasked with ensuring rapid and coordinated decision-making at EU political level during major and complex crises, which most certainly include large-scale CBRN terrorist attacks (EU Policy Department for External Relations, pp. 23-24).

This mechanism can be activated either by the presidency of the Council or with the invocation of the solidarity clause by an affected Member State. Taking into account the internal-external security nexus, it can be triggered for responding to crises both within and outside the European Union (EU Policy Department for External Relations, 2019, pp. 23-24).

In this framework, an Integrated Situational Awareness and Analysis (ISAA) capability supports the Presidency's and Council's decision-making. The EU Integrated Crisis Management Arrangement (EU-ICMA) facilitates practical cooperation between MS for all types of disasters (Roffey, p. 27).

DG HOME - Action Plans and the CBRN Resilience Program 2010-2015 Action Plan

The EU developed the 2010-2015 and 2017 Action Plan within the context of CBRN incidents such as the Iraq chlorine attacks (2006 and 2007), the Fukushima Daiichi nuclear accident (2011), and the Ebola crisis (2014-2016) and various others.

The EU adopted a CBRN Action Plan as an “apolitical commitment” (The EU CBRN Action Plan, 2009, p. 9) in 2009 based on a report by the CBRN Task Force (Council of

the European Union, 2009) to contribute to the implementation of the EU Counter-Terrorism Strategy (Roffey, p. 22). DG Home Affairs is responsible for the overall coordination of implementation.

Based on an all-hazard approach, the BRN Action Plan's overall goal is to spread good practices, strengthen interoperability and reduce the threat of, and the potential damage from, CBRN incidents of accidental, natural and malevolent origin, including “acts of terrorism” (The EU CBRN Action Plan, 2009, p. 2). It aims to prevent terrorists from obtaining CBRN materials to protect their people and vulnerable infrastructures (Chatfield, 2018, p. 23). It designates the ways to recover after CBRN incidents as quickly as possible” (Roffey, p. 22). Although, it intended to reinforce interoperability between the Members but not covered cooperation between militaries and vital third countries. (Action Plan to enhance preparedness against CBRN security risks, 2017)

In 2012, a comprehensive Progress Report on the Implementation of the EU CBRN Action Plan (Progress Report, 2012) stressing the “uneven” implementation of the plan across Member States was released. During the same year, Council concluded “the need to focus on and prioritise further common efforts to enhance the security of production, storage, handling and transportation of high-risk CBRN and E materials...” and “...to use the EU Chemical, Biological, Radiological and Nuclear Action Plan, and the Action Plan on Enhancing the Security of Explosives, as a foundation for creating a revised policy...” (The Commission of the European Union, 2012, pp. 5-6)

In 2014, the Communication of the European Commission on a new approach to the detection and mitigation of CBRNE risks at

EU level (The Commission of the European Union, 2014) stated that it would be essential to focus on the development of a more strategic and overarching approach to CBRN policies in the longer run (Chatfield, p. 22) and a robust, better designed, and proportionate strategy to anticipate and deter future CBRNE risks at EU level is needed (Roffey, 2019, p. 24).

2017 Action Plan

The 2017 Action Plan highlighted the need to deepen cooperation with other partners “such as military and key third countries” which were not covered by the previous CBRN Action Plan (2017, Action Plan). Considering current challenges, the use of EU and Member States’ military means is a necessity for strengthening prevention capacities (EU Policy Department for External Relations, 2019, p. 16).

In the same vein, the European Commission issued the new ‘Action Plan’ (The Commission of the European Union, 2017) on 18 October 2017. The Communication indicates that the EU directive on combating terrorism, with obligations on Member States to provide medical assistance as a specific EU priority action and policy commitment to all victims of terrorism, has provided a legislative base which will underpin the action plan. Previously, this policy area was considered to be the responsibility of national governments (Chatfield, p. 19).

The 2017 Action Plan which builds upon the 2010–2015 CBRN Action Plan (The Commission of the European Union, 2017) aims to create an EU CBRN Security Network to enhance knowledge of CBRN risks coming from inside and outside the EU, develop cooperation and coordination at the operational level, as well as facilitate civil-military cooperation in mutually beneficial areas. Many of



the proposed actions pursue an all-hazards approach and will also contribute to improving preparedness for any large scale CBRN incidents unconnected to terrorism (Roffey, p. 24).

The CBRN Resilience Program

As part of the implementation of the CBRN Action Plan, the European Commission launched a CBRN Resilience Programme in civil protection to support preparedness and enhance effective coordination in response to CBRN incidents.

The main objectives of the EU CBRN Resilience Programme are to streamline different strands of work undertaken under the EU-CPM. This is achieved by improved linkages between the first responders, including civil protection, health, and law enforcement activities in the field of CBRN, and to tackle identified gaps (Roffey, p. 26).

DG DEVCO - The EU'S CBRN Center of Excellence

In practice, EU support is provided to implement a wide range of CBRN Risk Mitigation activities including needs and risk assessments, national and regional action plans, training, and real-time (including cross-border) field exercise (EU CBRN CoE fights against COVID-19, 2020)

Launched in 2010, the European Union (EU) Chemical, Biological, Radiological, and Nuclear Risk Mitigation Centres of Excellence (CBRN CoE) that Partner countries can join on-demand and on a voluntary basis is an initiative of the EU implemented jointly by the European Commission's Joint Research Centre (JRC) and the United Nations Inter-regional Crime and Justice Research Institute

(UNICRI), under the aegis of the EU Institutions (EU CBRN Risk Mitigation CoE Initiative, 2013).

The aim consists in “mitigating CBRN risks of criminal, accidental or natural origin by promoting a coherent policy, improving coordination and preparedness at national and regional levels and by offering a comprehensive approach covering legal, scientific, enforcement and technical issues. It addresses regional CBRN needs through tailored projects. It aims at strengthening policies, institutional capacity building at both regional and national levels as well as a regional culture of safety and security.” (EU CBRN Risk Mitigation CoE Initiative, 2013)

It is currently the “EU's largest civilian external security programme and is financed through the Instrument contributing to Stability and Peace with a budget of €130 million and 82 CBRN defence-related projects for the years 2014-2020” (Reich, 2020, p. 18) (Dirk Neumeister, Aurelia Petliza, Bettina Jakobsen, Michiel Sweerts, 2018, p. 5) and is managed by the Directorate-General for International Cooperation and Development (DG DEVCO) (Martellini, Novossiolova, & Malizia, 2017, p. 7).

A 2018 report drafted by the European Court of Auditors “examined whether the EU CBRN Initiative with a regional focused perspective had mitigated the CBRN threat, concluding that it did but that many challenges remain” (Dirk Neumeister, Aurelia Petliza, Bettina Jakobsen, Michiel Sweerts, 2018, p.5). The regional cooperation the initiative seeks to foster has started, say the auditors, but there is still insufficient interaction between partner countries, as they wish to address national needs first.” (European Court of Auditors, 2018)



Marine Corps photo by Lance Cpl. Demetrius Morgan.

A Marine with the 11th Marine Expeditionary Unit participates in Chemical, Biological, Radiological, Nuclear familiarization training.

CHAPTER III: EU MILITARY PREPAREDNESS AGAINST CBRN THREATS

The EU's defence policy has changed dramatically in the past decade since the Treaty of Maastricht and especially the Treaty of Lisbon. The Treaty of Maastricht enabled the establishment of a Common Foreign and Security Policy (CFSP) which was amended during the Treaty of Amsterdam and the Treaty of Lisbon thereby establishing the European External Action Service (EEAS) in 2009. The CFSP also laid the foundation for the establishment of the European Defence Agency (EDA) in 2004. As the organisation responsible for deepening military capabilities of the EU, the EDA has supported to an outstanding extent research and development (R&D)

against CBRN threats. The Treaty of Lisbon indeed strengthened military cooperation by laying the foundation for deeper integration based on Article 42.6 which allows Member States to establish a “permanent structured cooperation within the Union framework”, Article 42.7 which introduces a mutual defence clause and Article 222 which calls on Member States to “act jointly in a spirit of solidarity if a Member State is the object of a terrorist attack or the victim of a natural or man-made disaster” (European Council, 2009).

This has led to the creation of the Permanent Structured Cooperation (PESCO) in 2017, which is responsible for creating the nucleus

of the Union's armed forces. Hence, as a young organisation, PESCO has made inroads in the field of CBRN defence only recently.

The European Defence Agency (EDA)

While the EU does not have at its disposal its military command structure regarding CBRN threats, Member States have been cooperating extensively in R&D and most recently through PESCO. The establishment of the EDA has enabled the pursuit of R&D on a European level in the field of CBRN defence systems which are interoperable by design and can be acquired by all Member States.

In 2011, a European Framework Cooperation (EFC) letter was signed between the Commission and the EDA setting-up a CBRN Joint Investment Programme (JIP). The JIP is a centrally managed budget funded by all contributing Member States to the tune of €12 million. The JIP has invested in various R&D programs, including CBRN detection systems, improved decontamination equipment, and next-generation protective gear. Since its inception, 14 projects have been finalised (European Defence Agency, 2011) (European Defence Agency, 2019a)[1]. Furthermore, the EDA launched a CBRN Capability Technology Area (CapTech) program which seeks to strengthen European armed forces' capability to safely operate in CBRN environments by identifying current capability gaps and helping find technological solutions (European Defence Agency, 2019b).

Similarly, EU Member states cooperate through PESCO. The current projects include a CBRN Surveillance as a Service (SaaS) project which aims to “establish a persistent and distributed manned-unmanned sensor network consisting of Unmanned Aerial System (UAS) and Unmanned Ground Systems

(UGS) that will be interoperable with legacy systems to provide a Recognised CBRN Picture to augment existing Common Operational Pictures used for EU missions and operations” (European Defence Agency, 2019c). Next to that there is a CBRN training range project (Permanent Structured Cooperation, 2020) and an “Autonomous Drone Services in the CBRNe operations” (AUDROS) project. Other civilian projects sponsored by the EU include COSMIC which develops sensors to identify CBRN threats in containers (COSMIC, 2020). Finally, although EU's militaries do not cooperate in the field of CBRN on a European level outside of the scope of NATO, the Commission has hinted its desire to strengthen military cooperation. In the Commission's 2017 Action Plan, it highlighted the need “to develop cooperation with other partners not covered by the previous CBRN Action Plan, such as military and key third countries” (European Commission, 2017). As of now, however, EU military cooperation in the field of CBRN remains to be seen.

NATO's CBRN Task Force

Military cooperation in the field of CBRN relies primarily on NATO's Combined Joint Chemical, Biological, Radiological and Nuclear Defence Task Force which is under the strategic command of the Supreme Allied Commander Europe (SACEUR). This task force consists of the CBRN Joint Assessment Team and the CBRN Defence Battalion which is specifically trained and equipped to carry out missions in armed conflict and crises, in support of civilian authorities. The battalion includes a Deployable CBRN Analytical Laboratory, a Multirole Exploitation and Reconnaissance Team, and an Aerial Ra-

biological Survey capability. NATO's CBRN Task Force can carry out the following missions: reconnaissance and monitoring operation, sampling and identification of biological, chemical, and radiological agents (SIBCRA), CBRN assessments, CBRN hazard management operations. The battalion-level structure is composed of personnel from several NATO countries, on stand-by for 12-month rotations. NATO encourages member states

Similar to the NATO Response Force (NRF), dedicated personnel are based in their countries, coming together for training and deployment (NATO, 2020a). Although the EU currently does not have its own autonomous CBRN military command structure, working with NATO confers more comprehensive advantages and a higher degree of protection that EU Member States otherwise would not have.



EU-NATO Military Cooperation in CBRN

Cooperation with NATO remains the EU's top priority. Within the framework of EU-NATO collaboration and the strengthening of trans-Atlantic relations, both organisations signed the Warsaw Joint Declaration in 2016. The Joint Declaration called for the development of "coherent, complementary and interoperable

defence capabilities to generate economies of scale and render their use more efficient. For instance, within this framework, Germany and the Benelux countries have been cooperating since 2016 in a multinational CBRN battalion. This battalion enables the joint formation and training of CBRN specialists (Flamant & Parrein, 2016).

Moreover, the Allied Command Transformation (ACT) provides evaluation standards, supports training and determines future CBRN defence requirements and capabilities. The ACT may also include personnel and CBRN defence assets from partner countries.

defence capabilities of EU Member States and NATO Allies, as well as multilateral projects" (European Council, 2016). Two years later, another Joint Declaration was signed where the EU and NATO called for more progress in four critical areas, including resilience to CBRN related risks. In light of this Joint Declaration, NATO and the EU have been cooperating in the field of training and R&D. Since 2017, NATO's Joint CBRN Defence CoE in Vyskov (Czech Republic) and DG DEVCO's CBRN Risk Mitigation CoE have been cooperating on training programs and R&D (European Council, Euro-

pean Commission, NATO, 2018). In 2019, NATO's CBRN CoE cooperated with several EU organisations and projects such as the EU Military Staff, DG HOME Community of Users (CoU) on Secure, Safe and Resilient Societies project, and PESCO's R&D in the field of 'Surveillance as a Service (SaaS). In 2020, NATO's CBRN CoE cooperated again

by providing a Mobile Training Solution to Morocco in support of DG DEVCO (NATO, 2020b). Despite EU-NATO cooperation, the 2018 Joint Declaration clearly states nonetheless that NATO will continue to fulfil its "essential role as the cornerstone of collective defence" (European Council, 2018).

CHAPTER IV: FUTURE CONSIDERATIONS

In her opening speech at the annual meeting of the European Union CBRN Risk Mitigation Centres of Excellence Henriette Geiger stated: "*We are facing challenges today that go beyond national borders and cannot be tackled alone. This is true for cooperation on CBRN matters, as witnessed by recent CBRN attacks*

and events in Europe, its neighbouring countries and use of chemical weapons in Syria, but also by the re-emergence of epidemic diseases like Ebola in Africa, or by the increased devastating effects of natural disasters and climate disorders" (2019). Geiger's words echo what many military strategists have asserted for many years,



that the threat posed by CBRN events will continue to grow in scope and likelihood. The current COVID-19 pandemic illustrates how truly devastating and disruptive a CBRN event can be. It has the potential to transform society and how European militaries operate radically. Therefore, it is imperative that European armies not only augment their current defence mechanisms but also develop new and modern capabilities to guard against future threats. Preparing for future defence against CBRN events requires forethought, planning, and innovation. As the rise, institutions that govern, and the importance of military interoperability have all been addressed thus far. It is imperative to examine the future of CBRN defence in Europe. This section will address how European militaries are preparing for potential CBRN events from both the strategic planning as well as the hardware and technological perspectives.

Challenges to EU preparedness

It is imperative for the future of CBRN defence that European militaries predict how emerging technologies will be misused instead of merely reacting to an incident. In 2015 Klaus Schwab declared that the world is witnessing the beginning of the Fourth Industrial Revolution as emerging technologies such as drones, the dark web, autonomous vehicles and robotics become more and more integrated into modern society (Schwab, 2015). While these technologies have allowed for modern societies and militaries to expand their operations and improve their capabilities, they also improve the ease of access and use of biological and autonomous weapons for small groups of actors that wish to cause mass harm. In addition to drones and dark web technology, malware, 3D printing, and

synthetic biology are emerging technologies that warrant special attention for CBRN defence planning (Koblentz, 2020, p.178). These technologies are especially impactful because they can be utilised for peaceful or harmful purposes, are powerful enough to transform modern warfare, are easier to duplicate and share due to their digital nature, are easily diffused due to globalisation, are decentralised to a broad group of actors, are more accessible with less training required to utilise the technologies, and have genuinely become do-it-yourself and nearly impossible for law enforcement and militaries to monitor (Ibid, p.184-186). Crucially, the European Union, as well as its allies, can rely on the United Nations Resolution 1540 which requires states to strengthen border controls, domestic controls and export controls to prevent non-state actors from acquiring CBRN weapons and related materials (Ibid, p.188). Adherence to the resolution as well as continuing to draw upon information from industry experts and the scientific community is imperative to ensure future challenges are always met with the latest defensive technologies. Militaries must have adequate resources to identify, exploit and counter any potential CBRN threat emerging from new technologies and the proliferation thereof.

It is not only the ever enhancing CBRN technological advances that threaten European security, but it is also the increased proliferation and continual easing of access to CBRN weapons. Events within the last decade have shown that the threat from traditional state-sponsored CBRN may now be overshadowed by the acquisition and use of CBRN material by violent non-state actors. The possibility of terrorists and violent non-state actors acquiring and utilising weapons of mass destruction, as well as chemical or



Airmen from the 179th Airlift Wing, Mansfield, Ohio, conduct Ability to Survive and Operate, or ATSO training course, June 5, 2018.

biological weapons is perhaps even more precarious than possession by traditional states (Ackerman & Jacome, 2018). Although there has never been an undisputed CBRN attack by a non-state actor, the threat remains, and since 1990 there have been over 500 recorded cases of non-state actors pursuing or attempting to use CBRN weapons (Ibid.). Therefore, European militaries must prevent non-state violent actors from manufacturing, obtaining or transporting potentially destructive CBRN material. Potentially vulnerable points of entry for CBRN material into Europe have been identified at the European Union's outermost borders as well as at the harbours. As 85% of the European Union's international borders are coastlines along with six bodies of water with 1,500 seaports that take over 600,000

ship calls per year, the potential for sea-based attacks or CBRN material hidden in cargo containers is a growing concern for EU security officials (Carpenter, 2012, p.1). The harbours, as well as instability in the European Union's neighbourhood, results in uncertainty which requires constant defensive appraising and awareness.

Strategic Planning

A 2018 investigation by the European Court of Auditors identified shortcomings in the European Union's CBRN defence planning. Specifically, the report highlighted that while the CBRN Centres of Excellence is a useful tool to mitigate CBRN threats to the European Union, many challenges remain. Notably,

the Commission should embed systematic risk assessments into the need's assessment and national action plans, identify possible synergies and other sources of available funding, increase accountability and visibility of activities, and allow easier access of information concerning the initiatives (European Court of Auditors, 2018, p.12-14). There is a lot of room for improvement and engagement with CBRN defence and planning capabilities.

Any future considerations for CBRN defence begin with a plan. CBRN defence planning is a “continuous, dynamic and complex process of analysing and assessing CBRN hazards, risks and threats, enemy capabilities and intentions, the vulnerability of own forces, operational environment and mission variables” (Herciu, 2018, p.43). A crucial component of the planning procedure is threat assessments. These assessments allow a nation's leadership to better understand the situation and layout an effective means of countering any potentially devastating effects and apply suitable measures to oppose any CBRN event. The assessments indicate the most significant risks facing CBRN defence in Europe, the international context in which the assessment is produced, potential scenarios that may require the involvement of military capabilities, as well as an acknowledgement of potential shortfalls and operational challenges which must be overcome. A 2019 Worldwide threat assessment carried out by the US Intelligence Community concluded that the threat from weapons of mass destruction, chemical weapons, and biological weapons is likely to increase in the coming years. This is due to the proliferation of attacks that involve chemical weapons agents, toxic industrial chemicals and nerve agents. Furthermore, threats from biological weapons are more diverse, and their

development is made easier by dual-use technologies (Coats, 2019, p.8).

Additionally, drills and joint operational training provide European militaries with the preparation and rehearsals necessary to reinforce the military teams in the implementation of the CBRN response doctrine (Nexon & Wachtel, p.14). Joint training exercises and drills complement a robust and well-developed threat assessment and research and development program. Previously in 2016, Italy organised its first non-conventional drills, including all entities involved in responding to a CBRN event (Rossodivita et al., 2017, p.32). Furthermore, the *Integrated Strategy for CBRN Threat Identification and Emergency Response* (TIER), aimed at developing a comprehensive and integrated national CBRN strategy, places training at the heart of their expected results and deliverables. The strategy calls for two CBRN training events related to different scenarios as well as a training methodology for emergency response (CRIMED-IM, 2017). This program is important in creating and evaluating the effectiveness of an integrated European response to any CBRN events and is well placed on preparing European countries for potential CBRN events.

Within the European Union, there is an indication that planning for CBRN events has become a significant priority in recent years, due in part to the precedent of CBRN events taking place around the world as well as the ever-uncertain international environment in which modern militaries operate. There have been threat assessments carried out at the European level by the European Parliament and at the national level by individual states. Examples include the *EU preparedness against CBRN weapons workshop hosted by the European Parliament in 2019*, *The CBRN Defence Management System in the Romanian Armed*

Forces 2018, CBRN Integrated Response Italy 2014, as well as CBRN reports for nine more European countries (Bonfati et al., 2014). This dual-layer of strategic planning in Europe is important because while crisis management falls under the purview of national governments, any large scale CBRN incident may require mutual assistance and solidarity (Nexon & Wachtel, 2019, p.24). Therefore, planning and threat assessments are critical to the future of CBRN defence in Europe and need constant updating and enhancements.

The future is interoperability

Crucially, interoperability and cooperation are at the heart of every threat assessment and a strategic plan carried out by European nations. European countries recognise that

the future of CBRN defence depends on the cooperation and support of allies within the borders of the European Union and other international agreements. Recognition of this reality allows for European nations to take a proactive approach towards CBRN defence. In 2017, the European Commission released its *'Action Plan to enhance preparedness against chemical, biological, radiological and nuclear security risks'*. In the plan, there is an acknowledgement that any CBRN event, however small in scale, can cause considerable impact and damage to European societies. The action plan highlighted the need for "closer cooperation at EU level to learn from each other, pooling expertise and assets and exploit synergies across borders" (European Commission, 2017, p.3). The action plan outlines four key objectives for preparing the European Union



for the future of CBRN defence: reducing the accessibility of CBRN materials; Ensuring a more robust preparedness for and response to CBRN security incidents; Building stronger internal-external links in CBRN security with key regional and international EU partners; Enhancing our knowledge of CBRN risks (Ibid, p.11).

It is also important to note that European militaries cooperate with international institutions and law enforcement agencies as well. The cooperation between European nations and these international organisations such as Interpol, the UN Office of Counterterrorism, Organization for the Prohibition of Chemical Weapons, and even the Federal Bureau of Investigation provides European militaries with allies in the defence against CBRN events and the pooling of resources and expertise.

The Covid-19 crisis has exacerbated the need and desire for a well-developed European Union plan of action and strategy. The rapid spread of the Covid-19 virus and the ensuing crisis has demonstrated the wide-reaching and devastating effects with which a CBRN event can disrupt countries in Europe. It has laid bare the vulnerability of defensive supply chains, has the potential to deepen existing conflicts and crises, and has uncovered vulnerabilities in European security and defence. At the same time, the crisis has underlined the crucial importance of utilising military assets to support civilian authorities. For European defence, according to Josep Borrell: “European solidarity must remain our guiding principle. Our responses need to be quick and flexible: with better coordination of all actors working for our security both within and beyond our borders, for example, or by making our missions and operations even more adaptable to changing circumstances” (2020). Throughout the pandemic, armed forces

throughout Europe have worked tirelessly to help alleviate the strain on civilian operations. ‘Operation Balmis’ in Spain in which the armed forces helped to perform medical checks on homeless people and provide mobile hospitals, as well as ‘Operation Resilience’ in Germany in which the Bundeswehr delivered food, and medical supplies are only a couple of examples in Europe of the military aiding the response (European Defence Matters, 2020, p.12). This display of interoperability is crucial because, on the one hand, it has displayed the importance of including militaries in CBRN events. On the other hand, it can help to brace European armed forces for future collaborative projects in the CBRN defence sector. The lessons learned and experience gained helps to prepare armed forces for a myriad of events in which interoperability within the armed forces as well with civilian actors is crucial.

Research and Development

Technological advances have been a double-edged sword in the field of CBRN defence. On the one hand, technology presents new and more diverse CBRN threats to both military and civilian populations. The technology exists which allows for the weaponisation of bacteria and viruses (biological weapons), chemical weapons, and the dissipation of radiological material to cause intentional harm. Advances in technology have reduced or eliminated the barriers to entry for any non-state or unconventional actor who desires to weaponise CBRN technology. On the other hand, it offers militaries new methods and competencies to defend and protect against CBRN events. According to Claude Wachtel, research and development programs are pivotal to CBRN defence in

Europe. These advances can come from many different facets of society, including industrial companies, think-tanks, research institutions, and civilian and military end-users (Nexon & Wachtel, p.15).

An example of European research and development being employed in the field of CBRN defence is The European Defence Agency and European Space Agency's '*Autonomous Drone Services in the CBRNe Operations*' or simply 'AUDROS'. The project combines satellite-based services with Remotely Piloted Aircraft Systems which will allow defence forces and first responders to quickly, accurately, and safely identify and respond to CBRN threats (European Defence Matters, 2020, p.39). The Czech-Polish consortium which developed the project had the ultimate goal of enabling a fully autonomous, beyond visual line of sight. These drone operations are capable of mapping radiation sources, chemical warfare agents, or toxic industrial pollution (Ibid, p. 40). Technologies such as AUDROS are critical to European defence due to the cross-over links to other EDA initiatives and research, the overarching broader aims of counterterrorism, infrastructure assurance, and CBRN

protection capabilities for European military users (Ibid, p.41).

Furthermore, in 2019 the European Defence Agency supported the development of a PESCO project which seeks to guarantee European CBRN defence well into the future. Known as the CBRN as a Service (CBRN SaaS), the project aims to maximise the use of technological advances in the field of unmanned ground systems and aerial drones. Both of these technologies will enable real-time CBRN surveillance, detection, and incident management capabilities for both civilian and military means (European Defence Agency, 2019). The Austrian-led initiative will be fully interoperable with legacy systems and seeks to mount CBRN sensors to collect information which when combined with existing communication and data networks enhances CBRN defence decision making and response (Ibid.). CBRN SaaS is slated to run until 2022 at which time the future of the project will be evaluated, and new technologies will be utilised to enhance further the service and operation of CBRN defence in Europe.

CONCLUSION

The threat posed by CBRN events has never been more apparent. The Covid-19 pandemic has laid bare how unprepared the world was to counter a biological event despite the growing awareness beforehand that such an event was not only likely but inevitable. This report has made clear that the nature of CBRN threats has evolved throughout history and does not merely entail a biological pandemic. There is

a need for a more coherent and harmonised defence framework within Europe to ensure a united front against any potential CBRN threat. Nefarious forces can and will develop a way to weaponise CBRN material to cause mass disruptions and panic in the world. Militarily, the European Union depends largely on NATO and the Combined Joint Chemical, Biological, Radiological and Nuclear De-

fence Task Force which is under the strategic command of the Supreme Allied Commander Europe (SACEUR). However, it is imperative that the European Union also focuses on developing effective defensive capabilities of its own.

Despite the numerous initiatives developed by the European Union regarding CBRN planning such as the action plans of 2010-2015 and 2017, at present CBRN defence remains largely fragmented and not harmonised within Europe. Planning, threat assessments, as well as research and development all play a crucial role in preparing for any potential CBRN event. Remaining current with emerging technologies provides a two-fold benefit. Firstly, it allows for the development of new defensive technologies to detect and deter any potential event. Second, it will enable Euro-

pean intelligence authorities to know what technologies are being exploited by violent third state actors who seek to undermine a potential weak point in European defence.

This report has indicated that as the European Union attains strategic autonomy, development of capabilities is crucial. Military preparedness at the European level against CBRN threats is still in its infancy, as cooperation and reliance on NATO is the preferred option to maintain mutual defence. While the ambition, technologies and desire to protect against potential CBRN threats is more significant than it has ever been before, it is crucial that the momentum gained thus far is maintained to ensure that Europe is well-positioned to defend against any future CBRN event.



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Created in 1953, the Finabel committee is the oldest military organisation for cooperation between European Armies: it was conceived as a forum for reflections, exchange studies, and proposals on common interest topics for the future of its members. Finabel, the only organisation at this level, strives at:

- Promoting interoperability and cooperation of armies, while seeking to bring together concepts, doctrines and procedures;
- Contributing to a common European understanding of land defence issues. Finabel focuses on doctrines, trainings, and the joint environment.

Finabel aims to be a multinational-, independent-, and apolitical actor for the European Armies of the EU Member States. The Finabel informal forum is based on consensus and equality of member states. Finabel favours fruitful contact among member states' officers and Chiefs of Staff in a spirit of open and mutual understanding via annual meetings.

Finabel contributes to reinforce interoperability among its member states in the framework of the North Atlantic Treaty Organisation (NATO), the EU, and *ad hoc* coalition; Finabel neither competes nor duplicates NATO or EU military structures but contributes to these organisations in its unique way. Initially focused on cooperation in armament's programmes, Finabel quickly shifted to the harmonisation of land doctrines. Consequently, before hoping to reach a shared capability approach and common equipment, a shared vision of force-engagement on the terrain should be obtained.

In the current setting, Finabel allows its member states to form Expert Task Groups for situations that require short-term solutions. In addition, Finabel is also a think tank that elaborates on current events concerning the operations of the land forces and provides comments by creating "Food for Thought papers" to address the topics. Finabel studies and Food for Thoughts are recommendations freely applied by its member, whose aim is to facilitate interoperability and improve the daily tasks of preparation, training, exercises, and engagement.



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