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# FIRST RUBRIC

## SECURITY AND DEFENSE ANALYSIS AND ASSESSMENTS

# The vital role of the Armed Forces in an unstable security reality

**Lieutenant General (Ret.) Dr. Pëllumb QAZIMI**

**Abstract.** *This paper addresses the necessity of armed forces in the context of modern security challenges and the evolving nature of contemporary conflicts, including global ones. By analyzing the concepts of security, war and peace in the post-Cold War period, it is emphasized that peace in the international reality is often relative and fragile, prompting the need for effective and sustainable instruments of defense. In this regard, the armed forces constitute an essential element not only for protecting national sovereignty and territorial integrity, but also for dealing with civil emergencies and contributing to the maintenance of international peace. Part of this discussion is also the case of Albania, where a realistic assessment of the security environment is required and the creation of a capable armed force, in accordance with the constitutional mission and in response to the security environment, which changes rapidly, frequently and unpredictably.*

**Keywords:** security, war, armed forces, conflict model, nature of conflict, peace, relative peace, absolute peace.

## INTRODUCTION

Today, the concepts of security, peace and defence have become more complex and interconnected than ever before. With the end of the Cold War, many countries cherished the hope of a new era of stability and lasting peace. However, developments in recent decades have shown the opposite: armed conflicts have not disappeared, but have changed their form, nature and scale. Traditional wars have been replaced by asymmetric conflicts, international terrorism, ethnic crises, failed states, cyber threats and hybrid interventions, which have significantly increased uncertainty in the global and regional security environment.

Nowadays, it is increasingly evident that security is giving way to uncertainty; predictability is being replaced by its absence; globalism and cooperation are making way for polarization and competition; dialogue is surrendering to arbitrary decisions and positions; understanding and alleged harmony are succumbing to military clashes

and confrontations. Arms reduction and confidence-building measures have yielded to armament, strengthening of the military machinery, rendering the possibility of military confrontations the talk of the day. Yesterday's friend and ally, or the one until now, is easily turning into an adversary. These and other characteristics make it essential to seriously consider all elements of national power and security, and among them the military component, which is one of the most important ones.

In this new reality, the role of the armed forces can no longer be limited to the classic concept of war and border protection. Today, the armed forces constitute an element with multiple and interconnected functions of national security, which must be capable and ready to face challenges that go beyond the battlefield, including maintaining order in cases of civil emergencies, responding to natural disasters, contributing to peacekeeping operations and managing humanitarian crises. Furthermore, they have an important role and are considered among the most efficient instruments for maintaining international order and building peace after violent conflicts.

From another perspective, the armed forces are a reflection of a state's seriousness as regards its fundamental responsibility for protecting sovereignty and integrity, constitutional order, and the well-being of its citizens. If a state does not invest in defense, it risks remaining vulnerable to threats and dependent on the will of others. In this light, every country, regardless of its size, geographical position or membership in powerful alliances, such as NATO or the EU, remains responsible for its own security. This is especially important for small countries, like Albania, which are located in areas marked by past conflicts and intertwined geopolitical interests.

This paper aims to analyze the continuing necessity for the armed forces, examining their role in a world of fragile peace, complex conflict, and fragmented security. Addressing the specific case of Albania, it will examine how a small country can and should build an adequate military capacity, as part of a national strategy for defense, peace, and long-term stability.

## THE NECESSITY AND ROLE OF THE ARMED FORCES IN THE CURRENT SECURITY FRAMEWORK

The question of whether armed forces are necessary today is immediately answered in the affirmative. This necessity is obvious, especially when we consider the developments in the field of security over the past decade or 15 years. No country, large or small, is immune to security threats, which are becoming increasingly complex and widespread. While conflict hotspots and wars are increasing, their impact is also spreading to other countries. When there is a war, the instrument to face it is also required – and this instrument is the army. Its role is irreplaceable not only for countering external threats, but also for maintaining internal order and security. Historically, the military has been one of the main pillars of state identity. A strong military has symbolized a strong state, representing not only defensive power, but also its sovereignty, stability, and authority.

The armed forces, in addition to the traditional mission of conducting combat operations, are increasingly engaged in missions related to the management of civil emergencies and natural disasters. This commitment has become a sustainable trend in many countries, especially in recent decades, where the army serves as a supporting instrument for the prevention and mitigation of consequences in crisis situations. After the end of the Cold War, the armed forces have been activated within the framework of international organizations for peacekeeping operations outside the national territory, contributing to the prevention of armed conflicts, preservation, maintenance and building of peace.

War is a terrible event. The truth is that even the richest country can lose a lot from war.[1] Human history has been marked by constant wars and conflicts, yet peace has always remained the most desired goal. Today, the role of the military is no longer defined solely by war or conquest, but increasingly by the mission of preserving and safeguarding peace. In a complex and uncertain world, the armed forces represent not only defense but also stability. After all, even an armed peace is more acceptable than no peace.

## SECURITY, WAR AND PEACE IN THE MODERN ERA

At first perception, security is seen as the most desirable objective for any society, while peace is its ideal reflection. However, historical and contemporary reality often proves the opposite: armed conflicts continue to cause great human and material losses. Should we passively wait for these challenges to resolve by themselves, or should we act responsibly? Among the tools at our disposal are political, diplomatic, economic, technological and military ones. "War is not necessarily the wrong tool, nor simply a sign of the inability to communicate"[2]. In certain cases, war remains the last viable means, when other means have failed to produce solutions in the interest of peace. Although war is not desired, it is often presented as necessary. And when it is needed, a structured and organized instrument is required - military force. In many cases of regional or international conflicts, it has been precisely military intervention that has prevented the escalation and brought about solutions.

We live in an era when "the time of great wars, waged only by professional armies (in uniform and under arms), has ended."[3] However, the goal of war remains a better peace, and in some cases, its horrors are seen as more acceptable than an unjust peace or slavery.[4] The case of Afghanistan, where "a seemingly decisive military victory was followed by a dirty and bloody peace"[5]. The same thing happened in Iraq. War and peace often switch places with each other, proving a historically repeated reality.

[1] Glenny, Misha, History of the Balkans 1804-1999, p. 229.
[2] Lani Remzi, Mustafaj Besnik, Misha Piro, The War Against War, p. 92
[3] Christopher Bellamy, The New Art of War and Peace, p. 20.
[4] Right there.
[5] Kaplan D. Robert, Imperial Grunts, p. 186.

For this reason, a deeper treatment of the relationship between security, peace and the armed forces is required. Only through a balanced and comprehensive analysis of these elements can the role of the armed forces be understood not only as a mechanism of war, but also as a guarantor of long-term security and stability.

With the end of the Cold War, due to the emerging "New World Order", it was thought that domestic and international issues would be resolved more easily than in the past. But the challenges did not end even after the 1990s and onwards. A number of states faced a resurgence of ethnic, religious, social, and economic problems. Groups and nations have engaged in conflicts over issues such as territory and identity. Most of these conflicts have been painful and unproductive. Almost always, they contribute to global instability. In this context, recognizing the forces that produce and reinforce conflict, as well as understanding the nature of the conflicts themselves, constitute the first step towards sustainable solutions. Equally important is the analysis of the relationships between security, peace, war, and armed forces, which shape the dynamics of contemporary geopolitical reality.

Overall, it seems that peace is in the shadow of conflict. It is defined as the absence of war[6] or the absence of war between states[7] and this is the most general definition. There are other definitions, but in general they refer to war or situations close to it. Clausewitz defined war as a social act. As such, it has co-existed in the history of humanity. People, groups, organizations try to initiate armed conflicts, but others try to prevent their outbreak, or to react against them. Thus, to reach the stage of armed conflict, many other steps would be required. Among other things, another feature is the objective of returning to peace after the war.

Let us start with security, which is defined as "The guarantee of being safe, i.e. political agreements that make war less likely, which provide for negotiations instead of hostility, and which aim to maintain peace as a normal condition (in relations) between states."[8] Giovanni Manunta explains that "… the philosophical condition of security is one where danger or anxiety is absent. We can therefore conclude that the remainder is determined by the presence of danger and anxiety."[9] Referring to the two parts of the presentation, history has shown that, instead of the presence of security, we are still experiencing a lack of security, and the latter has also led to military confrontations, that is, to armed conflicts.

The nature of conflict is very broad and does not only mean the conflict segment itself. Chris Bellamy considers all types of conflict during the Cold War as one-

[6] Evans Graham, Newnham Jeffery, The Penguin Dictionary of International Relations, Penguin Books, 1998, p. 423

[7] Scruton, Roger, The Palgrave Macmillan Dictionary of Political Thought, 3rd edition, palgrave macmillan, 2007, p. 515

[8] Ibid., p. 623.

[9] Manunta, Giovanni, Defining Security, Cranfield University, The Royal Military College of Science, Cranfield Security Centre, March, 2000, p. 11

dimensional. But new developments, according to him, make this conception inappropriate. Thus, he suggests the spiral model. The model considers all phases of conflict: before, during and after it. It emphasizes the importance of prevention and peacebuilding.[10] This model takes into account the nature of conflicts and how they escalate. It also addresses the pre- and post-conflict segments, including peace-building activities, but without mentioning peace as a separate area or phase. However, it is important that most of the time is spent on the first and last phases, or in other words, pre-conflict and post-conflict. And this in order to shorten the duration of the conflict phase as much as possible. In practice, there are numerous examples that show that the conflict phases overlap with each other, making it difficult to distinguish each of them.

Based on the above judgments, it seems that the chances for peace are minimal; when it occurs, it is rare and fragile. Samuel Huntington describes some of the most violent and bloody modern conflicts as "protracted conflicts." According to him, conflicts within a state last nearly six times longer than those between states..[11] If we refer to this model, we notice a strong focus on conflict, while peace is addressed less. So, where does peace stand? Although it is mentioned indirectly, it rarely occupies a clear place in the discourse. Despite this, peace is thought to have a place within the model, but that place is unstable, exposed to threats and insecurity.

From a security perspective, peace is defined as the absence of danger and disturbance. But, as history shows, such an ideal state has never been fully realized. For this reason, definitions of peace repeatedly relate to the absence of war, conflict, or disorder, rather than to any positive or stable state in itself. It must be admitted that there has been much talk about total, absolute war, but not about total or absolute peace.[12] A better clarification of the problem perhaps requires the acceptance of the two terms of relative peace and absolute peace, defining absolute peace as a complete and perfect peace, whereas relative peace as a non-independent, incomplete, or partial peace.

The main requirement for absolute peace is the complete absence of threats. Reality shows the opposite. "... peace cannot be built if the history of humanity is

[10] Chris Bellamy, Professor of Military Science and Doctrine, Cranfield University, United Kingdom. From 1990, for seven years, as a war correspondent, he reported from conflict zones such as the 1991 Gulf War (from Saudi Arabia and Iraq), from Bosnia between 1992 and 1997 and from Chechnya in 1995.

[11] Huntington P. Samuel, The Clash of Civilizations and the Remaking of World Order, 1998, p. 252-253

[12] Bellamy, Chris, Absolute War, Soviet Russia in the Second World War, Vintage Books, New York, 2008, p. xix. The author explains that this war, that is, World War II, was the greatest, the greatest land-air conflict in history. That war was total, because it was fought by all elements of society. It was an absolute war, since both sides aimed to exterminate the opponent and destroy his political existence.

dominated by the history of wars."[13] Threats and risks to security and peace are present and sometimes they result in armed confrontations. Taking this logic into account, it turns out that in this world it is impossible to have absolute or total peace. The absence of total peace is related to the nature and complexity of the conflict. Conflicts have not vanished. Conflicts are increasingly becoming regional and wider. Many conflicts are related to interests and actors across borders. An increase in external involvement in internal conflicts is evident. For example, during the last decade of the last century, the Balkans experienced various types of third-party intervention. Thus, conflict prevention measures were implemented in Macedonia, sanctions and military interventions against Yugoslavia, conflict and post-conflict measures in Bosnia and Herzegovina and Kosovo. External measures were also implemented in Albania during the unrest of 1997. The third party or international actor is present in Iraq, Afghanistan, Syria and elsewhere.

Even in Western democratic societies where the terms of harmony, well-being, security and respect sound so pleasant, one cannot speak of absolute peace. This is the case for many reasons. First, we live in a world where globalization is advancing, thanks to rapid technological development and increasing interdependence. No single country is able to solve all its problems on its own. Turmoil, disorder and conflicts elsewhere represent threats that at a certain stage of their development affect the security and stability of these countries as well. Lederach (USA) names many of today's conflicts as internal and internationalized conflicts.[14] And this is not simply and only because there will be international intervention against them. But mainly, because of the effect they have. So, Western countries, which at a certain level, do not suffer directly from internal or external conflicts, are affected by the latter. In addition to internal conflicts, there are also other warning or damaging events in terms of security, which are directed from abroad. The events of September 11, 2001 in the United States of America, showed that even the most powerful country in the world, not mentioning others, is not safeguarded against every negative development. Terrorism showed that even the most powerful country does not have the immunity needed to protect itself from it. What about other countries? Not at all.

If we were to return to the conflict model presented above and consider it closely, it turns out that there is a kind of peace there too. Perhaps this peace is not always located at the top and in opposition to the conflict segment. The small arc of peace may perhaps be located somewhere in the post-conflict segment and possibly in its second part, or even at the top. But it may also be located in the first part, or at the beginning, of the pre-conflict segment. Based on the logic of the conflict model, in general this kind of peace in the pre-conflict segment tends to become smaller and in the post-conflict segment to increase. This rule also accepts the opposite tendency.

[13] Togo Takehiro/Ostojić Negoslav P. (editors), National Reconciliation, Inter-Ethnic and Inter Confessional Tolerance in the Balkans, Reconciliation and Human Security, European Center for Peace and Development, University for Peace established by the United Nations, Belgrade, 2009, p. 194

[14] Lederach P. John, Building Peace, Sustainable Reconciliation in Divided Societies, 1999, p. 12

Thus, in both of these segments, perhaps more so in the post-conflict segment, there are chances for peace. Perhaps this peace, as Mari Fitzduff defines it, exists in parts.[15]

Also, if peace is presented in parts, is weak, or is becoming stronger, this is one side. The important thing is that peace exists. But it must be acknowledged that due to fragility, if the encouragement of peace is weak or fails, it very quickly becomes non-existent. This type of peace that is being talked about is precisely relative peace, a term that was accepted above. It is precisely this relative peace that needs to become increasingly healthy and stronger. Among those elements or components of national power and security that preserve, protect and strengthen peace is that of the armed forces.

## CHANGES IN THE NATURE OF CONFLICT AND THE ROLE OF ARMED FORCES IN CONTEMPORARY WARS

In past conflicts, the role of armed forces was clear and justified through the direct use of military force. But in contemporary wars, where the nature of conflicts is more complex and often ambiguous, the question arises: are armed forces still necessary? The answer remains yes. While total peace seems unattainable and relative peace remains fragile and threatened, security requires deliberate means to maintain it. In this context, armed forces are not obsolete but, on the contrary, they continue to be an essential instrument for protecting peace and maintaining stability.

The post-Cold War period, which began with the US as the sole superpower, presented a world "with increasing ethnic conflicts, terrorism and insurgencies, not to mention the degeneration of weak states into failed states, disease pandemics and weak governance, all new security challenges that made the international security environment more challenging and fragmented."[16] Security challenges have increased, and in this regard, national and international organized crime, illegal trafficking in people, drugs and goods, illegal migration, etc. can be mentioned, including aggression by state actors against states. It should also be noted that the world is changing from a single pole to several poles. This fact also presents a separate, even major, challenge for global security.

Some of the main conclusions regarding the nature of today's and future conflicts show that it is essential to understand and analyze the entire spectrum of conflict, from pre-conflict phases to the management of situations after it has ended. Particularly important is the recognition of new challenges and opportunities in terms of prevention and intervention after conflicts, with the aim of reducing human, economic and social costs. These processes require coordinated efforts, both at the national and multinational levels, through the engagement of international actors

[15] Fitzduff, Mari, Beyond Violence, Conflict Resolution Processes in Northern Ireland, The United Nations University, 1996

[16] Edwards, Aaron, Strategy in War and Peace, A Critical Introduction, Edinburgh University Press, 2017, p. 2

and inter-institutional cooperation. The role and weight of these actors varies depending on the characteristics of each conflict, requiring flexibility and continuous adaptation. In this context, the operation of traditional security instruments is no longer sufficient, as the contemporary environment requires new approaches. The armed forces, as one of the most important means for maintaining security and order, must be able to act simultaneously in different phases of the conflict. However, their role is not always primary, as they must interact with other actors, often under civilian leadership. Combat capability remains their core function, but at the same time, the military is required to be prepared for broader missions, in the service of peace and security.

Every state, regardless of alliances, is primarily responsible for its own security. This indicator cannot be disputed, history shows. And this, "because any state can use force at any time, all states must be constantly ready either to counter force with force or to pay the price of weakness. The requirements of state action, in this view, are imposed by the circumstances in which all states exist."[17] This assessment holds true across all historical periods. The state is responsible for its own security and must have all its instruments organized and functional, including the military instrument, that is, the armed forces.

Referring again to the conflict model and focusing on all parts of the spiral of the model, that is, the pre-conflict, during it and especially in the post-conflict part that has to do with peacebuilding, it follows that: military forces prepare mainly for the conflict since its prevention is the responsibility of other instruments, but not that the military instrument is excluded; during the conflict, the military force is prepared and fights the war that also constitutes the essence of maintaining a military force; the post-conflict again appears challenging since this phase is oriented towards the production of peace. It is precisely this phase, or part, that deserves attention. The post-conflict part also appears challenging for a military force, which in its nature has the use of weapons, of the killing tool, i.e. violence. The post-conflict part varies from case to case. Consider the case of Iraq, at the end of 2005, when US Secretary of Defense Donald Rumsfeld drew attention to the fact that American military troops who had gone to war needed to be better prepared for the post-war period, and specifically for operations to stabilize the country.[18] which translates to bringing peace to the country. As is known, these operations did not meet expectations as intended. Otherwise, it can be said that in Iraq, American troops won the war, but not the peace.[19] The same assessment is made in the case of Afghanistan.

The necessity for armed forces and their different engagements require different

[17] Ibid., p. 127, referenced: Kenneth N. Waltz, Man, the State and War: A Theoretical Analysis; New York, Columbia University Press, (1959) 2001, p. 160

[18] Graham, Bradley, By His Own, The Ambitions, Successes, and Ultimate Failures of Donald Rumsfeld, Public Affairs, New York, 2009, p. 582-583

[19] See: Ibid., pp. 381, 394-395

levels of training and equipment. The lesson learned from current conflicts is clear. If you prepare for the worst, the worst is less likely to happen and if it does happen, you are prepared and equipped to deal with it. Therefore, in addition to other security instruments, every state also needs a military instrument. The asymmetry of today's war not only requires armed forces, but also requires them to be prepared to deal with this asymmetry. And, confrontation cannot be done alone. Integration, coordination and cooperation with other security instruments and other components of national power, at the state and interstate levels, enable the armed forces to accomplish their mission most efficiently.

Armed force is also needed to deter potential adversaries. Military balances, when political cooperation and mutual understanding do not exist, help to avoid aggression or armed conflict.

Again and again, the usefulness and necessity of armed forces, regardinf both a large or small state, never disappear. Consider what Robert Gates, former US Secretary of Defense, said in a speech. He claimed to have offered his strong support for "soft" power through diplomacy and development, but he reminded the audience that "the ultimate guarantee against the success of aggressors, dictators, and terrorists in the twentieth century, as well as in the twenty-first, is hard power – the size, strength, and global reach of the United States military."[20] Of course, this assessment is for the United States. But, in a certain sense, it is related to the military instrument of any democratic state, regardless of its size, economy and geographical position. The military instrument is necessary. No one can guarantee that force will not be directed against states and their interests or against the interests of allies. So, the military instrument or "Military power is necessary to deter these interventions, or, if they occur, to stop them."[21]

Another supporting argument for the existence of armed forces is related to alliances. They are not always only political. Alliances and membership in international organizations require, among other things, the possession of armed forces and the provision of military contributions. This is imposed by the indicators of the security environment, the assessment of threats and risks. The military component is part of the response to them. Alongside the political, diplomatic, economic, technological, information, etc. components, there is also the military component. Nowadays, this necessity is presented not only in the framework of the NATO Alliance, the European Union, but also in contributions within the framework of the United Nations.

The military instrument is often presented as a preferred opportunity to bring different countries together. So the instrument of war contributes to friendship and cooperation, to bring countries of the same region closer under one objective and

[20] Gates M. Robert, Duty, Memoirs of a Secretary at War, WF Allen, 2014, p. 550

[21] Edwards, Aaron, Strategy and Peace, A Critical Introduction, p. 134, cited: Acheson, Dean, Power and Diplomacy, Harvard University Press, 1958, p. 40

towards the goals of peace, understanding, good neighborly relations, but also for a common future. This phenomenon is more evident after the end of the Cold War. One of the examples of this nature is the initiative taken in Southeast Europe through the Southeast European Ministerial of Defense,[22] as well as the concretization of the Southeast European Brigade,[23] where Albania has been an active participant since the beginning. Another example is represented by the Charter of the Baltic States[24] and the US - Adriatic Charter,[25] where efforts are already being made for Kosovo to be part of it. It is worth noting that based on these initiatives, military troops from the Southeast European region or the Western Balkans are together in operations.

In many countries, if not most of them, the armed forces are also used for civilian purposes, especially in cases of emergencies. This has its own reasons, which are especially related to the organization, preparation, capacities, discipline that they manifest. In certain countries they are expected to have capacities in their mission to respond to emergencies or disasters that are caused by natural causes or even by humans.

The armed forces are a necessary but undesirable institution. They are useful in times of crisis and a cautionary tale at other times.[26] They are undesirable because they are wasteful, they are a burden on the economy and taxpayers, they do not create tangible products directly, they sometimes take priority that perhaps belongs to other sectors of institutional organization or social life. But they are also necessary for the reasons discussed above. Not without reason, an English poet expressed that people turn to the soldier and the god for help only in times of danger. But always, by developing skills and maintaining capacities that are reasonable and necessary and not simply because they are required.

As mentioned above, the overall picture of conflicts shows that there is no total or absolute peace. However, there is a peace that can be called relative peace, which is fragile, not easy and needs to be protected, expanded and made healthier. These responsibilities are fulfilled by many actors. One of them is the armed forces.

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[22] This process began with a meeting of defense ministers held in Tirana in March 1996. The goals were to promote regional cooperation and good neighborly relations, strengthen defense capabilities and cooperation through collective efforts, and create links that facilitate integration into Euro-Atlantic institutions. See: SEDM, 10th Anniversary, SEDM Magazine, Albanian Chairmanship 2005-2007, p. 4

[23] One of the initiatives of the Ministerial of Defense of South-East Europe was the creation of the Multinational Peacekeeping Force of South-East Europe. The agreement was signed in Skopje on 26 September 1998. This force is also known as SEEBRIG, or the South-East European Brigade. See: SEDM, 10th Anniversary, Albanian Chairmanship, SEDM Magazine, p.4

[24] The Baltic Charter or Partnership Charter of the three Baltic countries was signed in January 1998.

[25] The US-Adriatic Charter was signed in Tirana on 2 May 2003. The Charter included three countries, Albania, Croatia and Macedonia, adding the USA. The signatories were the Foreign Ministers of the three countries in the region and Colin Powell, Secretary of State, USA. See: Albania, US-Adriatic Charter, Ministry of Defense, 2003, p. 10-15. See also: Ministry of Defense, Adriatic Charter and NATO Integration, Press Center, Military Publishing and Translations, Tirana, 2005, p. 7

[26] Powell, Colin, My American Journey, p. 351

The absence of total peace requires the contribution of the armed forces. Contributions are expected to be made across the spectrum of conflict. The armed forces are trained and prepared to meet challenges. As long as threats to security and peace exist, absolute peace does not exist. As long as absolute peace does not exist, then the armed forces are not only needed, but are expected to play an important role in protecting and promoting peace. The primary mission of an army is to wage war.[27] But when the military force is prepared for its mission, and in particular for combat, then it is also prepared for any other task, which is defined in the constitutional mission of the armed forces.

## THE ALBANIAN CASE AND THE NATIONAL STRATEGIC PERSPECTIVE

What about Albania? The correct answer would be: Yes, the armed forces are necessary, they are needed. The armed forces give dignity and substance to the Albanian state. They are a highly professional institution that the country needs in fulfilling the mission that the Constitution of the Republic of Albania has defined for them. But to be such, they must be respected as an indispensable instrument of the country's security. Why? The studies, assessments and determinations of the post-Cold War and the decades that followed, seem to be "outdated". Sometimes it must be admitted that they were superficial and lacked analytical depth. Albania lies in a region that still remains problematic in terms of security and the influence of third actors. The region indisputably remains coveted. And this is due to geography, history and historical claims of other actors, as well as the different orientation of some of the countries in the region.

Albania has been a member of the NATO Alliance since 2009, and is in the process of EU membership negotiations. These achievements and realizations do not guarantee the security and defense of the country without having the necessary security instruments. Nothing can be guaranteed and not cause "distractions". The Albanian state is first and foremost responsible for its own security. It cannot expect it from anyone else.

After the 90s of the last century and the following two decades, the country's security was assessed in accordance with the reading and understanding of the threats to security of that time. It was determined that in terms of defense, considering the risks and threats to the country, Albania needed small, professional, well-trained, well-paid, well-equipped armed forces to be able to fulfill their mission. Now, it is worth reassessing the security environment. The unrest is now not only present in the region, but also armed conflicts are taking place on our continent, in Europe, and have a direct impact on the security of Albania.

Therefore, it would be better for Albania to have a *reasonable* armed force in

[27] Kaplan D. Robert, Imperial Grunts, p. 106

a *small* country (taking into account the current and future security environment), in accordance with the size of the country and population, in accordance with the country's economy, in line with the assessment of border countries and their positioning in terms of security and their development orientation, in respect of the alliances of which Albania is a part but not necessarily to remain dependent on them. They should be well-trained, well-paid, well-equipped and have operational capacities and capabilities. Some indicators of operational capabilities that were ignored should be "reintroduced". Specialties and military units with special techniques and weapons of a conventional nature should be viewed very carefully with the aim of ensuring that the armed forces responsibly cover the spectrum of operations for which they are responsible in protecting the sovereignty and territorial integrity of the Republic of Albania. These capacities should be such that they can be used in any case for the above purposes, as well as in the interest of the Albanian nation if an aggression occurs that violates it or aims at its disintegration or weakening. At the same time, these capacities would also be valid for operations on behalf of the NATO Alliance, or for peace support operations on behalf of other international organizations,

The Albanian people, despite the traumas of history, have always loved the army. For this perception to grow more and more, we need to have a complete, compact and capable armed force. A highly professional military and armed force gives dignity to the state, reassures its public and enjoys its trust. If trust exists, then the appropriate support will also exist.

## CONCLUSIONS

Highlighting the arguments presented at the beginning of this paper again, it should be emphasized that the end of the Cold War did not mark the end of armed conflicts. Today, conflicts have not disappeared, but have changed form and intensity. In this context, when talking about peace, it is more appropriate to ask the question "When does peace exist?" instead of the question "Does peace exist?". This perspective helps to focus on the circumstances and conditions that make peace possible. These circumstances, in turn, impose an analysis of security issues, threats and risks, as well as what needs to be protected. In this way, the status of current and future peace is understood more clearly, as well as the indispensable role of the armed forces in preserving and guaranteeing it.

The armed forces represent a necessity. In a world where security threats are numerous and in constant evolution, the armed forces remain an irreplaceable instrument for the protection of the state and the preservation of peace. They are not only for war, but play an increasingly important role in crisis management, civil emergencies and peace operations.

Total peace does not exist – that is why protection is needed. Global reality shows that peace is often relative, fragile and under threat. Therefore, armed forces must be prepared to preserve and protect this unstable peace.

Today's war is complex and multidimensional. New conflicts are intertwined

with ethnic, religious, economic and geopolitical factors. Modern armed forces must be competent and capable of operating in all phases of conflict: prevention, combat and peacebuilding.

Albania needs a decent armed force adapted to today's security reality. As a small country, but a NATO member and positioned in a region with high geopolitical sensitivity, it cannot rely only on the guarantees of its allies. In order to fulfill its constitutional obligations and international commitments, it is necessary to have a well-trained armed force, equipped with real operational capacities and capable of responding to security challenges, both domestically and within international alliances.

In conclusion, it can be noted that the analysis of the role and necessity of the armed forces in contemporary reality proves that they remain irreplaceable instruments for guaranteeing security and preserving peace. Modern armed forces no longer represent simply tools for waging war, but are essential components in its prevention, as well as in building peace after the end of conflicts.

Consequently, the armed forces should not be perceived as an institutional luxury, but as a national necessity and a clear indicator of the state's seriousness in the face of security challenges, both at the national and international levels. They represent the state's commitment to protecting its values, sovereignty and stability in an increasingly unstable world.

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# Security beyond borders: for an evolution of the strategic concept

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***Abstract.*** *The concept of security has evolved profoundly over the past decades, reflecting the transformation of the nature of threats and actors in the international arena. Traditionally, security has been identified with the protection of sovereignty and territorial integrity, viewing the border as the first line of defense. However, recent developments in wars and conflicts have shown that borders are no longer enough to guarantee security. Drone or missile attacks between Israel and Iran, Yemen or Syria, violations of the airspace of Poland and Romania during the war in Ukraine, as well as cyberattacks on small states, such as Albania, demonstrate that modern threats bypass physical borders and challenge the traditional notion of sovereignty.*

*The article analyzes the evolution of the strategic concept of security through a combination of theoretical frameworks and empirical examples from current conflicts. The use of drones and hybrid warfare, the cyber dimension, energy and disinformation are elements that push security beyond territorial boundaries. For small countries, such as Albania, this transforms the meaning of sovereignty, making it conditional and divided within collective security architectures, such as NATO and the EU.*

*The methodology of the study includes a literature review on traditional and expanded security, comparative analysis of international cases and a detailed case study of Albania. The conclusions suggest that the concept of security needs to be reformulated as a comprehensive framework, where national defense is combined with social resilience and multilateral cooperation. In this way, security beyond borders does not weaken sovereignty, but reconceptualizes it as the ability to protect citizens in a world where threats no longer respect national borders.*

**Keywords:** security, sovereignty, conflict, small countries, Albania, NATO, hybrid threats

## INTRODUCTION

Security is one of the most fundamental concepts of international relations and state policies. Traditionally, it has mainly been associated with the protection of sovereignty and territorial integrity, placing borders at the center of strategic analysis. During the 20th century, security was perceived mainly as military defense against external threats, in line with the realist approach of the anarchic international system (Waltz, 1979; Morgenthau, 1948). However, recent developments show that this model is insufficient. New threats go beyond physical borders, transforming security into an international phenomenon.

The war in Ukraine is the clearest example of this transformation. Russian missiles and drones, which have violated the airspace of countries such as Poland and Romania, show that even NATO members are not immune to the consequences of a conflict that transcends territorial borders. In the Middle East, the ongoing drone and missile attacks between Israel, Iran and Yemen involve not only states but also non-state actors, demonstrating the vulnerability of airspace. Meanwhile, cyberattacks have adversely affected the functioning of small states such as Estonia and Albania, highlighting the importance of digital sovereignty as a new dimension of security, which cannot be protected by traditional instruments.

The importance of this topic lies in the fact that recent developments challenge the classical understanding of security, pushing it towards a more comprehensive approach. Security is no longer just military defense and border protection, but also includes cyber resilience, energy security and the human dimension. In this context, the essential question is: how has the strategic concept of security evolved in a world where threats transcend territorial borders and what are the implications for small countries like Albania? Several main hypotheses arise from this question: security has gone beyond territorial borders and is no longer ensured solely by national capacities; sovereignty has become conditional, especially for small countries; collective mechanisms such as NATO and the EU remain essential guarantees to compensate for weaknesses; while new dimensions - cyber, energy, climate and disinformation - are as important as military defense.

The methodology of this study is based on a combination of theoretical frameworks and empirical analysis. First, the evolution of the concept of security in the academic literature is addressed, from classical realism to expanded security approaches (Buzan, Wæver & de Wilde, 1998) and human security (UNDP, 1994; Paris, 2001). Then, recent international conflicts - Ukraine, Gaza, Israel–Yemen - are analyzed to highlight the ways in which modern threats challenge classical borders and sovereignty. Finally, a special focus is devoted to small countries, with an emphasis on Albania, to illustrate security management through interdependence and collective cooperation.

This article aims to contribute to the academic debate by proposing a reconceptualization of security as a dynamic process that transcends physical borders

and where sovereignty is perceived not as absolute autonomy, but as the capacity to protect citizens through resilience and international cooperation. On a practical level, the study offers recommendations for small countries, including Albania, to invest in cyber defense, air capabilities, and strengthening human security, while acknowledging the reality of divided and conditional sovereignty.

## 1. THEORETICAL PERSPECTIVE AND LITERATURE REVIEW

The discourse on security in international relations has undergone a profound evolution, reflecting changes in the nature of global politics and the emergence of new threats that are not limited to the military dimension. In the classical realist tradition, security was seen primarily as the defense of the state from external aggression and as a function of military power. Authors such as Hans Morgenthau (1948) and Kenneth Waltz (1979) considered the state as the central actor of the international system, while sovereignty and territorial integrity were the basis of its survival. The balance of power and military deterrence were the key mechanisms for maintaining peace and stability, while the main threats were defined through the risk of military aggression by another state. In the Cold War era, this paradigm represented the dominant logic of security, where the two superpowers – the USA and the Soviet Union – kept the international system frozen through nuclear competition and military alliance structures.

However, the end of the Cold War and the fragmentation of the bipolar system made the limitations of the realist approach apparent. The disintegration of Yugoslavia, the ethnic wars in the Balkans, the rise of international terrorism, and transnational threats such as drug trafficking or organized crime could not be contained in an analytical framework that saw security only through the lens of the state and the military. Internal conflicts and non-state actors challenged the idea that security could be guaranteed simply by military forces and territorial control. This brought about a significant shift in security theories, opening the debate towards new approaches that aimed to explain the multidimensional nature of threats.

One of the most important developments was the broadened approach of the Copenhagen School, articulated by Barry Buzan, Ole Wæver and Jaap de Wilde (1998). These authors argued that security is not limited to the military dimension, but should also include the political, economic, social and environmental sectors. This approach, known as “securitization”, broadens the understanding of threat to include issues that are not of a traditional military nature, but that have a major impact on the stability of states and societies. Economic crises, uncontrolled migration, climate change and social fragmentation constitute challenges that are often more destabilizing than a military attack. A clear example is the Syrian refugee crisis of 2015, which shook the political and social foundations of the European Union, proving that threats knew no borders and that territorial defence was not sufficient to manage such situations.

At the same time, the concept of human security promoted by the United Nations

Development Programme (UNDP, 1994) brought about a major paradigm shift. In this perspective, security is not only related to the state and the military, but to the individual and his or her need for protection from poverty, hunger, disease, structural violence and environmental degradation. Paris (2001) has called this a "paradigmatic shift", shifting the focus from borders to people. This approach has gained particular importance in the era of globalization, where threats such as pandemics, cyber attacks or climate change directly affect the lives of citizens and cannot be addressed by classical mechanisms of national defence alone. A cyber attack, for example, not only damages state structures, but also paralyses basic services that serve citizens, creating social and political insecurity.

These theoretical developments have led to a re-examination of the concept of sovereignty. Stephen Krasner (1999) has described sovereignty as an "organized hypocrisy," emphasizing that, although states proclaim absolute autonomy, in practice they often share it or condition it for survival. This is especially true in the modern era, where air, cyber, and energy sovereignty cannot be guaranteed by an isolated state alone. Joseph Nye (2011), through the concepts of soft power and complex interdependence, has shown that borders have become increasingly porous and that security is a collective good that is distributed among different actors. For small states, sharing sovereignty is not a choice but a necessity directly related to survival.

The literature on small states has highlighted their structural limitations. Ingebritsen (2006) and Thorhallsson (2018) argue that the lack of resources and capacities makes these states dependent on international security architectures. Thorhallsson's "shelter theory" describes this phenomenon as a deliberate search for shelter in international organizations, which offer small states security guarantees, economic support and political stability. For Albania and the Western Balkan countries, this is a tangible reality: their national security cannot be imagined outside NATO and the EU integration process. This shows that sovereignty has become divided and conditional, becoming a cooperative mechanism rather than an absolute attribute.

In the contemporary debate on security, two main approaches continue to exist. On the one hand, realists such as John Mearsheimer (2001) emphasize that military power and the balance of power remain the main determinants, as the war in Ukraine clearly demonstrates. On the other hand, more critical and constructivist approaches (Acharya, 2016; Bourbeau, 2015) see security as a dynamic construct, built by norms, institutions and multilateral cooperation. Today's reality shows that both perspectives must be combined: military capabilities are necessary to counter traditional threats, but not sufficient to address challenges of a cyber, energy and social nature.

Recent experience has shown that new threats are not limited to the traditional battlefield, but also include other areas such as cyber, information and energy. Drone attacks, hybrid warfare and disinformation campaigns show that modern security is

the product of the combination of military strength, social resilience and international cooperation. This makes it clear that the evolution of the concept of security cannot be understood only through the paradigms of the past; it is an inevitable process that shifts the focus from the isolated state to a global and interconnected architecture.

In this sense, the theoretical literature leads us to several intermediate conclusions: security has shifted beyond national borders and cannot be guaranteed by the capacities of a state alone; sovereignty has become increasingly conditional and fragmented, especially for small states; collective mechanisms such as NATO and the EU represent the main guarantee to compensate for structural weaknesses; and new dimensions such as cyber, energy, climate and disinformation have become as important as military defense. This theoretical synthesis creates the basis for understanding the evolution of the concept of security in the 21st century and for analyzing how the most recent developments in wars and conflicts are reshaping it in practice.

## 2. EVOLUTION OF THE STRATEGIC SECURITY CONCEPT

The concept of security has undergone a continuous evolution from the period of the classical system of international relations to the current reality where threats do not stop at borders. For a long time, the realist approach has dominated the analysis of security by defining it as the ability of the state to maintain sovereignty and territorial integrity in the face of military threats. For Hans Morgenthau (1948), power was the essence of security, while for Kenneth Waltz (1979), the anarchic structure of the international system imposed the need for a balance of power and military deterrence. This vision worked in the Cold War era, when borders and armies were the main definers of security, while the strategic concept was directly related to the survival of the state in a bipolar system.

After the fall of the Berlin Wall, the nature of threats changed and with it the concept of security. Ethnic conflicts in the former Yugoslavia, international terrorism and new global crises showed that security could not be limited to state-to-state conflicts. Barry Buzan and his colleagues at the Copenhagen School (Buzan, Wæver & de Wilde, 1998) expanded the concept beyond the military dimension, introducing new sectors such as the economy, politics, society and the environment. This approach paved the way for a strategic concept that sees security not only as the protection of territory, but as a multidimensional process that relates to the entire structure of the state and society.

The 1990s also saw the articulation of the concept of human security, promoted by UNDP (1994), which shifted the focus of analysis from the state to the individual. Roland Paris (2001) called this a “paradigmatic shift”, as it challenged the traditional approach by making the well-being of citizens an indicator of security. This approach changed the definition of the strategic concept, making it more comprehensive and explaining why conflicts such as humanitarian ones or cyber attacks, which directly affect individuals, are as important as military attacks.

The further evolution of the strategic concept was linked to the idea of sovereignty as an increasingly relative notion. Stephen Krasner (1999) argued that sovereignty is often an "organized hypocrisy", since states are never fully autonomous, but depend on international agreements and alliances. This view has become even more evident today, when air, cyber and energy spaces cannot be defended with national resources alone. Joseph Nye (2011) added another dimension by emphasizing complex interdependence and soft power as instruments that go beyond military force. In a globalized world, where information, capital and technology rapidly cross borders, the strategic concept must reflect this interplay.

Recent wars have further reinforced this evolution. In Ukraine, the conflict is not simply between armies, but a hybrid war involving energy, propaganda and cyberspace (Freedman, 2022). In the Middle East, the massive use of drones by non-state actors has proven that technology is changing the balance of power and that even states with advanced defense systems are exposed (Byman, 2020; Cordesman, 2022). These developments have forced the military doctrines of states and international alliances to adapt, recognizing that strategic security is no longer just a matter of territorial defense. NATO, for example, in its 2022 Strategic Concept emphasizes the role of hybrid threats, cyberattacks and technological competition as key challenges to collective security (NATO, 2022).

For small states, this evolution is even more evident. The literature on "small states" emphasizes that these states do not have sufficient capacities to defend all dimensions of their sovereignty and therefore seek "refuge" in international organizations (Thorhallsson, 2018; Ingebritsen, 2006). This is a strategic reality for countries like Albania, North Macedonia or the Baltic states, which protect their air and digital space through NATO and EU guarantees. For them, the strategic concept is no longer a closed national project, but a separate and conditional mechanism closely linked to international interdependence.

In this sense, the evolution of the strategic concept of security can be seen as a shift from a closed to an open paradigm. In the past, border protection was seen as the main goal of security strategy; today, the protection of citizens, critical infrastructure and the integrity of digital spaces is equally important. Instead of a strategy based solely on "defense", that is, territorial defense, we have a strategy based also on "resilience", the ability to adapt and recover from shocks. Instead of absolute sovereignty, we have a shared and negotiated sovereignty. And instead of a narrow military security, we have a comprehensive security, which includes the human, energy and information dimensions.

In conclusion, the strategic concept of security has moved from a vision based on borders and military power to one based on resilience and international cooperation. This evolution is not just a theoretical reflection, but a necessity imposed by the new realities of conflicts and wars. For small countries, this represents a chance to find security through integration into collective architectures, while for larger states, it

is a challenge to adapt doctrines and accept that security beyond borders is now the new norm of international relations.

## 3. SMALL COUNTRIES AND THE CHALLENGE OF SECURITY BEYOND BORDERS

In the analysis of international security, small countries represent a special category, often overshadowed by the focus on great powers. However, their study is essential to understand how the concept of security evolves in an interconnected system, where threats do not recognize traditional borders. These countries are characterized by resource constraints, military weakness and high dependence on international organizations and great powers (Ingebritsen, 2006). Consequently, they cannot rely solely on their national capacities to guarantee survival, but require external mechanisms to balance structural fragility.

One of the key concepts for understanding small countries is the refuge theory, developed by Thorhallsson (2018), according to which small countries seek security by positioning themselves under the umbrella of international organizations and military alliances. This mechanism is not simply a strategic choice, but a necessity stemming from their vulnerability. For example, the Baltic states – Estonia, Latvia and Lithuania – have joined NATO and the EU to guarantee their sovereignty in the face of ongoing threats from Russia. The case of Estonia after the 2007 cyberattacks proves that even small countries can be targets of great powers, and that their protection requires international interdependence and solidarity (Herzog, 2011).

In the Balkans, countries such as Albania, North Macedonia and Montenegro have followed a similar path, integrating into NATO and aiming for EU membership as a survival strategy. This integration is not only a geopolitical issue, but a new form of sovereignty protection, which in the current context is no longer understood as absolute autonomy, but as sovereignty shared and guaranteed by larger structures. Krasner (1999) describes this process as an "organized hypocrisy", where states often declare autonomy, while in practice depending on external actors to ensure stability.

Another important dimension for small states is the perception of risk. Due to limited resources, they are more sensitive to threats and often follow a more cautious approach to foreign policy. This phenomenon is evident in Eastern European countries, which have intensified relations with the US and NATO as a security guarantee against Russia. Romania and Poland, although medium-sized states, share some of the challenges of small countries due to their geostrategic position and dependence on the guarantees of the Atlantic alliance (NATO, 2023). Small countries often choose to specialize in certain areas to contribute to international security and gain legitimacy. Albania and the Baltic states, for example, have actively participated in peacekeeping missions and have invested in cyber capabilities as a way to demonstrate their contribution and strengthen their position within alliances (Bieber, 2018). This "niche" role enables them to overcome material limitations by

building a reputation as reliable partners.

A new challenge for small countries is the combination of traditional and non-traditional threats. They face not only the risk of military aggression, but also challenges such as mass migration, climate change and energy crises – deeply transnational phenomena (Bourbeau, 2015). As a result, the concept of security for small countries is no longer limited to territorial defense, but is closely linked to social, economic and institutional resilience. In this context, multilateral diplomacy appears as a vital instrument. Through it, small countries manage to exert influence beyond their material weight, becoming promoters of international norms and rules (Cooper & Shaw, 2009). This is particularly important for the Balkan countries, which through participation in international organizations not only gain security guarantees, but also access to decision-making processes that they would otherwise lack.

*In conclusion*, small states constitute a valuable laboratory for understanding how the concept of security beyond borders is evolving. Their structural weakness forces them to accept interdependence as a strategic reality and to rely on collective architectures to compensate for shortcomings. The case of the Baltic countries and the Balkans, including Albania, shows that sovereignty is no longer a notion based solely on national autonomy, but a shared and negotiated process, where security is guaranteed through resilience and multilateral cooperation. In this sense, small states not only face security challenges beyond borders more directly, but also contribute to the reformulation of the strategic concept of security itself.

## 4. THE CASE OF ALBANIA

Albania represents a typical example of a small country that has built the concept of national security on the basis of interdependence and integration in collective architectures. Since the 1990s, when the country moved from an authoritarian regime to democracy and openness to the world, its security has no longer been conceived as a purely internal project, but as a process closely linked to regional and global developments. In a fragile region like the Western Balkans, where ethnic conflicts, institutional weakness and great power competition have been determining factors, Albania has seen sovereignty not as absolute autonomy, but as a shared sovereignty, guaranteed through international alliances and partnerships (Biberaj, 2018).

NATO membership in 2009 was a key moment that marked the transformation of Albania's security strategy. Since that moment, the defense of airspace and the security of national borders no longer depend solely on Tirana's capabilities, but on the collective guarantees of Article 5 of the North Atlantic Treaty. This integration became evident after the Russian aggression in Ukraine, when Albania, as part of NATO, was included in strategic decisions to strengthen the alliance's eastern flank and protect its airspace (NATO, 2022). For a small country, which does not have an advanced air fleet or large defense systems, the fact that air sovereignty is guaranteed by joint NATO patrols is a clear indication that security is beyond borders and beyond

national capabilities.

Albania has also faced direct challenges that demonstrate the new nature of threats. The 2022 cyberattacks, attributed to Iranian actors, temporarily paralyzed public services and damaged the state's digital infrastructure (Microsoft Threat Intelligence, 2022). This episode shows that even a small country can become the object of digital aggression by a foreign actor, and that national borders do not provide protection against threats operating in virtual spaces. Faced with this challenge, Albania turned to its international partners, including the US and NATO, for technical assistance and defense capabilities, proving once again that its security is divided and contingent.

Another important aspect is Albania's connection to energy and regional security. As a country with limited resources and dependent on international markets, Albania is exposed to energy crises arising from global conflicts. The war in Ukraine, which caused a deep energy crisis in Europe, also directly affected the Albanian market, making it clear that economic and energy security cannot be limited to the country's borders, but is part of a global chain (Bartlett, 2022). This reality has pushed Albania to seek more diversification of sources and deeper integration into the energy policies of the European Union.

Regionally, Albania is embedded in the security dynamics of the Western Balkans, a region where ethnic rivalries and political challenges often transcend state borders. Its role in regional initiatives such as the Berlin Process or in security cooperation with Kosovo, North Macedonia and Montenegro shows that defense and stability are no longer just national issues, but require coordination and common mechanisms (Bechev, 2019). In this sense, Albanian sovereignty is increasingly part of a regional and Euro-Atlantic mosaic.

Another dimension where Albania has experienced a change in the concept of security is the confrontation with non-traditional threats. The management of the COVID-19 pandemic showed that health security is as important as military security. For a country with limited health capacities, support from international organizations and the EU was crucial to cope with the crisis (World Bank, 2021). Likewise, the challenges related to immigration, organized crime and climate change are clear indicators that Albania's security cannot be thought of simply within its borders, but as part of a broader international process.

Furthermore, Albania's inclusion as a non-permanent member of the UN Security Council for the period 2022–2023 strengthened the perception that the country is contributing to international security not only as a beneficiary, but also as an actor that helps regulate the global system. This diplomatic experience has affirmed Albania as a small state that aims to raise its profile through multilateral diplomacy and participation in international security architectures (UN, 2022).

*In conclusion*, the case of Albania clearly shows that for small countries, security is no longer a concept reduced to territorial defense. It is a combination of shared sovereignty, institutional resilience and international cooperation. Confronting cyber

threats, the energy crisis, health challenges and regional tensions makes it clear that Albania's security goes beyond its borders and cannot be guaranteed without a deeper integration into collective structures. This reality reconceptualizes Albanian sovereignty not as a loss of autonomy, but as the ability to survive and secure citizens in a world where threats are globalized and asymmetric.

## 5. ANALYSIS AND IMPLICATIONS

The evolution of the concept of security and the cases analyzed above – from Ukraine, the Middle East, the Baltic states and to Albania – show that sovereignty is no longer a static notion associated simply with the protection of borders. On the contrary, it is transforming into a dynamic process, where national defense is intertwined with collective architectures and where transnational threats make borders play an increasingly symbolic role. This transformation raises important questions about how the strategic concept should be reformulated and what the implications are for small states.

One of the clearest elements that emerges from the discussion is the traditional realist concept of security, focused on military power and the balance of power, which remains valid, but insufficient. The war in Ukraine has shown that ultimately military force is decisive for the survival of a state, as Mearsheimer (2001) argues. However, this case has highlighted that power should not be understood only in military terms, but also in technological, energy and informational terms. On the other hand, more critical and comprehensive approaches, such as those of the Copenhagen School (Buzan, Wæver & de Wilde, 1998), seem more necessary today than ever, because only they can explain why a cyber attack or an energy crisis can have consequences as serious as a military aggression.

*First implication*of this discussion is related to the concept of sovereignty. In a world where drones cross borders, where missiles hijack airspace, and where cyberattacks do not recognize territorial barriers, sovereignty is no longer an absolute right, but an ability to manage interdependence (Krasner, 1999). For small countries, this means that the protection of sovereignty cannot be achieved without "refuge" in international organizations (Thorhallsson, 2018). For Albania, sovereignty is guaranteed by NATO membership and EU integration, which proves that national autonomy has not been lost, but has been reconceptualized as active participation in broader security architectures.

*Second implication*is related to technology as a defining factor of contemporary security. Drones, cyberattacks and disinformation are reshaping the way power is conceived and exercised. What once required large armies and colossal investments can now be achieved with cheap and distributed means. This reality makes non-state actors and small states potentially more dangerous than before, as they are able to challenge even great powers at low cost (Byman, 2020). For small countries, this has two implications: on the one hand, they are more vulnerable to asymmetric threats; on the other hand, they can use technology as a means to compensate for the lack of

traditional capabilities. Albania's investments in cybersecurity after the 2022 attacks are an example of this logic.

*Third implication*is related to the concept of resilience. In a world where threats are inevitable and often unpredictable, the ability to cope with and recover from them becomes as important as the ability to prevent them (Bourbeau, 2015). This is especially important for small countries, which cannot invest equally in all dimensions of security. Institutional, social and economic resilience emerges as a sensible strategy that allows these countries to survive and adapt. For Albania, this means strengthening institutions, increasing civil emergency capacities and building a society more aware of modern risks.

*Fourth implication*is multilateral diplomacy. Because threats are transnational, no country can address them alone. Albania's role as a member of the UN Security Council in the period 2022–2023 is an indication of the fact that even a small country can contribute to the management of international security through diplomacy (UN, 2022). This involvement gives legitimacy to the country, but above all it reinforces the idea that sovereignty is not measured only by the ability to protect borders, but also by the ability to influence global decision-making processes.

*In conclusion*, the discussion on security beyond borders has profound implications for the theory and practice of international relations. It shows that the strategic concept is not a rigid notion, but a process in constant evolution, which reflects the interconnected nature of the modern world. For small countries, including Albania, this is both a challenge and an opportunity: a challenge because it makes them more exposed to threats, but also an opportunity because it allows them to participate in larger security architectures and reconceptualize sovereignty in new terms. This evolution requires a new approach, where power is understood not only as the military, but also as technology, diplomacy and sustainability, and where security is not limited to borders, but extends to all spaces where citizens seek protection and stability.

## FINDINGS AND RECOMMENDATIONS

The analysis of recent developments in wars and conflicts, combined with theoretical perspectives and the case of Albania, clearly shows that the concept of security has entered a profound evolutionary phase where borders are no longer the only guarantee of sovereignty. Drone attacks in the Middle East, Russian aggression against Ukraine, airspace violations in NATO countries, cyberattacks and disinformation campaigns have proven that modern threats transcend traditional barriers and that sovereignty has become a relative, divided and conditional notion. This changes the way national security should be understood and makes it clear that old strategies based solely on territorial defense are no longer sufficient.

For small countries, including Albania, this has multiple implications. First, their security can no longer be thought of outside collective architectures. NATO membership and the EU integration process are not simply political aspirations, but

vital instruments for guaranteeing strategic survival. In conditions where a small country cannot cope on its own with asymmetric threats or digital attacks sponsored by large states, alliances become a source of legitimacy and guarantee. This is a conclusion that reinforces the thesis of the refuge theory, according to which small states rely on international organizations to compensate for their weaknesses (Thorhallsson, 2018). Albania is the clearest example of this logic, as its air and digital sovereignty is protected through the capacities of the alliances to which it belongs.

*Secondly*, the concept of security should be seen as a multidimensional process. New threats are not only military, but also related to energy, economy, technology and public health. For this reason, a modern strategic concept must include elements of resilience and the ability to recover from crises. For small countries, investments in this context are as important as investments in defense. Albania, for example, needs to strengthen its capacities in crisis management, develop comprehensive strategies for the protection of critical infrastructure and promote social awareness of modern risks. This conclusion is in line with the literature on expanded security, which argues that stability cannot be guaranteed by military force alone (Buzan, Wæver & de Wilde, 1998).

*Thirdly*, the role of technology as a determining factor in security is an undeniable reality. The use of drones, cyberwarfare and disinformation have created a new field of action where power is no longer measured only by the number of tanks or aircraft, but also by the capacity to control information and digital networks. For Albania, which has become a direct target of cyberattacks, this means the need for sustainable investments in technology and partnerships with international actors.

*Fourthly*, multilateral diplomacy is vital for small countries. Albania has shown this through its participation in the UN Security Council in the period 2022–2023, where it contributed to the debates on Ukraine and the Middle East (UN, 2022). This experience shows that sovereignty is not only protection from abroad, but also the ability to influence global processes.

*In conclusion*, the concept of sovereignty under pressure and security beyond borders is not just a theoretical challenge, but a practical reality that directly affects national and international policies. For Albania and other small countries, this reality requires a reformulation of the approach to security: from a narrow focus on territorial defense, towards a comprehensive concept that combines collective defense, resilience, technology and diplomacy. This does not mean giving up sovereignty, but rather, a way to protect it in a world where threats do not respect national borders. In this sense, shared sovereignty and security beyond borders are not weaknesses, but expressions of the adaptability of small states to survive and secure their citizens in an increasingly complex and asymmetrical international environment.

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# Geostrategic Situation in the Western Balkans and Albania's Role in Euro-Atlantic Security

*"In a complex region, power is measured not only by arms but by the ability to cooperate, to stabilize, and to lead with vision."*

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***Abstract.*** *The Western Balkans constitute a region of high geostrategic importance for European and Euro-Atlantic security, where the interests of global and regional actors intersect. Competition among major powers, unresolved ethnic tensions, institutional weaknesses, and the rise of hybrid threats make the region particularly vulnerable to external interventions and internal instability. In this context, Albania has consolidated its role as a reliable NATO partner and a regional stabilizing factor (Brachet, 2020; Bieber, 2020).*

*This paper aims to analyze the current security environment in the Western Balkans, highlighting the influence of external powers, political developments, and the growth of cyber challenges. Special attention is devoted to Albania's role within the Euro-Atlantic security architecture, including the contribution of the Armed Forces to multinational operations, the modernization of defense capabilities, the strengthening of strategic partnerships, and the building of institutional resilience.*

*The analysis is based on contemporary literature, NATO reports, and strategic security documents. The objective is to provide a clear and structured assessment of the region's geostrategic situation and of Albania's growing role as an active contributor to collective Euro-Atlantic security.*

**Keywords:** Western Balkans, Euro-Atlantic security, Albania, Armed Forces, NATO, hybrid threats, regional stability, preventive diplomacy, NICHE capabilities.

## I. INTRODUCTION

The Western Balkans have historically been one of Europe's most sensitive and strategically significant regions. As Glenny (2012) emphasizes, it is the "crossroads

of empires and great rivalries," where the interests of major powers and internal ethnic and political tensions have intertwined throughout history.

In the 21st century, challenges in this space have become increasingly complex and multidimensional. The interaction of global and regional factors, such as competition among the U.S., NATO, Russia, China, and the European Union, creates an unpredictable environment with a fast pace of change (Allison, 2021; Vračić, 2019). As Bieber (2018) observes, "political instability and fragile institutional structures make the region vulnerable to external influence," underscoring the importance of an active and strategic Albanian approach.

Albania's role is unique. As a politically and militarily integrated member of the Euro-Atlantic structures, the country is not merely a consumer of security but an active contributor to regional stability. The Albanian Armed Forces play a key role within this security architecture, providing not only national defense but also cooperation with NATO and contributions to regional stability (Nye, 2017).

Hybrid attacks, including cyberattacks, disinformation campaigns, and interventions in political processes—as exemplified by the Iranian cyberattack against Albania in 2022—demonstrate vulnerabilities and the need for coordinated national and regional responses (NATO CCDCOE, 2021). This combination of military capabilities and diplomatic orientation positions Albania as a stabilizing factor and a reliable partner within the Euro-Atlantic security framework.

***The introduction sets the foundation for an in-depth analysis of the geostrategic situation in the Western Balkans, identifying Albania as a key actor in regional stability. It emphasizes the need for an integrative approach combining diplomacy, operational capabilities, and responses to hybrid threats to ensure sustainable security in the region.***

## II. GEOSTRATEGIC ENVIRONMENT AND SECURITY ARCHITECTURE

National security in the 21st century faces unprecedented complexity and evolving challenges. As Bieber (2018) emphasizes, "we no longer live in a world clearly divided between peace and war, but in a reality where traditional, hybrid, cyber, economic, and environmental threats intertwine into a mosaic of new, interconnected, and often invisible challenges." This reality requires a comprehensive and multidimensional approach, where politics, diplomacy, and operational capabilities cooperate to prevent destabilization and preserve regional integrity.

The Western Balkans remain a delicate area, sensitive to external influence. Allison (2021) stresses that "the interests of Euro-Atlantic powers clash with the ambitions of actors seeking to maintain their traditional influence," making the region an "open field of strategic competition, where the security of one country cannot be guaranteed without the stability of others" (Vračić, 2019). This framework highlights the necessity of a security architecture that unites regional and Euro-

Atlantic actors while minimizing destabilizing influences.

In this environment, Albania's security is "organically linked to regional and Euro-Atlantic security" (Judah, 2016). Any insecurity in the region translates into a potential threat to national stability and interests, forcing the country to maintain operational readiness and strengthen its response capabilities against hybrid threats, including cyberattacks and disinformation.

### *2.1. Main Risk Vectors*

Three primary risk vectors characterize the regional environment:

1. Political-ethnic fragmentation: "remains a permanent source of tension in Bosnia and Herzegovina and in northern Kosovo" (Bieber, 2020).
2. Multidimensional hybrid warfare: "disinformation, cyber interventions, and energy pressure are used as strategic weapons to influence the political and social orientation of our countries" (NATO CCDCOE, 2021).
3. Interweaving of criminal and political interests: a phenomenon that "undermines institutions, the economy, and the rule of law" (Judah, 2016).
4. Artificial Intelligence misuse: AI technologies can be exploited for disinformation campaigns, cyberattacks, autonomous weapon systems, and mass surveillance, creating new and complex vulnerabilities in national and regional security (Nye, 2020; Brachet, 2021).

As Bieber (2018) notes, "the

As Bieber (2018) notes, "the lines between internal and external security have blurred," emphasizing that an energy crisis, cyberattack, or disinformation campaign can have "strategic impact equivalent to a conventional military threat" (Nye, 2017).

These risk vectors clearly show that challenges in the Balkans are multidimensional and require integrated preparation at both national and regional levels.

### *2.2. The "Influence Hybrid" Model and Militarization of Political Discourse*

For NATO member states, "the 'influence hybrid' model is as dangerous as a hybrid military operation. It does not operate with tanks and missiles but with emotions, trust, and national patriotic narratives" (NATO CCDCOE, 2021).

Such activities "are not isolated but show an increasing tendency toward the militarization of Serbian politics, where the military, war culture, and historical myths are used as inspirational, recruitment, and mobilization tools" (Allison, 2021). This "complicates regional cooperation within NATO and PfP, increasing the risk of polarization between countries with Euro-Atlantic orientation and those with traditional ties to Russia" (Judah, 2016).

The hybrid influence model emphasizes the need for regional cooperation, rapid cyber response, and strengthened political dialogue to prevent destabilization.

### *2.3. The Balkans as a Terrain for External Influence*

The Balkans, divided into two political blocks, "quickly become open terrain for external influence and new hybrid tensions" (Bieber, 2018). Serbia, facing a strategic choice, cannot indefinitely avoid its position. "Nationalist narratives and anti-Kosovo rhetoric push Belgrade in the forefront and distance the European perspective" (Judah, 2016).

Europe is rebuilding its defense architecture after the Russian aggression in Ukraine, and "any signal strengthening the Belgrade-Moscow connection should be seen as weakening strategic cohesion in Southeastern Europe" (Allison, 2021). The concept of the "Serbian world" aligns with the Russian doctrine of "Russkiy mir," using "culture and religion as justification for political influence and intervention" (Bieber, 2020). This makes Belgrade a "silent strategic partner of Moscow in Southeastern Europe" (Vračić, 2019).

The Balkans remain a critical terrain for external influence, where historical narratives and foreign doctrines are used to orient countries toward strategic blocs.

### *2.4. Regional Challenges and Strategic Cooperation*

Political developments in Serbia directly affect the perception of threats in the region:

- Kosovo: "interpreted as provocation and attempts to undermine the country's sovereignty" (Judah, 2016);
- Bosnia: "stimulate fears of a renewed partition of the entities" (Bieber, 2020);
- Montenegro and North Macedonia: "fuel ethnic and religious tensions" (Vračić, 2019).

On 18 March 2025, Albania, Croatia, and Kosovo signed the Trilateral Defense Cooperation Declaration, aiming to "strengthen military cooperation, interoperability, and joint efforts in threat management" (NATO CCDCOE, 2021). Cyberattacks and disinformation continue to be "weapons used to divide societies, undermine trust in institutions, and feed nationalist or pro-Russian narratives" (Nye, 2017).

Strategic cooperation and the reinforcement of regional mechanisms are essential to manage hybrid challenges and preserve the integrity of the Western Balkans.

Analysis of the geostrategic environment shows that the Western Balkans remain a complex and sensitive area. Albania plays a key role as a stabilizing factor: through its Armed Forces, cyber capabilities, and preventive diplomacy, the country contributes to regional and Euro-Atlantic security, balancing hybrid, political, and economic challenges with coordinated responses and strategic vision.

## III. REGIONAL AND EURO-ATLANTIC COOPERATION – FROM CONSUMER TO LEADERSHIP

Albania has entered a new phase of strategic positioning, where the main challenge is the transition from the traditional role of security consumer to the status of a contributor with weight in the Euro-Atlantic architecture. This transition is supported by the commitment of the Albanian state and the Armed Forces to create measurable value within NATO and to strengthen diplomatic and strategic leadership in the Balkans.

xperiences from the past decade, such as Albania's contributions to KFOR, participation in SEEBRIG and NATO regional exercises, and leadership in the Berlin Process and trilateral initiatives with Kosovo and Croatia, show that small countries can exert disproportionate influence when they build unique capabilities and use diplomatic, military, and institutional instruments in an integrated manner.

### *3.1. Within NATO: Strategic Specialization and Operational Contribution*

As an active NATO member, Albania has significantly increased the operational readiness of its declared units, invested in airport infrastructure, and intensified participation in multinational exercises. The current focus is on consolidating capabilities where small countries create strategic effects beyond their size.

Smith (2020) emphasizes that "small countries gain strategic value when they build specialized skills in areas where the Alliance has operational gaps." Albania has identified several of these fields: mountain operations and rapid response in difficult terrains; special operations; as well as cyber defense and counter-hybrid threat capabilities. NATO's Annual Report (2022) highlights that "information protection, network integrity, and digital resilience are now central pillars of collective defense."

These priorities position Albania as an actor with a measurable contribution within NATO, opening the possibility to serve as a center of expertise for aspiring countries in the region. Brachet (2020) reinforces this assessment, noting that "geostrategic positions in the region gain added value when operational capabilities are combined with security diplomacy."

Through strategic specialization and operational contribution, Albania has raised its profile within NATO and has become a reliable actor for other countries in the region.

### *3.2. In the Region and Beyond: Diplomatic-Strategic Leadership*

Regionally, Albania has transitioned from the role of a beneficiary state to an active security contributor. Johnson (2019) argues that "small states using preventive diplomacy create influence beyond their economic or military weight."

This assessment reflects Tirana's approach, which is activated through multilateral mechanisms such as the OSCE and the Berlin Process, engagement in UN missions, and regional and bilateral partnerships with the USA, Italy, Turkey, the United

Kingdom, France, and Germany. These experiences strengthen Albania's credibility as a stabilizing actor and demonstrate how a small state can project strategic influence through coordinated diplomacy and military engagement.

Albania's diplomatic-strategic leadership demonstrates that small countries can leverage their influence to maintain stability and promote regional cooperation.

### *3.3. Albania as a Regional Stabilizing Factor*

In relation to its neighbors, Albania plays a constructive role in maintaining regional balances. Brachet (2020) notes that "the most reliable security actors are not necessarily the largest, but those that are more resilient, predictable, and integrated."

This logic aligns with Albania's role in Kosovo, North Macedonia, and Bosnia and Herzegovina, where the country coordinates diplomacy, policy, and security, ensuring that responses to hybrid challenges and ethnic tensions are coherent and effective.

Through coordinated and sustained engagement, Albania has become a regional stabilizing factor, reinforcing its role as a trusted Euro-Atlantic partner.

## IV. INDUSTRIA E MBROJTJES SI INSTRUMENT GJEOPOLITIK

### *4.1. Rëndësia strategjike*

Industria e mbrojtjes është shndërruar në një faktor kyç të sovranitetit, sigurisë kombëtare dhe autonomisë strategjike të shtetit. Friedman (2021) thekson se "industria e mbrojtjes nuk është thjesht infrastrukturë prodhimi, por instrument gjeopolitik që përcakton autonominë strategjike të shtetit". Për Shqipërinë, kjo nënkupton zhvillimin e kapaciteteve teknologjike, prodhuese dhe inovative që shërbejnë si shtyllë e sigurisë dhe diplomacisë, duke mundësuar ndërveprime më të sigurta dhe bashkëpunim efektiv me partnerët strategjikë.

Sipas Ministrisë së Mbrojtjes (Programi Defense 2030, 2023), synimi kryesor është "të zhvillojmë industrinë e mbrojtjes 'Made in Albania', duke përfshirë prodhimin e municioneve, sistemeve pa pilot dhe pajisjeve strategjike", duke rritur kapacitetin kombëtar dhe autonominë operative. Industria e mbrojtjes shndërrohet kështu në një mjet strategjik që forcon sovranitetin dhe pozicionin gjeopolitik të Shqipërisë në Ballkan.

### *4.2. Kuadri ligjor dhe infrastrukturor*

Në dy vitet e fundit, është krijuar një paketë ligjore konsoliduese, që sipas Friedman (2021), "siguron stabilitet, aftësi absorbuese për investime dhe bazën për zhvillim teknologjik të qëndrueshëm". Kjo kuadër shoqërohet me ngritjen e strukturave të monitorimit dhe menaxhimit, duke rritur transparencën, efikasitetin dhe koordinimin institucional.

Kuadri ligjor i Ministrisë së Mbrojtjes (Buxheti Afatmesëm 2023–2025) thekson se investimet në infrastrukturën ushtarake dhe teknologjinë mbrojtëse krijojnë

mundësi për një zhvillim të qëndrueshëm dhe një bazë solide për inovacion strategjik. Ky kombinim e vendos industrinë e mbrojtjes në një pozicion të qëndrueshëm për të përballuar sfidat e kompleksitetit modern dhe për të kontribuar në sigurinë kolektive euroatlantike.

### *4.3. Projekte strategjike dhe partneritete*

Partneritetet me Italinë, Turqinë dhe kompani ndërkombëtare kanë sjellë avancime në fushat e dronëve, sensorikës taktike, teknologjisë së avancuar dhe municioneve inteligjente. Friedman (2021) thekson se këto projekte "konsolidojnë aftësitë mbrojtëse dhe ndërtojnë fleksibilitet strategjik", duke i mundësuar Shqipërisë të jetë një aktor me kapacitet reagimi të lartë dhe qendër inovacioni rajonal.

Programi Defense 2030 dhe raporti i Shefit të Shtabit të Përgjithshëm (2024) nënvizojnë se modernizimi i kapaciteteve operative dhe investimi në teknologji është prioritet për të siguruar aftësi autonome dhe fleksibilitet në misionet shumëkombëshe. Këto bashkëpunime dhe projekte rrisin aftësinë operacionale dhe ndikimin rajonal të Shqipërisë, duke e bërë vendin një qendër referimi për rajonin.

### *4.4. Roli rajonal dhe sovraniteti kombëtar*

Industria e mbrojtjes shqiptare është një instrument strategjik që lidh sovranitetin kombëtar me lidershipin rajonal. Përmes investimeve në teknologji, kapacitete operative, partneritete dhe kuadër ligjor të fortë, Shqipëria forcon jo vetëm kapacitetin mbrojtës, por edhe ndikimin euroatlantik dhe stabilitetin rajonal.

Programi Defense 2030 thekson se investimi në industrinë e mbrojtjes nuk është vetëm politikë ekonomike, por edhe strategji e qartë për të siguruar integritet strategjik dhe autonomi në arenën euroatlantike. Modernizimi i infrastrukturës ushtarake, zhvillimi i kapaciteteve teknologjike dhe aftësive njerëzore krijojnë një kombinim të fuqishëm për të ruajtur stabilitetin rajonal dhe për të garantuar sigurinë kombëtare.

Industria e mbrojtjes shqiptare është një instrument strategjik që lidh sovranitetin kombëtar me lidershipin rajonal. Përmes investimeve në teknologji, kapacitete operative, partneritete dhe kuadër ligjor të fortë, Shqipëria forcon jo vetëm kapacitetin mbrojtës, por edhe ndikimin euroatlantik dhe stabilitetin rajonal. "Industria e mbrojtjes nuk është vetëm prodhim; ajo është themeli i një shteti të qëndrueshëm dhe një aktor i besueshëm rajonal" (Friedman, 2021; Ministria e Mbrojtjes, 2023).

## V. DEFENSE INDUSTRY AS A GEOPOLITICAL INSTRUMENT

### *5.1. Strategic Importance*

The defense industry has become a key factor in national sovereignty, security, and the strategic autonomy of the state. Friedman (2021) emphasizes that "the defense industry is not simply production infrastructure, but a geopolitical instrument that determines the strategic autonomy of the state." For Albania, this implies the development of technological, manufacturing, and innovative capabilities that

serve as a pillar of security and diplomacy, enabling safer interactions and effective cooperation with strategic partners.

According to the Ministry of Defense (Defense 2030 Program, 2023), the main objective is "to develop a 'Made in Albania' defense industry, including the production of ammunition, unmanned systems, and strategic equipment," thereby increasing national capacity and operational autonomy. The defense industry thus becomes a strategic tool that strengthens Albania's sovereignty and geopolitical position in the Balkans.

### *5.2. Legal and Infrastructural Framework*

Over the past two years, a consolidating legal package has been established, which, according to Friedman (2021), "ensures stability, absorptive capacity for investment, and a foundation for sustainable technological development." This framework is accompanied by the creation of monitoring and management structures, enhancing transparency, efficiency, and institutional coordination.

The legal framework of the Ministry of Defense (Medium-Term Budget 2023–2025) emphasizes that investments in military infrastructure and defense technology create opportunities for sustainable development and a solid base for strategic innovation. This combination positions the defense industry in a stable position to face the challenges of modern complexity and to contribute to collective Euro-Atlantic security.

### *5.3. Strategic Projects and Partnerships*

Partnerships with Italy, Turkey, and international companies have led to advances in drones, tactical sensors, advanced technology, and smart munitions. Friedman (2021) notes that these projects "consolidate defense capabilities and build strategic flexibility," enabling Albania to be an actor with high response capacity and a regional innovation hub.

The Defense 2030 Program and the Chief of General Staff report (2024) underline that the modernization of operational capabilities and investment in technology is a priority to ensure autonomous capacity and flexibility in multinational missions. These collaborations and projects enhance Albania's operational capability and regional influence, making the country a reference center for the region.

### *5.4. Regional Role and National Sovereignty*

The Albanian defense industry is a strategic instrument linking national sovereignty with regional leadership. Through investments in technology, operational capacities, partnerships, and a strong legal framework, Albania strengthens not only its defense capabilities but also its Euro-Atlantic influence and regional stability.

The Defense 2030 Program emphasizes that investment in the defense industry is not only an economic policy but also a clear strategy to ensure strategic integrity and autonomy in the Euro-Atlantic arena. Modernization of military infrastructure,

development of technological capabilities, and human skills create a powerful combination to maintain regional stability and guarantee national security.

The Albanian defense industry is a strategic instrument linking national sovereignty with regional leadership. Through investments in technology, operational capacities, partnerships, and a strong legal framework, Albania strengthens not only its defense capabilities but also Euro-Atlantic influence and regional stability. "The defense industry is not just production; it is the foundation of a sustainable state and a reliable regional actor" (Friedman, 2021; Ministry of Defense, 2023).

## VI. ALBANIA'S ROLE IN THE EURO-ATLANTIC SECURITY ARCHITECTURE (2025–2035)

Albania is expected to maintain and strengthen its role as a regional stability actor in the coming decade. Despite being a relatively small country, its specialized capabilities and strategic reliability make Albania a reference point for security in the Western Balkans (Brachet, 2020; Ministry of Defense, 2023). Albania's active engagement in regional stabilization includes support in Kosovo, Bosnia and Herzegovina, North Macedonia, Montenegro, and other strategic areas, integrating diplomacy, military capabilities, and cyber technologies to create a network that preserves regional integrity and security.

One key dimension of Albania's contribution is the development of specialized or "niche capabilities" within NATO, which include mountain operations and rapid response in challenging terrains, special operations, cyber and artificial intelligence capabilities, as well as training for aspirant countries (Smith, 2020; Chief of General Staff, 2023). These capabilities position Albania as a regional center of expertise, making the country a reference point for units and states seeking operational and technological integration within the alliance.

Beyond operational contributions, Albania aims to strengthen its diplomatic and strategic role in the region. Through the Berlin Process, SEEBRIG, and bilateral partnerships with the USA, Italy, Turkey, the United Kingdom, and France, the country contributes to preventive diplomacy, monitoring ethnic tensions, and peacekeeping operations under OSCE and UN frameworks (Johnson, 2019; Ministry of Defense, 2023). This engagement integrates politics, diplomacy, and military capabilities, enhancing Albania's credibility and regional influence.

Albania's geographic position and infrastructure capacities make the country a strategic hub for regional logistics and operations. Airports, military bases, and logistical networks support training and operational coordination, strengthening the country's ability to respond to destabilizing influences and hybrid attacks (Allison, 2021; Smith, 2022). Furthermore, the focus on cyber defense and innovative technologies positions Albania as a regional reference for security and innovation, contributing to the containment of malign influences from global actors such as Russia and China (Nye, 2017).

This combination of preventive diplomacy, operational capabilities, and technological innovation creates a sustainable platform for regional strategic leadership. Albania not only contributes to Euro-Atlantic security but also becomes a model for other Balkan countries seeking to balance Euro-Atlantic integration with the preservation of sovereignty and internal stability.

Albania has become a key actor in the Euro-Atlantic security architecture, where the integration of preventive diplomacy, operational capabilities, and technological innovation creates a sustainable model of regional leadership.

## VII. CONCLUSIONS, FINDINGS, STRATEGIC PRIORITIES, AND RECOMMENDATIONS (2025–2035)

The analysis of the decade 2025–2035 shows that Albania has consolidated its position as a key regional stability actor, a reliable NATO partner, and an active contributor to Euro-Atlantic security. The combined actions of preventive diplomacy, operational capabilities, and technological development have transformed the country from a security consumer into a contributor with regional leadership and high strategic reputation (Brachet, 2020; Johnson, 2019).

***1) Key findings relate to the following areas:***

- Increase in operational capabilities: The Armed Forces and special units have strengthened their performance in difficult terrains and cyber operations, creating flexible and rapid-response capacities (Smith, 2020; Chief of General Staff, 2023).
- Regional contribution: Albania plays a stabilizing role in Kosovo, North Macedonia, Bosnia and Herzegovina, and Montenegro, integrating diplomacy with operational capacities (Brachet, 2020; Ministry of Defense, 2023).
- Strategic and diplomatic leadership: Through the Berlin Process, SEEBRIG, and bilateral partnerships with the USA, Italy, Turkey, the United Kingdom, and France, Albania has increased its influence in preventive diplomacy and multinational operations (Johnson, 2019; NATO CCDCOE, 2022).
- Defense industry as a sovereignty instrument: The development of technological capabilities and international partnerships strengthens strategic flexibility, positioning Albania as a regional center of expertise (Friedman, 2021; Ministry of Defense, 2023).

***2) Strategic priorities for 2025–2035 focus on:***

- Consolidating the reserve component to increase national resilience.
- Developing “niche” capabilities within NATO, including mountain, special, and cyber units (Smith, 2020; Chief of General Staff, 2023).
- Investing in human capital and strategic leadership to manage complex challenges (Bieber, 2020; Ministry of Defense, 2023).

- Establishing centers of excellence in areas such as EOD, cyber security, and advanced technologies to consolidate unique capacities.
- Expanding regional and Euro-Atlantic influence through preventive diplomacy, multinational operations, and innovative technological projects (Allison, 2021; Nye, 2017).

***3) Key recommendations include:***

- Revising the national defense strategy to harmonize operational capabilities with diplomatic, technological, and economic priorities.
- Developing technological and cyber capacities to confront hybrid threats and malicious attacks.
- Strengthening regional cooperation through trilateral initiatives and coordinated efforts with neighboring countries and NATO.
- Investing sustainably in leadership and human capabilities to ensure strategic coordination and effective responses to future challenges (Ministry of Defense, 2023; Chief of General Staff, 2023).

***Albania emerges as a reliable factor of regional stability, where the integration of operational, diplomatic, and technological capacities creates a sustainable model of leadership. Combined actions, bold decisions, and long-term vision strengthen sovereignty, regional stability, and active contribution to Euro-Atlantic security.***

***"Security is not built by chance, but through decisions made with courage, responsibility, and strategic vision, at the right time and place."***

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# The impact of the Hague Summit on Albania's national security

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***Abstract.*** *This study analyzes the impact of the last NATO Summit (The Hague, June 2025) on Albania's national and regional security, with emphasis on the indicative objective of increasing defense spending to 5% of GDP by 2035 and its division into two items respectively: 3.5% allocated to essential defense and 1.5% allocated to resilience/sustainability (critical infrastructure, cybersecurity, etc.). In the context of an uncertain and unstable global security environment, especially after the Russian aggression against Ukraine, the article addresses the Summit decisions, turning them into measurable objectives for Albania for the period 2025–2035: comprehensive modernization of (land, air, naval) forces, revitalization of the defense industry (KAYO), increased C4ISR interoperability with NATO, and "dual-use" investments in cybersecurity, critical infrastructure, and civil emergency capacities. The Polish case study (2023–2025) serves as a comparative anlysis, showing that the combination of political will, financial instruments, and centralization of procurement can accelerate the building of appropriate military capabilities through fiscal discipline and institutional absorption capacity.*

**Keywords:** The Hague Summit, military spending at 5%, essential defense, resilience, modernization, military industry, cybersecurity, critical infrastructure, civil emergency capacities, NATO, Armed Forces, strategy.

## INTRODUCTION

This analysis examines the profound strategic and financial implications of the historic decisions reached at the NATO Summit, held in The Hague in June this year, for the national and regional security of Albania. The core focus of this analytical assessment is the ambitious new target of allocating 5% of Gross Domestic Product (GDP) to defense by 2035, a commitment that is divided between strengthening core military capabilities and building comprehensive resilience. Consequently, the study analyzes Albania's path toward the full modernization of the Armed Forces and the

revitalization of the defense industry, arguing that the successful fulfillment of these obligations constitutes a unique opportunity to transform our country into a promoter of security in the Western Balkans.

## 1. THE 2025 HAGUE SUMMIT AND ITS IMPACT ON ALBANIA

The NATO Summit in The Hague, held in June 2025, concluded with a clear and firm reaffirmation of the unwavering commitment to collective defense, under Article 5 of the Washington Treaty. All 32 member countries signed the final declaration, where NATO is described as "the strongest alliance in history", united and committed to the defense of every inch of Allied territory.

One of the historic decisions of this summit was the adoption of an ambitious new target for defense spending. NATO leaders agreed that by 2035, member countries would increase annual defense spending to 5% of Gross Domestic Product (GDP).[1]. This is the highest level of defence investment since the Cold War, exceeding the previous target of 2%. The increase to this level means hundreds of billions of dollars/euros more each year at the Alliance level, compared to current spending. This measure is directly linked to the need to respond to the growing threat posed by Russia to European security, following its invasion of Ukraine. It also aims to strengthen NATO's readiness to face long-term security challenges, including terrorism and hybrid threats.

For Albania, which has already reached the previous 2% of GDP threshold for defense[2], recently, the Hague decision translates into a significant budget increase over the coming years. Achieving this 5% objective would constitute a heavy burden on a country with a modest economy, like Albania, as it is a substantial amount and would require careful planning, in order not to jeopardize the country's economic and social development.

**3.5% + 1.5% allocation: new focus on resilience:** The 5% target is divided into two spending categories[3]: 3.5% of GDP will be allocated to traditional military defense (military industry, salaries, weapons, ammunition, combat equipment, etc.), while 1.5% will be used for activities related to collective security and increasing national resilience. This new category includes investments in cybersecurity, protection of critical infrastructure (energy networks, roads, railways, ports, bridges, pipelines) and civil emergency capacities[4]. For Albania, this means not only increasing the budget of the Ministry of Defense, but also allocating funds to other ministries that contribute to national security, such as improving the road and railway network. This comprehensive approach reflects the modern concept of security, where defense is

[1]https://www.janes.com/osint-insights/defence-and-national-security-analysis/nato-leaders-agree-to-invest-5-of-gdp-on-defence-and-security-by-2035

[2]https://www.mod.gov.al/eng/newsroom/1744-2025-draft-budget-minister-vengu-in-parliament-ensures-salary-increases-and-continued-modernization-of-the-armed-forces

[3] https://www.nato.int/cps/en/natohq/official_texts

[4] https://www.nato.int/cps/en/natohq/official_texts

not limited to the military aspect, but also includes civilian mechanisms for crisis management – a lesson learned from the experience of Russian aggression, where cyberattacks and infrastructure sabotage play a key role.

The Hague Summit conveyed a clear message: the 5% target is not simply a financial obligation to the Alliance, but a necessity for the modernization of defense capabilities – from combat equipment to military infrastructure. For years, the defense budget has been at the level of 1.2–1.5% of GDP, increasing to 2% only recently. Albania aims for full interoperability with Allies in every branch of the armed forces, as well as increased capabilities for territorial defense and contribution to international missions. The Summit Declaration addresses these objectives, mentioning Russia and terrorism as long-term threats and calling for the elimination of trade barriers in the defense field – including facilitating military procurement between Allied countries. The Allies, including Albania, must act quickly to increase military capabilities through cooperation in the field of armaments and defense technology.

## 2. IMPACT ON THE ALBANIAN ARMED FORCES AND RESILIENCE STRATEGY

**Military Industry.** In 2024, the state-owned company (KAYO sh.a.) was founded, conceived as a central entity for the consolidation of production capacities whose object of activity is the design, production, repair, demilitarization, destruction and trade, inside and outside the country, of all types of weapons or parts of weapons, including military weapons, ammunition, military technologies and equipment, as well as any activity related to this activity, in the service of national security and defense policies and the increase of military capacities: Gramsh (light weapons), Poliçan (ammunition) and Mjekës (Elbasan). The KAYO sh.a. company has assumed the activities of the State Enterprises (the Explosives Plant in Mjekës, Mechanical Plant in Poliçan, and Ammunition Plant in Gramsh). In order to support it, the Defense Industry Agency was established, tasked with regulating, supervising and promoting the production, trade, transportation, storage, as well as research and development of military armaments in accordance with national and international standards, with the aim of strengthening the defense capacities and economic development of the Republic of Albania.[5]

These two entities were created with the sole purpose of revitalizing the domestic defense industry by adding a new pillar of development to the economy. This marks a historic turning point, transforming the country from a "passive consumer" of imported equipment to an "active contributor" to the Alliance's supply chain. Of course, achieving this objective requires major investments, strategic partnerships and technology transfer, as this is a challenging process for a small country with limited financial and technical resources.

[5] https://www.mod.gov.al/politikat-e-sigurise/te-tjera-nga-mm/industria-ushtarake

**Increasing interoperability with NATO.** A clear goal of modernization is interoperability with allied forces. This means that this process should include state-of-the-art communication tools that enable uninterrupted communication, the implementation of procedures according to Alliance standards, as well as well-trained military personnel. Albania has taken concrete steps in this direction: Albanian personnel regularly participate in joint multinational exercises (e.g. Defender Europe and Joint Endeavor exercises), during the execution of which various military operations are carried out.

In addition, a number of officers and non-commissioned officers attend training courses at NATO military academies (USA, Italy, Turkey, etc.), to familiarize themselves with modern tactics, techniques and technologies. Interoperability is also increasing in the field of command and control: with the assistance of allies, the FARSH are implementing integrated C4ISR (Command, Control, Communication, Computer, Information, Reconnaissance and Surveillance) systems that allow for real-time data exchange with NATO centers. This means that, for example, an Albanian radar or an Albanian patrol can exchange information with allies in a short time, contributing to the creation of a clear combat picture. As a result, Albania is increasingly seen as a security provider in the region, despite its small size, a contribution "exceeding its weight", as NATO officials have called it.[6].

**Military and civil sustainability:** In addition to the modernization of equipment, the Hague Summit placed great emphasis on resilience, the ability to withstand and recover quickly from shocks. For the Albanian army, this means increasing logistical support capacities, strengthening logistics and improving critical military infrastructure. In addition, specialized training of troops is being intensified to increase operational resilience: Albanian units are being trained for rapid deployment abroad, for operations in winter or mountain conditions, as well as to adapt to various crisis scenarios. Within NATO, our country contributes troops to peacekeeping missions and combat training, which gives practical experience to our army. Albania is constantly sending military personnel to military missions in Iraq, Kosovo, as well as to NATO multinational groups in Latvia and Bulgaria (part of the Enhanced Joint Force on the Eastern flank). These engagements provide Albanian troops with enhanced capabilities, from crowd control and peacekeeping operations (obtained in Kosovo) to deployment in unfamiliar terrain (obtained in Latvia and Bulgaria).

Another component of resilience is cyber defense., which is included in the 1.5% of GDP target. Albania has learned lessons from the painful experience of the 2022 cyberattack against the government system (attributed to an attack caused by the Iranians), which temporarily paralyzed public services and forced the Albanian

[6]https://www.nato-pa.int/news/after-15-years-nato-membership-parliamentarians-hail-albanias-outsized-contribution-alliance

government to take strong protective measures.[7]. In January 2024 it was inaugurated Military Cyber Security Unit (MCSU)[8], for training cyber experts within the Armed Forces, it also has equipment for monitoring systems and active protection against cyber attacks. These efforts not only protect military and civilian government communication networks, but also contribute to NATO's collective cyber defense, as Albania shares information on possible attacks of this nature.

**Critical infrastructure protection and civil emergencies:** An important part of the 1.5% figure is investments in critical dual-use (civilian-military) infrastructure and in civil emergency capacities. Albania is exposed to natural hazards (earthquakes, floods, forest fires). With the new funds, it is foreseen to strengthen civil protection: the creation of emergency reserves (e.g. food, water, medical equipment) for the population, the modernization of the firefighting fleet and land and air search and rescue vehicles, as well as the training of (military and civilian units) personnel engaged to provide rapid response in case of natural disasters.[9] In addition, investments will be made in adapting road, rail and port infrastructure for military needs.

This could mean investments in strengthening major bridges to support the weight of heavy vehicles, or expanding airstrips (such as Kuçova and other airports) to accommodate military aircraft of all types, and upgrading ports (Durrës, Vlorë) with quays where large military ships can dock. Such investments have two benefits: on the one hand, they increase defense capability (troops and equipment can move faster and more safely in a crisis), and on the other hand, they improve the development of civilian infrastructure. This "dual-use" approach will also be appreciated by the European Union and other partners, as it ensures that defense funds have a positive impact on the community.[10]

## 3. FUTURE STRATEGIES AND STRENGTHENING THE ROLE OF ALBANIA

To successfully achieve NATO's ambitious objectives following the Hague Summit, Albania must implement a series of key strategies, affecting both the military and the economic and diplomatic spheres. The following are the main strategic pillars for the future:

**Drafting a Long-Term Strategic Plan:** Albania should draft a National Defense Plan 2025–2035, which should detail the annual steps to achieve the 5% target

[7]https://www.reuters.com/world/albania-cuts-iran-ties-orders-diplomats-go-after-cyber-attack-pm-says-2022-09-07

[8] https://www.kryeministria.al/newsroom/krijohet-njesia-ushtarake-e-sigurise-kibernetike-me-rol-kyc-ne-luften-kunder-kercenimeve-kibernetike

[9] https://www.mod.gov.al/newsroom-2/7362-zjarret-qeveria-shpall-pakete-mbeshtetese-per-banoret-e-prekur-ministri-vengu-shtojme-investimet-per-rinovimin-e-flotes-ajrore-dhe-torkesore

[10]European Commission / CINEA, "Commission supports military mobility projects with €807 million," press release, January 24, 2024.

without causing financial shocks. This plan should include a clear financial analysis: how much the defense budget will increase each year, what are the sources of financing, and which investments will be prioritized. This constitutes a large burden on the state budget, so planning should foresee where cuts will be made or where additional revenues will be generated. The strategic plan should also define investment priorities: e.g., by 2027 the focus should be on basic modernization (weapons and personal equipment, vehicles, communications), for the period 2028–2030 the focus should be on advanced capabilities (drones, artillery, air defense), for 2030–2035 the focus should be on domestic production and long-term maintenance. The plan should also foresee the strengthening of military procurement structures to manage the increasing volume of funds and projects, as well as the establishment of monitoring and auditing mechanisms to ensure efficient and transparent use of funds.

**Ensuring financial sustainability and reducing fiscal risks:** Since increased defense spending can put pressure on public finances, an important strategy is to ensure that this increase is fiscally sustainable. The government should aim to cover the additional spending primarily from domestic revenues (economic growth, tax revenues) and budgetary redistribution.It is necessary to secure various financial resources to support and improve protection. This is where public-private partnerships and aid/donations from allies come into play; dual-use infrastructure (airstrips, ports, strategic roads) can be built with co-financing: part from the Albanian budget, part from NATO funds, and part from private investment in cases where private companies can express their interest in investing in the defense field. The US and key allies can provide direct military assistance, either in the form of free equipment (as is the case with the donation of two Black Hawk helicopters from the US), or in the form of grants for training and infrastructure (e.g. NATO funding worth 50 million euros for the modernization of the Kuçova base).

Albania should draft concrete projects and submit them to special NATO or EU funds (such as the EU's European Defence Fund or NATO Security Investment Program programs), to secure financing that eases the burden on the national budget. Equally important is maintaining balance with other priority expenditures.

**Strategic communication and public awareness:** The implementation of such an ambitious program requires broad public support. Albanian citizens must understand why increasing the defense budget is vital. It must be constantly emphasized that defense spending is an investment in security and peace, a vital insurance to protect the country from threats that, as the war in Ukraine has shown, are not theoretical but real. The public narrative must clearly explain the connection between security and development: without a safe country, there is no stable economy, foreign investors leave, tourists are frightened, and daily life is disrupted. Likewise, it must be explained that Albania's contribution to NATO increases its international weight and prestige, a country that fulfills its allied obligations earns the respect of major allies.

Another aspect is the involvement of the public in defense projects when possible, e.g. employing local labor in the construction of bases, or opening up Armed Forces

activities to the public (open days, military parades, demonstration exercises). These initiatives make the public feel part of the change and better understand the role of the military. The real challenge comes when this support has to be translated into financial sacrifice, i.e. accepting that a larger part of taxes will go to investments for the purchase of military equipment and supplies instead of being destined for the construction of schools or roads. This requires careful argumentation: citizens must be explained that the danger is not far away, instability in Europe (or potentially even tensions in the Balkans) could directly affect Albania, therefore preventing conflict through strengthening NATO is in their vital interest.

**Active engagement in NATO initiatives and operations:** In addition to increasing national capacities, Albania aims to consolidate its profile as an active and useful ally within NATO. This means continuing contributions to military missions and operations, taking on new initiatives, and proactively positioning itself in the formulation of Alliance policies. Currently, the Albanian contingents in Kosovo (KFOR), in NATO Mission Iraq, in NATO groups in Eastern Europe (Bulgaria, Latvia) and the naval participation in Sea Guardian are concrete examples of the value that Albania brings. In the future, the opportunities for engagement may increase. Also, participation in the new structures of the Joint Forces may increase (some Albanian companies or units to declare themselves ready for NATO calls in case of future crises, once NATO standards are met). This would demonstrate Albania's seriousness in being at the forefront of collective efforts.

**Priority of skills where Albania has an advantage:** Given that resources, even after growth, remain limited compared to great powers, a wise strategy for Albania is to focus investments in areas where its contribution has the maximum impact on collective security. Some of these areas could be:

**Contribution to military training and mobility:** One asset that Albania offers is its training and logistical capabilities for Allied troops. The diverse Albanian terrain (mountains, coast, Mediterranean climate) offers good conditions for various exercises. Recently, Albania has hosted large multinational exercises, such as "Defender Europe 21/23/25", with the participation of Alliance troops. In the future, investments (notably the new port at Porto Romano and road/rail infrastructure) will make Albania even more capable of hosting a significant number of military troops in a shorter time. This is essential in case of crises: e.g., reinforcements from Italy or Spain can pass through Albania to reach the Balkans or the Eastern Front quickly. Albania has adapted its legislation and infrastructure in order to ensure that the transport of troops and military equipment of allied countries is carried out without bureaucracy and according to NATO standards (e.g. roads that can withstand the weight of heavy vehicles, air bridge for military cargo in Rinas, etc.). This makes our country a strategic hub of regional military mobility within the Alliance.

**Coordination with international partners and Euro-Atlantic integration:** While the main focus is NATO, we should not see this objective in conflict with other integration processes, especially with the European Union, but rather a synergistic

approach is needed. The EU has long been promoting joint defence initiatives between member and candidate countries, to avoid duplication and to strengthen collective military capabilities in an efficient manner..Albania should seek inclusion in EU defense programs (e.g. PESCO – Permanent Structure for Defense Cooperation, where it can join certain projects such as military transport infrastructure, drone development, etc.). In other words, we need to demonstrate that it can move in two directions simultaneously: strengthen defense capacities and advance democratic and economic reforms, with the goal of EU membership. This will place the country in a positive light, as a contributor to European security.

In the regional aspect, the implementation of joint military agreements with neighboring countries and coordination is important to maximize collective security. In this context, the three defense ministers of Albania, Croatia and Kosovo signed the Joint Declaration on Cooperation in the Field of Defense, in Tirana on March 18, 2025. According to the agreement, the three countries will cooperate in the field of security and defense in the following areas: interoperability, joint exercises, military mobility, cyberdefense, countering hybrid threats and cooperation in the military-industrial complex. Albania can also develop joint projects with neighboring countries in the fields of border patrols, civil emergency exercises, etc. These increase regional cohesion and strengthen resilience to malicious influences from third actors..Finally, an important strategy is to perceive Albania's military buildup as a contribution to stability. The main diplomatic message should be: a militarily stronger Albania within NATO is additional guarantee that the Balkans will remain secure.

## 4. CASE STUDY: POLAND

**Increase in military spending for 2023–2025:**

**Strategic framework**. In the last three years, Poland has emerged as the most typical case of an ally that has turned budget growth into a direct instrument of deterrence and capacity building. The architecture of this transformation was set by the "Homeland Defense" law (2022)[11], which unified the provisions and created new financing mechanisms for the modernization and expansion of military forces. Essentially, the political objective has been twofold: to quickly recover the capabilities lost after sending some of the equipment to Ukraine and to raise a new deterrence profile on NATO's eastern flank.

**Budget dynamics for 2023–2025.** In 2023, Poland positioned itself among the largest spenders in the Alliance as a share of GDP, bringing public defense spending tosthe 4% of GDP threshold, with a significant increase compared to the previous year. According to official NATO estimates published in early 2025, Poland spent about 4% of GDP in 2024. In the spring of 2025, the executive declared the ambition

[11]https://www.gov.pl/web/primeminister/more-troops-and-more-money-for-defence--the-council-of-ministers-adopted-a-draft-homeland-defence-act

that in 2026 spending would approach 5% of GDP, in resonance with the Alliance's new target of 5% by 2035. This 2023–2025 triangle therefore represents a continuous climb, which appears as the highest in NATO in terms of percentage over GDP.

**Financing and control mechanisms.** The financial pillar is supplemented by the Armed Forces Support Fund at the State Bank (BGK)[12]. This instrument allows for the mobilization of capital beyond the annual budget limits (through treasury bonds, treasury bills and budget contributions), making it possible to develop multi-annual programs at a rapid pace. In the summer of 2025, Poland also secured a USD 4 billion loan guarantee[13] from the US government for modernization, which reduces the cost of financing. All this has been accompanied by efforts to centralize procurement and increase parliamentary oversight, with the aim of finalizing this process in time and avoiding mismanagement of funds.

**Modernization package.** The budget increase has translated into a broad portfolio of projects: contractssfor 250 M1A2 Abrams tanks and 32 F35 aircraft from the US; large-scale agreements with South Korea for K2 Black Panther, K9 howitzers, K239 Chunmoo and FA50 missile launchers; as well as ground air defense components (Patriot and other GBAD layers). These purchases aim to transition to Western standards regarding the unification of calibers, networksscommunication and proceduresscommand and control with the Alliance. At the same time, Poland aims to gradually expand its active troops towards a force of around 300,000 by the middle of the next decade.

**Its operational effect and weight within NATO.** In the operational plan, Poland has increased its ability to raise armored ground formations with high operational readiness and has increased its contribution to air defense and air policing missions in the east. This is also reflected in its political weight: through host nation agreements for the stationing and deployment of allied forces, Warsaw has demonstrated real sharing of financial burden with partners. So, the modernization process of equipment goes hand in hand with training, maintenance and interoperability processes, all of these enhancing the containment strategy and generating multiplying effects for the security of the eastern flank.

## CONCLUSIONS

The 2025 Hague Summit marked a historic turning point in the evolution of NATO's strategy and at the same time presented a major challenge for countries. smalllike Albania. Through the decisions taken, the reaffirmation of collective defense without any doubt and the targeted increase in defense spending to 5% of GDP, they show that the Alliance is determined to face a more dangerous world..For Albania, these decisions translate into obligations but also into historic opportunities.

[12] https://www.trade.gov/country-commercial-guides/poland-defense-industry

[13]https://www.state.gov/releases/office-of-the-spokesperson/2025/07/us-delivers-4-billion-fmf-loan-guarantee-to-poland-advancing-strategic-partnership-and-strengthening-natos-eastern-flank

Increasing the defense budget and modernizing the Armed Forces should not be seen simply as fulfilling an obligation to NATO, but as a strategic investment for the country's future. A stronger and better-equipped Armed Forces significantly increases national security, giving the country real capabilities to defend itself against any threatening scenario. Modernized military forces also contribute to regional security, becoming a pillar of stability in the Western Balkans alongside allies.

Successful implementation of the Summit objectives requires vision, planning and political will. Albania must show wisdom in managing defense reform: a detailed financial plan, open communication with the public, and close coordination with allies to provide technical and financial support where necessary. In the international arena, Albania will likely reap diplomatic benefits from its engagement. By fulfilling NATO promises and "giving more than getting" from the collective security, our country strengthens its position as a reliable partner. This could also have a positive impact on the EU integration process, as it demonstrates governance skills and commitment to Western values. As for NATO, Albania's voice will carry more weight when it comes to issues that affect its interests (e.g. the Balkans, the Mediterranean, relations with partners).

Of course, the challenges should not be underestimated. Achieving 5% by 2035 is ambitious and fraught with potential economic and social obstacles. But the strategic orientation is clear and sustainable: Albania sees its future inseparable from the Euro-Atlantic community. The current geopolitical situation, the war in Ukraine, the regional tensions still not fully resolved, prove once again that the best guarantee for a small country is to be an active part of strong alliances like NATO. Increasing military capacities, combined with democratic and economic development, will make our country more resilient to crises, safer from aggression, and will provide our citizens with long-term peace and stability. In this way, the goals of the Hague Summit can be transformed into a success story for Albania: from a security consumer to a significant security contributor, guaranteeing not only the survival but also the progress of our country in the decades to come.

## RECOMMENDATIONS IN SPECIFIC MILITARY FIELDS

**Long-term strategic legal framework:** Albania should adopt a 5–10-year strategic legal framework that defines clear, measurable and time-bound objectives, linking each objective to key performance indicators (KPIs) and periodic review mechanisms. The framework should be supported by multi-year financial planning, to give the Ministry of Defense the certainty and ability to engage in long-term modernization programs that are not interrupted from annual budget cycles.

**Innovative financial mechanisms:** A "Special Fund for Defense Modernization" should be established, designed to finance transformational programs and increase the predictability of funding over time. The fund could be filled with a dedicated percentage of the annual budget, other state revenues, and public-private partnerships, spreading the fiscal burden over the years. The fund should have the

right to carry over funds from year to year, in order to accumulate capital for large infrastructure projects and complex purchases that require upfront payments. The use of international financing instruments, such as loans with guarantees provided by partner governments or multilateral institutions, should be envisaged to reduce the cost of borrowing and ensure a sustainable pace of strategic procurement.

**Focus on "Niche Capabilities":** (specialized field – capability/capacity in a specific specialized strategic military field). The modernization package should focus on capabilities/capacities in specific areas where Albania can offer added value to collective security, in line with the country's geography, economy and regional role. Unmanned systems and anti-drone defense: relying on TB2 Bayraktar, a chain of advanced C-UAS training, maintenance and tactics can be built, so that our country is transformed into a center of regional expertise.

Special Forces and light infantry: there should be enhanced the modernization of highly ready and rapidly deployable units, by investing in multinational training, lightweight/rugged equipment and C4ISR interoperability.

Cybersecurity: there should be increased human capacity through the application of advanced training programs, testing laboratories, and participation in concrete exercises with allied countries; an area of lower capital costs, but of a disproportionate impact on resilience.

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# COMPARATIVE ANALYSIS OF NATO'S INTELLIGENCE DOCTRINE AND THE COLLECTIVE APPROACH TO SOVEREIGN NEUTRALITY

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**Abstract.** *The doctrines of security, defense, and intelligence are interconnected and, even from an official perspective, they are defined as an expression of national security, but it is necessary to have a more accurate perspective that is based on different political units.*

*Thus, these doctrines operate within the format of strategic solutions and attempt to maximize territorial security as the most important political concern in the general sense and security in the specific sense, providing decision-making strategies for the country's leaders.*

*In this regard, the study of strategic doctrinal solutions and the comparison of intelligence doctrine between NATO and Switzerland is similar to Albania and Kosovo, but is also of particular importance in the recent changes of geopolitics as a political phenomenon which has an emphasis on maximizing the power, security and internal territorial capacity of a state.*

*Based on the above, small states, in particular, should begin to conceptualize their intelligence doctrines by creating intelligenceindependence that protects national interests in relation to obligations to various international security and defense formations.*

*The current results show that every theorist from the field of security and defense should suggest territorial security, ensured by various strategic security solutions, with a special focus in order to succeed in operational areas.*

**Keywords:** NATO, Military Security and Intelligence Doctrine, Federal Intelligence Service (FIS)

## INTRODUCTION

In a world characterized by geopolitical instability and complex threats, strategic intelligence plays a crucial role in shaping security and defense policies. Various international organizations and sovereign states develop security, defense and intelligence doctrines to address challenges such as terrorism, hybrid warfare, cyberattacks and espionage. In this context, NATO and Switzerland represent two different approaches: one relies on collective cooperation and information sharing, while the other emphasizes neutrality and national autonomy. NATO's intelligence doctrine is built on the principle of collective defense (Article 5 of the North Atlantic Treaty) and promotes the exchange of information between member states to identify and prevent common threats. Through structures such as the NATO Intelligence Fusion Centre (NIFC) and the NATO Intelligence and Security Division (NISD), NATO pools intelligence resources to enhance the effectiveness of regional and global security.

In contrast, Switzerland's intelligence doctrine is built on permanent neutrality and strategic independence. Through the Federal Intelligence Service (FIS), Switzerland focuses on protecting sovereignty and internal security, acting independently and avoiding forced external commitments. This approach aims to maintain stability and minimize the risk of involvement in international conflicts.

The purpose of this study is to analyze and compare these two intelligence doctrines, highlighting differences in institutional structure, approach to cooperation, and the influence of foreign policy in shaping intelligence strategy.

The main objectives of addressing this topic are:

a) to understand the differences between security, military, and intelligence doctrine;

b) to examine the main principles and structures of NATO and Swiss intelligence doctrine;

c) to analyze the impact of neutrality on Switzerland's intelligence policy.

The main research questions are:

- How does NATO's intelligence doctrine differ from that of Switzerland?
- How does neutrality affect the Swiss approach to intelligence?

The importance of this paper lies in providing a detailed comparative analysis that can help scholars, policymakers, and security experts better understand the impact of different structures and philosophies on intelligence effectiveness. Furthermore, this paper contributes to the academic debate on the balance between international cooperation and national independence in an uncertain global environment.

**Realist and liberal perspectives on the definitions of security, defense, and intelligence doctrines**

In the analysis of international relations, the realist and liberal perspectives offer

two different perspectives on security, defense, and intelligence doctrines and their use. These two approaches differ fundamentally with regard to the role of military and intelligence security forces and their purposes in the international system. (Fredrik Doeser and Filip Frantzen 2022).

**- Realistic perspective on doctrines**

Realism is a theory that emphasizes competition, security, and the role of the state in an anarchic international system, where there is no supreme authority that can enforce rules. From this perspective, states are primarily concerned with their own survival and will seek to maximize their security in an environment of uncertainty and competition. According to realism, doctrines are shaped by the constant threat of the actions of other states.(Fredrik Doeser and Filip Frantzen 2022). An increase in military power by one state may trigger an arms race or may prompt another state to take preventive action. Realist doctrines often focus on deterring threats through a strong defensive or coercive capability, as well as on being prepared to respond to one or more attacks. Realists believe that doctrines in general, and intelligence doctrines in particular, are oriented toward the preservation of national interests, usually understood as defense and force.

This means that military security strategies focus on war readiness or knowledge, such as deterrence strategies (e.g., nuclear deterrence), and on preparing for worst-case scenarios, such as war with rival states. Realism therefore advocates doctrines that contain a balance of offensive and defensive capabilities, depending on the security environment. A state may adopt a preemptive strike doctrine or a defensive posture, depending on perceived threats from other states. Doctrines within realism are closely related to maintaining or adjusting the balance of power at the international level. States may formulate doctrines in response to power shifts, for example, when a rival state is increasing its strength. (Collins 2007)

**- Liberal perspective on doctrines**

Liberalism, on the other hand, emphasizes international cooperation, institutions, and the possibility of peace through international norms, laws, and organizations. According to this perspective, doctrines are shaped by the belief that conflict is not inevitable and that states can cooperate to achieve common goals. The liberal believes that security doctrines, both military and intelligence, should focus on strengthening international cooperation through international organizations such as NATO or regional security organizations.(David Schwartz, Daniel Galily 2017).

**- Definition of security doctrine**

It is a set of principles and policies that guide a state or organization in formulating strategies and measures to ensure the protection of its national, territorial, political, economic and social interests in the face of potential threats. It includes a deep understanding of the internal and international factors that can affect a state's security and how to manage threats that can endanger national security.(Sempa 2004)

**- Definition of the doctrine of defense**

It is a set of principles, strategies, and policies that guide a state in the use of military force and other resources to protect its territory, citizens, and national interests from internal and external threats. It functions as a state plans and organizes its defense, including the use of military force, threat management, and international cooperation in the field of security. (LT. COL. GR MEYER 1939) Hysni Gjergji, in his paper "Modernization of the Armed Forces under Geopolitical Influence and Technological Transformation", emphasizes that "military doctrine is the fundamental set of principles that guide the Armed Forces to fulfill national security objectives." (Hysni Gjergji 2024)

**- Definition of the doctrine of intelligence**

It is an indispensable guide that defines how intelligence operations should be conducted to ensure the protection of national interests and to guarantee that the information collected and analyzed serves decision-makers efficiently and securely. (KEVIN D. SCOTT Vice Admiral 2017).

## THE EVOLUTION OF NATO'S INTELLIGENCE DOCTRINE

NATO's primary goal is to preserve the freedom and security of all its members by political and military means, and to this end, the 2010 Strategic Concept defines its main tasks: collective defense, crisis management and cooperative security, and intelligence sharing.(Rêgo 2018). NATO's Intelligence Doctrine therefore began to emphasize the need to complexify and diversify information collection. NATO began to develop a more integrated and coordinated approach to information collection and dissemination, including cooperation with other international organizations, such as the United Nations and the European Union, applying liberal theory to the concept of security.(NATO 2024) NATO doctrinal publications often have functional relationships and are grouped into an architecture called the Allied Joint Doctrine Architecture (AJDA).

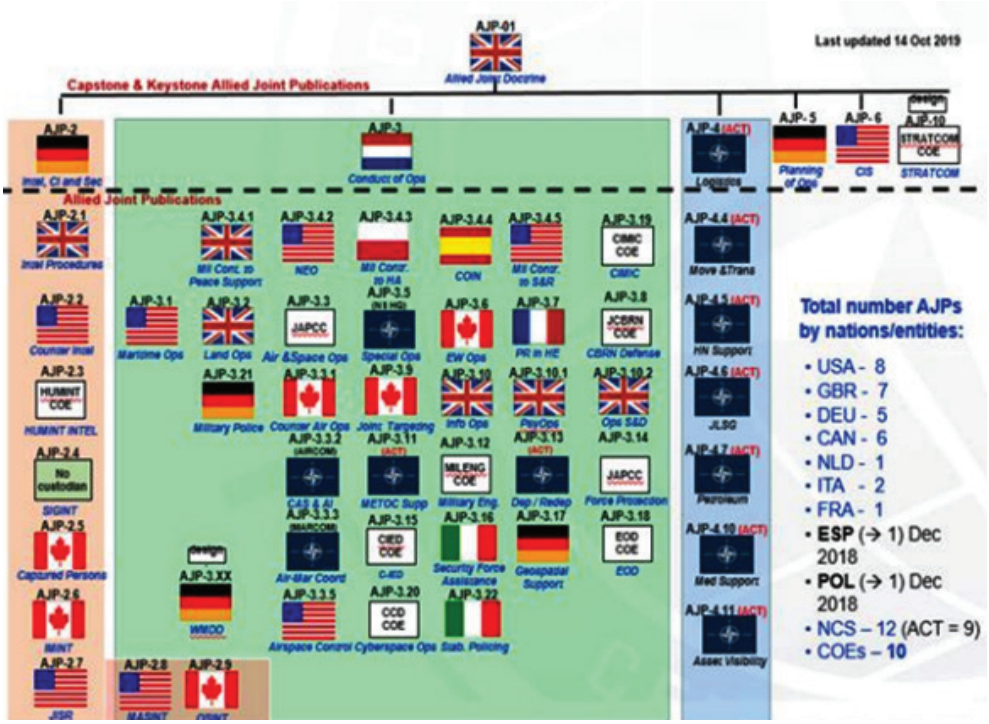


Figure 1. Allied Joint Doctrine Architecture (AJDA) (Gubbels 2020)

So we can conclude that in 1996, NATO had its first ground operation in Bosnia and Herzegovina where during this operation, NATO began to collect its intelligence through local national cells. The intelligence cells supported deployed NATO forces and staff. Therefore, seeing the need, NATO continued to expand the number of active intelligence cells as their operations grew in scope. These cells also had a precedent of sharing information between each other, which is a concept that would continue in the Intelligence Fusion Center (NIFC).(Recio 2025).

The events of 11 September 2001 and the subsequent invocation of Article 5 (which states that an attack against one member is an attack against all) prompted the Prague Summit. The summit concluded with a mandate to improve NATO's structure and to improve NATO's capacity to undertake and successfully complete new operations. This was the impetus for the creation of the NIFC. The aim of the NIFC is to create a more cohesive intelligence apparatus for NATO and to fill information gaps within the organisation. The NIFC creates intelligence products that are then distributed to Allied Command Operations and NATO Allies.(Recio 2025)

See Figure 2. NATO intelligence is supported by a number of national and NATO-integrated intelligence agencies. NATO intelligence became important when NATO began to build multinational force organizations around multinational headquarters. (Korkisch 2010).

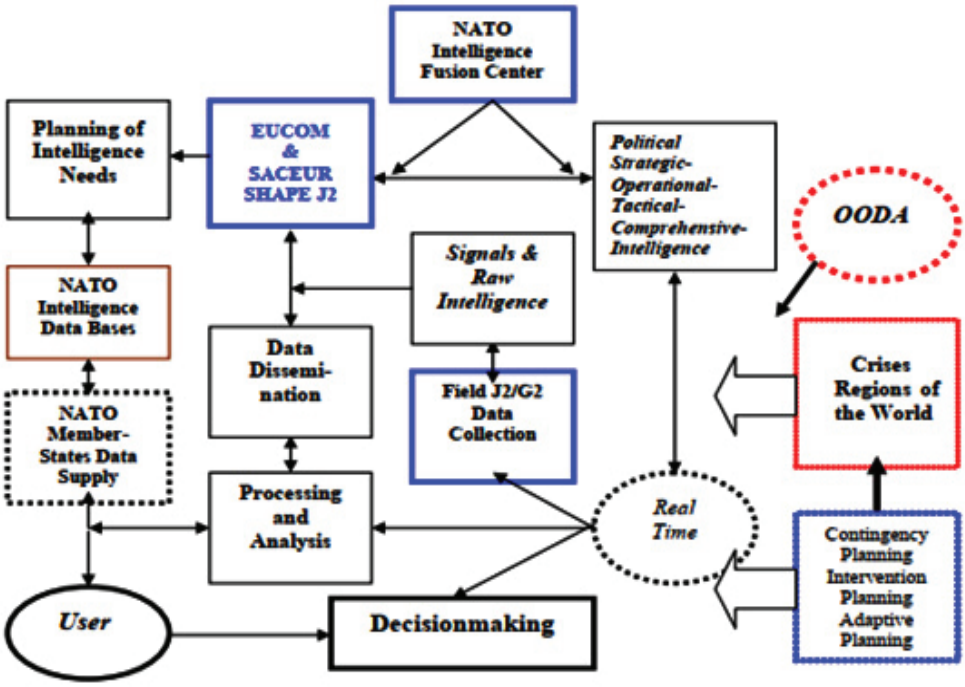


Figure 2. Intelligence Fusion Center (NIFC).

A comprehensive reform of NATO's intelligence sector was advanced in 2010-2011 and brought about significant improvements in the quantity and quality of inter-agency coordination, information analysis and intelligence sharing. The Intelligence Steering Board (ISB) was tasked with overseeing and developing strategic intelligence requirements. The Military Intelligence Unit (IU) was established at NATO Headquarters as a joint civilian and military body supporting decision-makers with intelligence-based analysis and assessments, produced in close cooperation with the Intelligence Division IMS. The Intelligence Liaison Unit improved the mechanism for sharing civilian and military intelligence with partners. In the operational dimension, Allied Command Transformation (ACT) enhanced and improved strategic analysis and forecasting related to intelligence concepts and capabilities. Allied Command Operations (ACO) strengthened intelligence support for operational planning and execution, improving communication and information systems for the purposes of information exchange and intelligence sharing. In this regard, the development of Joint Intelligence, Surveillance and Reconnaissance (JISR) was recognized as one of the vital elements of military operations, including pre-operational capabilities and enhanced situational awareness.(Gruszczak 2024) which is illustrated in Figure 3, where the intelligence, surveillance, reconnaissance, synchronization, and integration (ISR) process is synchronized with the intelligence and operations cycles. Although the ISR process is often aligned with the collection

and processing phases of the intelligence cycle, it is not exclusively aligned, especially when ISR assets support operations directly and in real time. Thus, Figure 3 illustrates the alignment of the ISR process and the intelligence and decision cycles. (The Development 2023).

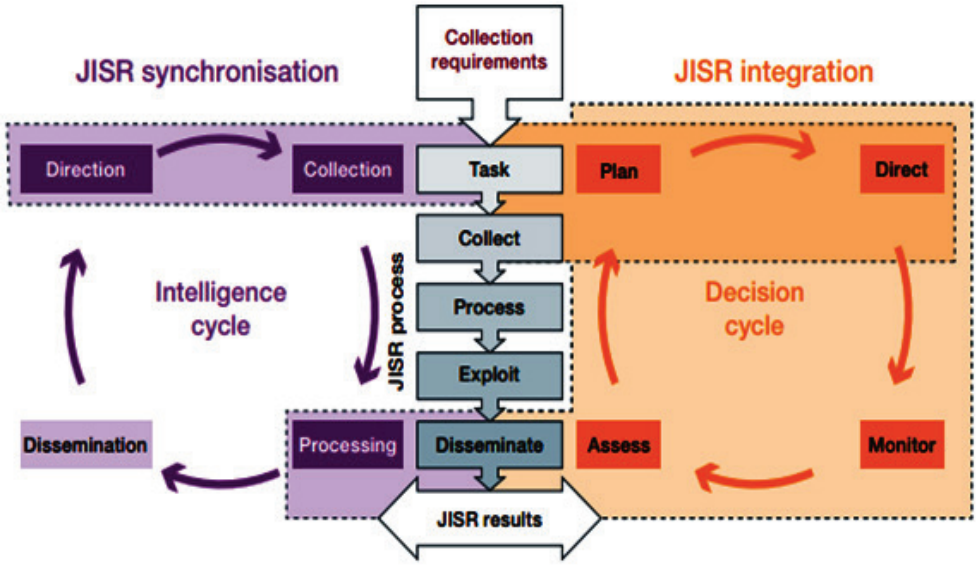


Figure 3. Alignment of the ISR process and the intelligence and decision cycles

## THE EVOLUTION OF SWITZERLAND'S INTELLIGENCEDOCTRINE

Swiss Intelligence Doctrine has undergone significant transformations throughout its history, reflecting changing political, social, and technological landscapes. Initially shaped by a commitment to neutrality and privacy, Swiss intelligence practices have evolved in response to internal challenges and external threats. The historical evolution of these practices can be traced to the creation of formal intelligence structures in the early 20th century, which were primarily focused on national security and internal stability.(Haering 2002) Over time, as global dynamics shifted, particularly with the rise of terrorism and cyber threats, Swiss intelligence agencies adapted their strategies to encompass a broader range of security concerns. This adaptability is evident in recent reports highlighting the growing risks from foreign espionage activities and domestic extremist movements.

Furthermore, discussions about oversight mechanisms have gained importance following financial scandals within intelligence services that called for greater parliamentary scrutiny.(Haering 2002)So while Switzerland's approach to intelligence has changed over time while maintaining core principles such as democratic oversight and respect for civil liberties, we can gain a deeper understanding of its current operational framework.(Westner 2022). At the core of the Swiss Intelligence Doctrine is the concept of multi-level cooperation. The Swiss

intelligence community is primarily composed of the Federal Intelligence Service (FIS), which operates under the Federal Department of Justice and Police. The FIS works in cooperation with several federal and cantonal agencies, as well as law enforcement bodies. This integrated approach allows for the pooling of resources and expertise, fostering a more efficient and effective intelligence system. Furthermore, conflicts and emergencies often require cooperation with international partners, so the doctrine promotes diplomatic ties by supporting the exchange of information with allied countries.(Margelist 2024). Legal compliance and respect for civil liberties are essential components of the Swiss Intelligence Doctrine. Given Switzerland's strong emphasis on human rights and democratic values, intelligence practices are subject to rigorous legislative oversight. The Federal Intelligence Service Act, adopted in 2017, outlines the legal framework governing intelligence activities.

It sets parameters for data collection, oversight, and analysis while protecting individuals' privacy rights. This framework not only ensures accountability, but also serves to maintain public confidence in intelligence operations.(Margelist 2024). In recent years, Swiss intelligence doctrine has adapted to the emergence of new threats, particularly in the field of cybersecurity. The increasing digitalization of society has led to an increase in cyberattacks that threaten national security. In response, Switzerland has prioritized the expansion of its cyber defense capabilities, incorporating these efforts within its intelligence doctrine. The foundation laid by the Swiss federal cybersecurity strategy emphasizes prevention, protection and response in the digital arena, reflecting the evolving nature of threats.(Amherd 2022).

In conclusion, the Swiss Intelligence Doctrine is a multifaceted approach that balances national security needs with democratic principles. As global threats evolve, Switzerland's commitment to cooperation, legal compliance, and adaptive strategies ensure the sustainability and effectiveness of intelligence. The integration of these elements is essential for Switzerland to navigate the complexity of contemporary security challenges.

## CONCLUSIONS

In this paper, we have managed to examine and compare two different intelligence doctrines in strategic terms: that of NATO and that of Switzerland, which now has a reflection in an uncertain and unstable geopolitical context.

Based on the concept that NATO is based on the principle of collective defense and close cooperation between member countries and using structures such as the NATO Intelligence Fusion Centre and the NATO Intelligence and Security Division.

This to identify and prevent common threats is now proving that many NATO countries are reflecting and building their national intelligence doctrines, while on the other hand, Switzerland, based on its permanent neutrality and strategic independence, develops and strengthens an intelligence doctrine that focuses on internal defense and security without external commitments while maintaining neutrality and long-term operationality in the use of intelligence information for its

needs by exchanging it with countries that have bilateral relations in this field.

From what we analyzed above, we recommend:

- Development of new strategies that address the challenges of small state neutrality that may affect international security cooperation.
- Investment in strengthening capacities and intelligencestrategies to better protect national interests and manage threats that may come from abroad, while also preserving its autonomy.
- Continuation to monitor changes in global threats and review security doctrines to ensure they remain effective in meeting new challenges. The discussion on the balance between international cooperation and national independence should be a central theme in security and intelligence policies.
- Encouragement of a more open approach to regional and international cooperation to help combat common threats such as terrorism and cyberattacks, while preserving national independence and integrity.
- Drafting of a joint military and intelligence doctrine between Kosovo and Albania in furtherance of cooperation.

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# Climate change and its implications for the security of the alliance and its allies

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***Abstract.*** *The current situation has generated numerous challenges and threats, ranging from the classical concerns of territorial defense to risks posed by climate change and other risks. The combination of conventional and unconventional threats has transformed the approach to security, requiring measures that also address so-called invisible threats, such as climate change. These threats produce significant unpredictability and pose objective challenges to national and international responses, thus constituting new security challenges.*

*NATO has become increasingly aware of the security implications of climate change and has undertaken concrete measures to address this challenge. In particular, it adopted the Action Plan on Climate Change and Security, which outlines specific goals and initiatives to integrate climate considerations into both the political and military agenda. NATO reports and official documents emphasize the significant impact of climate change on the security of Allies, highlighting it as an integral component of an increasingly complex security environment.*

*In addition to its effects on economic development, political stability, and human security, climate change also impacts the operational tasks of the Alliance. NATO's forces, assets, and military installations face constant pressure from climate-related challenges, both during their preparatory phases and throughout mission implementation.*

**Keywords**: climate change, security environment, operational environment, alliance, threat.

## INTRODUCTION

Nowadays, the strategic environment is increasingly characterized by complexity and declining predictability. Contemporary threats to national security are more intricate and interdependent than in the past, encompassing both traditional conventional and unconventional challenges. Alan Collins[1] emphasizes that, in addition to measures and provisions for the protection of citizens, the political and economic systems, etc., we should also focus on "*invisible threats, such as climate change"*[2].

Like the broader field of security studies, approaches to climate change are diverse and reflect multiple theoretical perspectives. The concept of security varies across countries. Developed states, alongside traditional concerns of classical security, increasingly emphasize economic security as a means to support sustainable development. Developing countries, in turn, often rely on their natural resources to foster economic growth. These activities directly influence climate change, which in turn generates threats arising from shifting environmental and natural variables.

Climate change studies have evolved significantly over the past thirty years, and the importance of climate-related security has grown accordingly. Its scope is linked to the external conditions surrounding a state and extends beyond the protection of territorial integrity. Consequently, groups of countries facing similar challenges cannot achieve their objectives unilaterally; effective responses require multilateral cooperation. This rationale underlies many regional and global meetings, treaties, strategic alliance concepts, and national, military, or sector-specific security strategies.

Legitimate concerns have, in some cases, been overlooked, without recognizing that climate change constitutes a security threat for many states. Ensuring healthy and sustainable ecosystems and supporting human livelihoods are essential, as failure to do so may lead current and future generations to face challenges that could eventually become sources of conflict at the global, regional, or national levels. Numerous studies have attempted to assess the extent to which climate change contributes to violent conflicts within and between states. Various explanations exist regarding the mechanisms through which climate change may undermine national security. Increasing research attention has focused on the links between climate change, environmental security, and development issues, including poverty and human security. These scholarly insights have, in turn, influenced policy developments in several countries and international organizations.

Climate change can threaten fundamental elements of security, including food security and human health; the stability of states by slowing or reversing development;

[1] Alan Collins, professor of political sciences at the University of Wales.

[2] Collins, Alan. *Escaping a Security Dilemma: anarchy, certainty and embedded norms International Politics*, 2014 p. 176.

the increased likelihood of internal conflicts due to migration; the loss of territory with implications for sovereignty; and international disputes over shared resources, among others. With regard to the armed forces, as will be discussed later in this article, climate change represents a growing challenge that, if not addressed proactively and consistently, may have consequences that hinder the accomplishment of their specific missions and operational tasks.

## CLIMATE CHANGE AND NATO'S SECURITY ENVIRONMENT

Climate change represents a defining challenge with profound implications for the alliance's security. At the 2021 Summit in Brussels, NATO Heads of State and Government (HOSG)[3]adopted an Action Plan on Climate Change and Security, agreeing that NATO should aim to become the leading organization when it comes to understanding and adapting to the impact of climate change on security. In general, climate change poses a threat to NATO's strategic environment, military assets and installations, operations, and the readiness of NATO member countries' forces. There are several organizations that carry out relevant studies in NATO in this area, such as: the NATO Military Authority (NMA)[4], Science and Technology Center for Marine Research and Experimentation (STOCMRE),[5]and the Climate Change Center for Security (CCASCOE)[6].

The contribution of the above mechanisms is reflected in NATO's Strategic Concept 2022, which in its preface it emphasizes "*the cross-sectoral importance of investing in technological innovation and integrating climate change*"[7], for ensuring national and collective resilience by supporting the Alliance's efforts to safeguard the nations and societies of its member states, as well as peace and security. To fulfill the Alliance's core tasks, the concept emphasizes that "*We will promote .... the integration of climate change*"[8] through all our tasks.

Over the past year, climate units/structures that continuously inform NATO have presented the fact of the speed and scale of climate change as very problematic.[9]Similarly, observations have been made of Arctic ice loss, rising sea levels, land degradation, decreasing fresh water availability, and an increase in the

[3] Heads of State and Government.
[4] NATO Military Authorities.
[5] NATO Science & Technology Organization Center for Maritime Research and Experimentation.
[6] Climate Change and Security Center of ExcellenceThis center has in its mission to be an internationally recognized center of excellence on climate change and security for military, civilian experts and decision-makers.
[7] NATO 2022 - Strategic Concept, p. 1.
[8] Ibid, p. 3.
[9] According to the World Meteorological Organization, 2023 was the hottest year on record, while the period 2015-2023 was the warmest year recorded in 174 years of records.Homepage | World Meteorological Organization WMO.

number of extremely hot days.[10].

The security environment on NATO's eastern and southern borders has been characterised by increasing volatility, with two of the most significant impacts being Russia's so-called Special Operation in Ukraine, which is having devastating humanitarian, social, economic and environmental consequences; and the outbreak of conflict in the Middle East. In addition to these armed conflicts, NATO is facing increasing competition from authoritarian states, including China. "*Non-traditional security challenges and climate change are increasingly testing NATO's resilience, with escalating effects on the security and defence of Allies at the strategic, operational and tactical levels*."[11].

For NATO Allies, the impact of rising air and sea temperatures is readily apparent in extreme weather events: catastrophic floods and wildfires have devastated large areas of Europe and North America, resulting in severe economic damage. These and other such extreme weather events have put pressure on critical military and civilian infrastructure and required additional military forces to support civil authorities.

Looking ahead, Alliance military forces will be required to adapt to increasingly challenging, extreme and unpredictable operational environments, as well as to prepare for an increasing demand to assist civil authorities. This trend is likely to be even more pronounced for the Armed Forces, given the increasing frequency of extreme events and the uncertainty surrounding the extent of future impacts. In addition to the above-mentioned impacts of climate change, the Armed Forces must also be prepared for the indirect consequences of climate change, both those occurring within the Alliance's territory and those on its external borders. Although the relationship between armed conflict and climate change is complex, the latter has the potential to contribute to higher levels of conflict, instability and violence, through its indirect consequences. Consequences such as climate-induced instability, large-scale population movements from disruption of global supply chains are likely to change the strategic environment in the medium to long term. Sudden changes in ocean currents or the collapse that could be caused in agricultural production could fuel a rapid escalation of instability and displacement in regions already experiencing climate stress.

There are important regional differences in climate vulnerability. The Middle East, North Africa and Sahel regions[12] have emerged as climate change hotspots. The Sahel countries are particularly vulnerable, due to extreme climatic conditions and a high dependence on agriculture and livestock, combined with the inability to

[10] Greenland's ice is losing more than previously thought. Sea levels have risen by 9.4 cm since 1993. Home | UNCCD, "*The Global Land Outlook - Second Edition*," April 27, 2022

[11] Timothy Clack, Mr.,*Climate Change, Conflict and (In)Security | Hot War.*

[12] The Sahel countries include a vast region in Africa that stretches from the Atlantic Ocean in the West to the Red Sea in the East, such as: Burkina Faso, Cameroon, Chad, Eritrea, Gambia, Guinea, Mali, Mauritania, Senegal, Sudan, etc.

adapt to them, due to the unaffordable costs for the economies of these countries. NATO's Strategic Concept 2022 highlights that "*conflict, fragility and instability in Africa and the Middle East directly affect our security and that of our partners*[13]".

The regional impacts of climate change will increasingly be felt in the Indo-Pacific region. From the increased risk of wildfires in countries like Australia and New Zealand, to extreme weather events and rising sea levels affecting island nations, climate change already poses a major threat to the security and well-being of the people of the Indo-Pacific. Climate change greatly affects the operational and strategic environment in the northern zone, as "*the Arctic is feeling such changes more than anywhere else in the world, impacting the environment, local communities and regional security*."[14].

Climate change is intensifying strategic competition. Increasing resource scarcity, coupled with the global drive to "*exploit"* these resources, is expected to fuel further instability, competition, and conflict, with indirect consequences for regional resilience, security, and NATO operations. Instability and conflict progressively exacerbate concerns related to human security and broader peace, bringing these issues to the forefront of discussions on climate security.

NATO's potential adversaries and strategic competitors are also exploiting this global threat against it. This is evident in the rise of climate-related disinformation, thereby reducing both the public response and the political will needed for more ambitious action on climate change. Climate change will not only affect the security of NATO allies but also of Russia and strategic competitors such as China. The adaptive capacity of Russia and China and their potential responses to a warming world, including the Armed Forces, are important considerations for security and defence planners across NATO.

As for Russia, the effects of climate change have been particularly noticeable in its Arctic regions and agricultural areas of its south and include "*permafrost areas, increased flooding, prolonged drought, heat waves, as well as an increasing number of natural disasters*."[15]. Extreme environmental conditions can negatively impact population health and labor productivity, drive migration and displacement, disrupt the provision of essential services, and worsen overall living conditions. These domestic challenges can influence foreign and security policy decision-making.

Although Russia acknowledges that global warming is a serious problem, its response to climate change to date has been based on a careful weighing of costs and benefits. The focus has been "*on adapting to the physical impacts of climate change,*

[13] NATO 2022 - Strategic Concept , paragraph 11, p. 4.

[14] Rachael Gosnell and Joseph Thomas, *European Security Seminar North: A Cooperative Future; Opportunities for the Arctic* - 7, GCMC, September 23, 2023.

[15] Thane Gustafson, *Climates: Russia in the Age of Climate Change*, Harvard University Press, 2021, ISBN 9780674247437

*rather than on mitigation strategies that address the root causes*."[16] We believe that the adaptation of the Russian Armed Forces is most evident in the forces it has deployed in the Arctic, developing significant capabilities to support military operations in remote ice-covered areas.

China "*faces threats from rising sea levels, extreme weather events, intensifying heat waves and droughts, population movements and melting glaciers*"[17]. In addition to the potential economic and socio-political impacts across the country, the effects of climate change in China could have consequences for the rest of the globe. As climate change increasingly affects global food systems, some countries (including China) are working to acquire large amounts of agricultural land abroad, as well as to develop efficient trade corridors. China's agricultural production plays a critical role in the global supply chain, and any significant climate impacts on it will have global consequences, as China feeds about 20% of the global population.[18] In terms of the Armed Forces, limited reports suggest "*improvements in energy efficiency and alternative fuel use, as well as the development of capabilities that can simultaneously provide disaster relief while maintaining military readiness*."[19].

## THE IMPACT OF CLIMATE CHANGE ON NATO'S OPERATIONAL ACTIVITIES

Climate change risks pose increasing operational stress on military personnel. Direct health impacts include increased incidence of climate change, which can limit training and operations. Indirect impacts range from psychological effects on soldiers responding to natural disasters to a higher incidence of infectious diseases in various operational contexts. Obvious risks include disruptions to supply chains; reduced access to fresh water; and a higher frequency of medical interventions performed in extreme environmental conditions.

Direct risks associated with climate change are likely to affect military equipment and weapon systems, armoured and unarmoured vehicles, combat and transport aircraft, surface and underwater vessels, defence equipment, armaments and ammunition, etc. In addition to armaments in general, various military installations, as well as training areas, are also vulnerable to the effects of climate change. These impacts vary across different geographical areas. Thus, military structures in NATO's northernmost latitudes are at risk from the thawing of historically frozen ground surfaces, which compromises structural integrity, while low-lying areas in

[16] Bobo Lo, *The Adaptation Game: Russia and Climate Change*, pdf. The French Institute of International Relations, March 2021.

[17] Erin Sikorsky*, China's Climate Security Vulnerabilities*, Center for Climate and Security, Council on Strategic Risks, November 2022, p. 9.

[18] According to UN (World Population Prospects 2024).China's population is about 1.4 billion people, January 2025.

[19] Michael Brzoska, *Climate Change and the Military in China, Russia, the United Kingdom, and the United States*, Bulletin of the Atomic Scientists, no. 68 March 2, 2012.

Europe face an increased risk of flooding. In the South of the Alliance, forces and installations find themselves at risk from extreme heat. The risks of climate change lead to higher maintenance and repair costs, pose a risk to the safety of military personnel and ultimately affect the operationality and readiness of forces.

To prevent and respond effectively to crises that could affect the security of Allies, it is crucial to maintain the military capability to conduct a wide range of operations and missions globally, even in a changing climate. Current examples of such operations and missions include NATO's multinational training and capacity-building efforts in Iraq, operations and activities in the maritime domain (Operation Sea Guardian), air policing in several Allied countries or the KFOR mission.

Many of NATO's missions and activities take place in regions that are already vulnerable to extreme heat, heavy rainfall, dust storms and other extreme *weather events*. The NATO Mission in Iraq (NMI) is particularly affected by heat waves. In recent years, deployed personnel have faced frequent periods of extreme heat, pushing equipment and personnel beyond their limits. The situation has been further exacerbated by the simultaneous increase in the frequency of dust storms, which reduce visibility, disrupt both air and road transport, block equipment and negatively affect the health of military personnel. The number of "*black flag weather days*"[20] continue to increase, which causes operational disruptions and compromises training and readiness[21].

Southeastern Europe, including Kosovo, has been identified as one of the "*warming hot spots*"[22] of the planet. According to the European Forest Fire Information System, Kosovo "is among the countries with an extreme level of risk for forest fires."[23]. The warming of the atmosphere in the region is leading to extreme weather events and together with Kosovo's socio-economic vulnerability and challenging security environment, climate change could have detrimental consequences for both Kosovo and the NATO presence on the ground. KFOR is involved in monitoring environmental crimes, the assistance provided by the force has been crucial in providing relief after extreme weather events but also engineering and construction support to assess bridges, roads and interventions after floods. In one of NATO's main tasks, "Crisis Prevention and Management", as highlighted in its Strategic Concept, NATO emphasizes that "*we will further develop the Alliance's capabilities to support civil crisis management and relief operations and to prepare for the effects of climate change, food insecurity, health emergencies. This will allow us to respond to any emergency in a short time*."[24]

[20] Days when temperatures exceed 35°C and operations are limited or stopped altogether for health and safety reasons.
[21] NATO Mission Iraq, NATO Climate Change and Security Impact Assessment: Second Edition 2023.
[22] OSCE, "*Regional Assessment for South-Eastern Europe Security Implications of Climate Change*," 2021.
[23] European Forest Fire Information System and Copernicus Atmosphere Monitoring Service
[24] NATO 2022 - Strategic concept , p. 9

In addition to flooding, extreme heat and particulate matter in the atmosphere have presented challenges with far-reaching impacts. Days with extreme temperatures (*black flag weather days*) will begin to increase, although the projected temperature increase is not as extreme as in some other geographic areas where NATO operates. Forecasts of higher temperatures and increased fire risks, "*reduced rainfall ..... could affect water supplies for both the local population and KFOR personnel*."[25].

The impact of climate change should be analyzed in terms of its impact on two key areas: its impact on the achievement of NATO's core mission and its impact on NATO's operational forces/assets both in their home regions and mission areas. Climate change is a defining challenge of our time, with profound implications for the security of our allies. It is a crisis and threat multiplier. It can exacerbate conflict, fragility and geopolitical competition.

Climate change also affects the way our Armed Forces operate. Our infrastructure, assets and bases are vulnerable to its effects. Our forces must operate in climates with extreme conditions; they are called upon more often to help alleviate natural disasters.[26].

In the maritime space, naval forces and their capabilities are increasingly affected by the effects of climate change including "*air and ocean temperature, wind speed, surface and underwater currents, etc.*"[27]. Such effects are challenging naval operations and capabilities in several ways. Storm surges and rising sea levels endanger coastal military infrastructure, increased water acidification accelerates corrosion of naval vessels, increased water temperatures directly affect the proper functioning of such vessels, etc. Changing water temperatures and acidification affect the normal functioning of surveillance equipment and various sensors, with possible consequences for their operability. Climate change has expanded the territory of previous responsibilities, as the opening of new shipping routes in the Arctic has increased the need for both increased presence and potential emergencies.

The escalating impacts of climate change are presenting complex tactical and operational challenges to ground operations. Wildfires in Canada, Greece, etc., in 2023 demonstrated the urgent need for increasing military resources. These resources were insufficient both to support the population and to protect the military infrastructure itself. In addition to the security risks, "*fires transform large areas, presenting other challenges in the terrestrial domain where vegetation is crucial for natural cover, tactical maneuverability, etc., influencing strategic and tactical decisions*."[28]. Possible changes in the terrain within a short period of time require

[25] USAID, "*Climate Change Risk Profile: Kosovo*" January 2017
[26] NATO 2022 - Strategic Concept, p. 6.
[27] Contribution from NATO's Science & Technology Organization Center for Maritime Research and Experimentation (CMRE).
[28] Gerhard Herda, *Climate Change and International Security: Challenges for the Austrian Military Geoservices,* No. 04, 2024.Book_climate_12_climate_change_and_international_security.pdf.

the Armed Forces to constantly reassess it, which directly leads to possible changes in military decision-making. Regarding human factors, exposure to extreme temperatures causes an increase in diseases related to changes above normal temperatures. Special forces, forces in chemical, biological defense operations, etc., with their equipment, feel in difficulty to use it in extreme conditions. A reassessment of "*training models, uniforms, protective equipment may be necessary to minimize these risks*"[29]The same level of risk also applies to crews in armored vehicles, which are exposed to increased climatic changes due to the materials used to make these vehicles.

Climate change significantly impacts all aspects of airspace, from the physical performance of aircraft, to the safety of equipment and infrastructure, to the structure and planning of flight operations. Starting with airspace, climate change is causing significant changes in environmental conditions, leading to greater weather instability and unpredictability, intensified turbulence, and a higher frequency of extreme weather events. These challenges require aircraft to operate in more challenging conditions, complicating flight planning and increasing flight risks. In particular, "*increasing temperatures reduce air density, perhaps the most important physical factor affecting aircraft performance*."[30].

Climate change-related impacts increasingly challenge NATO members' ability to operate effectively in space and limit the potential value that space capabilities can add to NATO missions and operations. Climate change could affect ground infrastructure that is critical to space operations, such as ground stations, communication towers, space launch platforms or satellites that have not yet been launched. Much of the relevant infrastructure could be damaged as a result of sea level rise or soil erosion. Looking at the relevant infrastructure, climate-related impacts are of greater concern to allied space capabilities than they are to Russia and China, because "*most of the launch sites operated by these two countries are located inland, benefiting from more stable weather conditions.*"[31].

The intersection of cyber defense and climate change is a complex and increasingly critical area of concern. As the world becomes more interconnected and dependent on digital technologies, the potential for malicious cyber activity to exacerbate climate change issues increases. From cyberattacks on environmental monitoring systems to data manipulation and climate disinformation campaigns, the ways in which cyber risk and climate change are interconnected are broad and diverse.

## CLIMATE CHANGE IN NATIONAL STRATEGIC DOCUMENTS

Over the past two decades, Albania has paid special attention to environmental

[29] Daniel S. Moran et al.,*Beating the Heat: Military Training and Operations in the Era of Global Warming.pdf*. 2023, pp. 60–67.

[30] NATO - News: NATO releases its Climate Change and Security Impact Assessment, 28-Jun.-2022

[31] NATO Review - The climate-space nexus: new approaches for strengthening NATO's resilience, 2022

protection in general and climate change in particular. The Constitution of Albania itself includes "*a healthy and ecologically suitable environment for the present and future generations.*"[32] as one of the social objectives that should be taken into consideration by all state institutions. Albania's main strategic interests are intertwined with interests that can be called classic with "*global commitment against climate change, increasing energy and food security, etc*."[33] and continuing with "*proper management of natural disasters*"[34].

Albania is a signatory to the United Nations Framework Convention on *Climate Change* and ratified by the Albanian Parliament, which has set the objective of combating climate change by stabilizing greenhouse gas concentrations in the atmosphere and limiting the increase in average global temperatures to support sustainable development.[35]. Given Albania's current status as a candidate country that has opened negotiations for EU membership, it is likely that it will join the EU during the period covered by this strategy. For this reason, it is of crucial importance that the energy strategy is also consistent with the EU Climate Change Policy, "*ensuring that the energy policy objectives and the relevant energy action plans identified are in line with the ambitions expressed in the EU climate change objectives.*"[36].

In elaborating on the strategic environment in the NSS, it is reiterated that changing climate conditions are now added to other threats, which have the potential to bring new socio-economic implications for security. They are causing a chain effect, which goes from global warming and environmental degradation to competition for resources, increasing migration, the spread of diseases and pandemics with a global impact on health and food security through the reduction of vital resources, and the increase in the destructive force of natural disasters, which has resulted in uncontrolled movements of people, both towards urban areas and in emigration. Climate change is increasingly affecting the change in the "*geopolitical environment, causing instability and greater political friction within and between countries.... They can also affect the increase in competition and existing threats, as well as geopolitical balances*"[37].

The global phenomenon of climate change negatively affects the natural balances of our country. As a result, the country may face high temperatures that have a significant impact on flora and fauna, prolonged droughts and increased risk of flooding, with significant costs for the human dimension and the national economy. The element of food security as a very important element of human security, with an impact on the health of the population, takes on particular importance in the

[32] Constitution of the Republic of Albania, article 59, paragraph d.
[33] NSS, p. 2
[34] Ibid, p. 3
[35] National Energy and Climate Plan (NECP) 2020-2030, page 10NECP-Albania_draft-albanian.pdf
[36] Ibid, p. 12
[37] Ibid, p. 5.

conditions of the economic crisis, as well as of "*changing climatic conditions...*"[38].

The events of recent years have shown that there is an urgent need to strengthen disaster preparedness and risk management capabilities, to adopt appropriate response systems and procedures, and to improve institutional capacity for coordinating and managing disaster risk reduction for interaction between public levels of government, as well as with private and civil society actors. The priority is "*preventing environmental degradation and reducing the consequences of climate change, by effectively managing watersheds, increasing forest areas, dealing with urban waste in an integrated manner, and by cooperating with civil society to raise public awareness of environmental protection and ensuring the safety of reservoir dams.*"[39].

The civil protection system was resized and the disaster risk reduction framework was improved through identification, periodic risk assessment and monitoring, mitigating the negative consequences of disasters, as well as the creation of a database of losses from natural emergencies and disasters. In implementation of the National Energy Strategy and referring to the EU recommendation, the National Energy and Climate Plan (NECP) 2020-2030 was adopted in 2021. This Plan complements the National Energy Strategy and "*sets new and more ambitious objectives for energy efficiency, the use of renewable energy sources and decarbonization*"[40].

The impact of climate change on the overall treatment given in the NSS serves as an indicator for its further focus by other state institutions, which in their mission address the relevant issues. In addition to these institutions, which draft sectoral strategies, the armed forces also find themselves involved in this process, which in their mission, in addition to preserving the independence, sovereignty and territorial integrity of the country, "*protect and support the population in times of peace, crisis and war....*"[41] is an important part of the mission. The Military Strategy of the Republic of Albania, 2024, in the second chapter "The strategic security environment at the global level", notes that, in addition to other threats, "*changing climate conditions, with new socio-economic implications and humanitarian crises, add further negative impacts on security.*"[42].

The impact of climate change in the United States is treated as a threat, which has a direct impact on the provision of basic vital elements of the population, "*Food security as a very important element of human security, with an impact on the health of the population, takes on particular importance in conditions of economic crisis, climatic conditions, etc.*".[43] The global phenomenon of climate change negatively

[38] Ibid, p. 10.
[39] Ibid, p. 20.
[40] Ibid, pp. 23-24.
[41] MSRA-2024, p.22.
[42] MSRA -2024, p.10.
[43] MSRA -2024, p.12.

affects natural balances and our country may face high temperatures that have a significant impact in many areas, with considerable costs for the human dimension and the national economy. Our approach within NATO, in the framework of the development of a joint force, where one of its tasks will also be participation in operations or crisis management, our Armed Forces will be deployed in different regions of the globe.

The current distribution of missions undertaken by NATO or those that may be undertaken in the future is in different geographical areas. Thus, in addition to the current climate changes occurring within the territory of our country, the Armed Forces must be prepared to conduct missions in regions where climate changes are even more pronounced.

## CONCLUSIONS

The strategic environment is in a state of constant evolution. The shift from conventional to unconventional threats occurred over a defined period; subsequently, the security environment entered a phase characterized by the interweaving of these threats and risks, making it difficult to determine which predominates. From violations of territorial integrity and the rhetoric surrounding the potential use of nuclear weapons to emerging threats such as climate change, armed forces are increasingly confronted with complex challenges that demand adaptive and multifaceted responses.

Climate change is an issue that requires a global response. Pursuing the right policies means that the cost of action can be less than the damage avoided. By now acknowledging that climate change is tangible, by now recognizing that its impact has first-order and beyond-level effects, the security environment will now be shaped by this threat as well.

If the causes of climate change are diverse and related entirely to the political actions of different states or organizations, their consequences will translate into security violations. The complexity of climate change increases further when the main actors of its causes often have different perspectives. Seen from this perspective, national and alliance Armed Forces will increasingly encounter security violations in the most diverse forms. If the armed forces have a minimal impact on preventing climate change, the armed forces themselves will be under their influence. Proper handling of this threat would enable the Armed Forces to have the flexibility to both minimize these consequences and not to compromise their operability.

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# ECONOMY AND REGIONAL SECURITY

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***Abstract.*** *Global security today has broadened considerably, as a result of profound changes in all areas of life. In the Balkan context, before the 1990s, the concept of security was mainly limited to defending borders from military threats and maintaining ideological order through propaganda control and compliance with the political line of the ruling party.*

*Today, both globally and in the Balkan region, security has taken on a broader meaning, where the economy plays a crucial role. A strong and stable economy enables a state to face unexpected and unforeseen challenges in strategic security scenarios.*

*Despite the Balkans' turbulent history, the region is marking a surge in regional cooperation in the areas of economy and security. These initiatives are smart and effective, reducing costs compared to individual investments by each country. One such example is the joint air defense project carried out by Croatia and Greece. Defense experts have emphasized that NATO's "Smart Defense" initiative was prompted by the financial crisis, which jeopardized the fulfillment of its strategic objectives.*

*In addition to military cooperation, joint projects have been and are being developed in areas such as economy, technology, and culture, reflecting a higher level of maturity and awareness on the part of the leadership of the Balkan countries.*

*If the region continues to develop economically and expand mutual cooperation, this will positively impact not only the stability and progress of the Balkans, but also the development of Europe and the evolution of the global order. This progress also represents an important opportunity for Albania.*

**Keywords:** security, economy, development, cooperation

## INTRODUCTION

Conflicts, both in ancient and modern times, have increasingly involved the economy. Securing economic resources and benefits is the primary national goal, considered the most important element that affects a country's national security. Economic power is exploited today to have a regional or global impact. A country's activities can be influenced to a great extent by how its economic resources are utilized and by the priorities assigned to them in national policy. All of these actions have a direct impact on national security, because the more efficiently the economic element is used and exploited, the more consolidated is national security.

Economic power has become widespread and has gained particular importance, especially in recent years. Globalization, economic reliance, and the distribution of economic power from developed to developing countries have fundamentally changed the world today. This distribution of economic power has served as a direct supplier of resources to the military element of power.

The way in which strong states exploit economic power is of various kinds, but the most prominent one is through economic sanctions, without excluding here the economic aid given to developing countries. This aid is implied by the obligations that states will have towards those powerful states that provide this aid. These obligations keep the backward states dependent on the developed states and until the moment of repayment of the obligations, we can say that they are "commanded" in every aspect by the strong states. States can use economic power to deter, coerce, fight, and even rebuild a former adversary to meet a particular need. If the economy is a way or a means to achieve a national interest, or a cause or motivation to take an action, the leaders of a nation must play a major role and pay attention to this increasingly important factor of security.

The economy is an element of national power. Normally, one of the important national interests of a nation is to maintain a stable economy to provide a certain standard of living for its citizens. A nation can pursue its goals by using the economy as the main way to exercise power. The economy serves as a source of government revenue.[1]In the short run, assuming a nation has a relatively resilient economy, a government can spend money fairly freely without serious consequences. However, governments must think about the long term. Government actions such as high taxes, irresponsible borrowing, or excessive spending on the basis of a failing or sluggish economy will eventually create political and economic conditions that will serve as a source of significant problems in the future.

*"Ask not what your country can do for you, but what you can do for your country"*

John Kennedy

[1] US Government Printing Office, Economic Indicators (Washington, DC: Government Printing Office 2021, 30.

## 1. ARGUMENTS AND FACTS ABOUT THE ROLE OF THE ECONOMY AND FINANCE IN NATIONAL POWER

In World War II, after the fall of France, the USA, with its wisdom and far-sighted goals, saw it necessary to intervene in this war that was engulfing the globe. Despite the fact that at that time, the USA was not in a very good condition and some thought that the latter did not have sufficient funds to help in the war, Roosevelt asked Congress for the right to the "Lend-Lease act", which meant that Congress gave the US president the right to provide military aid, weapons and monetary funds to those countries that the President thought were fighting to secure US territories, an act from which many countries such as England, the Soviet Union, China and others would benefit. This act was approved by Congress on March 11, 1941 and provided mainly Britain and 37 other countries with about 50 billion dollars in military supplies and other means necessary for the war. From this fund, Britain and the Commonwealth would benefit from 31.4 billion dollars. Seeing this move of the US, Canada, adapting to the same plan, gave a fund of 4.7 billion dollars to Great Britain and the Soviet Union. But, despite the effort for competition or rivalry and in terms of the aid that was given by these countries, the US had the greatest superiority and reputation. The US has always put its political and economic considerations and preferences at the service of the interests of the future.[2] If America is today the most developed, most creative, most dynamic, and most successful society in human history, it is because, especially during the second half of the 20th century, it applied this civilizational principle better than any other modern society. The decisive role of the United States in the international arena was first realized in the difficult period immediately after the end of World War II and the beginning of the Cold War, when Harry Truman was president. When Dwight Eisenhower was elected to the White House in 1953, the United States had already become the greatest power in the world, with global interests and commitments and a role in international relations that no other country, including the Soviet Union, could claim and that no other country could approach. Under President Harry Truman and his administration, United States foreign policy underwent a profound transformation. From an isolationist policy, or a limited engagement in the period between the two world wars, the United States assumed great responsibilities and the leading role in managing and resolving the world's major issues. So as it is understood, US national security includes the security of its allies and partners. How is this achieved? The United States exerts global influence in economic, political, and military matters.[3]

***On the other hand, a very important historical fact is*** that the scale of human losses from the Second World War was staggering and only a few years after its end, politicians and renowned economic experts from the two main countries that participated in the war, France and Germany, these two main opponents of this war,

[2] ALTAX, https//atlax.al, Tirana, Economic Security as part of National Security, 2022, 5.
[3] Ibid, 11.

forgot the grudges and double destruction they caused and began to think about cooperation between the two countries in the economic domain.

It can be noted that this cooperation paved the way for further expanded alliances, up to the creation of the European Union alliance, which today serves as a stabilizer not only in the economic problems or failures of the countries, but also further, serves as a bridge of peace and security in the region and beyond. This should serve as an example for the countries of the region, in order to forget old grudges and move forward through continuous cooperation and the exchange of best experiences in all fields.

Another factor of progress in the region and beyond is the strengthening of the rule of law in the countries of the region through the implementation of the functioning of independent democratic institutions, respect for fundamental human rights and freedoms and the market economy, while accepting democratic values and norms.

## 2. THE IMPACT ON ECONOMIC AND MILITARY POWER OF THE UNITED KINGDOM'S EXIT FROM THE EUROPEAN UNION

The surprising outcome of Brexit has cost the market value of about 2.1 billion dollars, which means a decline in European economic power, exports, imports, production, and consequently the circulation of money in the European market and beyond. The US is also concerned about this, which throughKerry urged Britain and the EU to work together to calm the market after the damage caused by Britain's exit from the EU, which has shaken investors around the world. Kerry also confirmed the special relationship that America has with Britain, and how important the relationship with Europe, with the EU, is to the US. He stressed that the most important thing is that regardless of the UK's decision, all European leaders must work together to provide as much continuity and stability, and as much security as possible.

*But who are the losers from this?* Great Britain in recent years has managed to leave France behind in terms of Gross Domestic Product and rank in the second position of the European economy. The departure of Europe's second largest economy from the EU will not only have a continuous negative impact on the European financial market, but will also remove a very important factor from this Union. The trade and economic exchanges of European countries with Great Britain will face greater difficulties than in the past. In his works on globalization and the economy, Civici analyzes the economic, political and social impacts of this phenomenon in Europe and beyond. In particular, in his publications, such as "Economic Policies in the Face of Globalization" and the book "Globalization, Ante Portas", he addresses the role of events such as Brexit in reshaping markets and in strengthening Eurosceptic movements. The mention of the merger of Deutsche Börse with the London Stock Exchange and its influence on political figures such as Viktor Orbán or Marine Le Pen is consistent with the analyses he makes on the effects of globalization and European integration on the domestic politics of member states.[4]

[4] A.Civici, Globalizmi Ante Portas. UET press, 2009

The value of the British pound has fallen to its lowest level in 30 years, and so have stock market indices in the UK and many other countries around the world. Of course, these changes are temporary and the UK economy will stabilize in the near future. But Brexit will be harmful to the British in two ways. First, many of the world's largest companies and institutions that operate in Europe and have their European headquarters in London will be forced to move their headquarters to a country within the European Union. The American bank JP Morgan is just one of many major financial institutions that has warned of England's exit from the European Union before the referendum. The greatest damage will be caused within the UK.[5]

*Who are the winners?* Moscow will undoubtedly be one of the winners of Brexit. In reality, the weaker the European Union, the more likely Russia will be to compete politically and economically with it, and perhaps in connection with some crises such as the one that occurred in Ukraine, Russia will be able to negotiate separately with the EU and the UK.

On the other hand, the US, although officially demanding that Great Britain remain in Europe, the reality is that with Great Britain's exit from the EU, London will be closer to Washington than in the past, and the sometimes independent decisions of France and Germany in Europe will not hinder the path of Great Britain's coordination with the US.

It is true that if the separation of Great Britain is becoming a cause for the slowdown of the economic development of Europe, Washington will undoubtedly also suffer a negative impact, but the European Union, just as it is considered a strong rival for Russia, is also considered a serious rival for Washington both in economic and monetary terms and in terms of presence in international spheres. Therefore, the US will certainly rejoice in the weakening of the European Union, despite the fact that for strategic reasons it cannot present this pleasure openly.

## 3. COMPARING CHANGES IN THE ECONOMIC DEVELOPMENTS OF THE REGION AND ALBANIA IN PARTICULAR

An analysis looking at it in relation to the Balkans and our country as part of the Balkans.Britain's exit from the European Union created a new situation of uncertainty for the Eurozone economy. The main advantage of the European Union has been precisely the economy and weakening it in the main advantage certainly has consequences in the field of security, but Europe, being united with the rest of it, will find energetic measures and a new clearer project for the EU. The first direct consequences are expected to fall on the countries with which Britain has close trade relations. The fear is of the economic chain effects, from which our country may not escape. In addition to the direct consequences, the effects that the exit will have on

[5] Angelos Kotios and George Petrakos, Restructuring and Development in Southeastern Europe, Publication:Volos, Greece: University of Thessaly Press: South and East European Development Center, 2002.

the capital markets and closely watching what happens to the European Union remain to be seen. This will also have effects on foreign investments, hitting economic growth. But the effects in the Balkans may not be limited only to the economy. Let's not forget that it was Churchill who said that the Balkans produces more news than it consumes. In this case, the negative impact of Brexit will be felt in some of the Western Balkan countries in the revival of nationalist or skeptical attitudes in the Balkans. So, we are entering a relatively turbulent economic situation. Considering our country, we can say that promoting sustainable economic development is the best policy that can be followed. Albania's geostrategic position is one of the most important assets for the country's economic development.[6]The favorable location in Southeast Europe with the potential of a natural hub for land, sea and air routes and with the role of an optimal port to the Balkan Peninsula, the pronounced Mediterranean maritime profile, as well as the wide extension along the Adriatic and Ionian seas, enable the country to become an important intersection center for large flows of international people, goods and services. Free trade with countries in the region, low-cost domestic production, advanced and effective technology, can lead us to economic growth and improved living standards. Domestic production will reduce imports and increase exports, policies that lead to an increase in Gross Domestic Product, strengthening the economy, and consequently the country's security. The development of the economy in the country means more income, well-being, and more money to strengthen the country's defense.[7]

In the context of the global economy and the increasing economic and financial interdependence of all countries on the planet, what is increasingly being sought is a world with clearer rules, as well as increased transparency and the regulatory and controlling role of several international institutions (World Bank, IMF, WTO, etc.). The guarantee given by them in the international arena for the stability and seriousness of a country's reforms, as well as the benefit from their global experience, creates premises for increased investment and international capital in these countries, including the region, and even more so our country. The opposite would raise many questions for any country that would seek, in an adventurous manner, individual utopian paths outside the context and international trends. Therefore, the combination of local, national or regional alternatives with a real partnership with these international organizations would increase the country's credibility and create real premises for rapid and sustainable development. There are many examples of regional and global commitments for our country, which means that the premises are optimistic for the growth of the country's economy and security.[8]

We mention cooperation with Croatia in the private sector, investments, the Berlin Process initiative - the Adriatic-Ionian Highway project of strategic importance, the Zagreb-Tirana airline, agriculture, livestock, etc.

[6] ALTAX, https//atlax.al, Tirana, Economic Security as part of National Security, 2025
[7] Marshall Center, Germany, monthly magazine "Regional security", May 2017
[8] US Government Printing Office, Economic Indicators, Washington, DC: Government Printing Office, 2021

The Trans-Adriatic Pipeline (TAP) project, which is one of the most important energy infrastructure projects in Europe. The pipeline is the European part of Southern Gas Corridor, a complex value chain of energy projects that connect natural gas supplies from the second phase of the development of the huge Shah Deniz field in Azerbaijan to Europe. Albania is also part of this project, through which this project passes. Albania, with this project, ensures Strategic Partners: the European Union, the governments of the host countries, TANAP-Turkey, TAP-Greece, IGB-Bulgaria-Greece, as well as the inclusion of the countries of the region in the memorandums of understanding of this project;

The South East European Cooperation Process (SEECP) remains the most important political forum in South East Europe, aiming at cooperation for peace, security, stability, economic, political and social development of all countries in the region. Considering regional cooperation and integration as a prerequisite for integration into Euro-Atlantic structures, SEECP is a unique process, established at the initiative of the countries of the region themselves, whose voice is unified on common problems in the process of development and integration into the European family. SEECP consists of 12 member countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Moldova, Montenegro, Romania, Serbia, Slovenia and Turkey. The main areas where these countries have agreed to increase cooperation are:

- Strengthening Economic and Trade Cooperation.
- Cooperation in the field of security, internal control and border control.
- Strengthening cooperation in the field of higher education and scientific research.
- Cooperation in the field of security and the fight against international terrorism.
- Trade agreements and various economic fields with other countries in the region and beyond.
- Military cooperation, etc.

Promoting regional initiatives, partnership processes, cooperation, dialogue, transparency, and the construction of joint security measures are the most effective ways for rapid development in all sectors of the economy, as well as the creation of a new security environment. As defined in the National Security Strategy, the preparation and development of the country's security cannot be limited to the effectiveness of a certain direction. A prerequisite is preparation in all directions, emphasizing the strengthening of the country's economy and the expansion of cooperation across borders.[9]

A draft multi-year action plan for a regional economic area in the Western Balkans (MAP) has been developed at the request of the six Western Balkan Prime Ministers

[9] Ibid.

to prepare a "Proposal for a common approach to advance economic cooperation in the Western Balkans", in the context of the Berlin process and the Trieste Summit. MAP prepared a structured agenda for regional economic integration, along the lines proposed by the Leaders' Meeting, namely: promoting further trade integration, introducing a dynamic regional investment space, facilitating regional mobility and creating a digital integration agenda.[10] MAP stems from the commitments made under the Central European Free Trade Agreement (CEFTA) and the South East Europe Strategy 2020 (SEE2020) and is based on the rules and principles of CEFTA and the EU as reflected in the Stabilisation and Association Agreements (SAA). It foresees the implementation of actions at all levels starting from 2017 and continuing today to 2025.[11]

The implementation of the actions listed here aims to result in an EU-based and EU-compliant CEFTA economic area in the six Western Balkan countries. This will enable the free flow of goods, services, capital and highly qualified employment, making the region more attractive for investment and trade, accelerating convergence with the EU and bringing prosperity to all its citizens. The Regional Economic Area is based on the principles of non-discrimination, creating a level playing field for all within the region.[12]

Another important aspect to be realized is trade integration, regional investment, facilitating regional movement and digital connectivity are the four main pillars that are expected to serve as a bridge for the economic integration of the Balkans. The Balkans are at a crucial juncture. While the previous decade had brought almost 8.5% GDP per capita in the region, compared to the EU average, this convergence has stalled for a while, narrowing the gap, by only 1% in the first half of this decade. Reform efforts are underway in most of the region's economies to address internal structural weaknesses, but considerable growth potential can be unleashed through closer economic integration. Growth strategies have a better chance of success if they are embedded in a consolidated system of regional cooperation in all relevant areas. These efforts need to be scaled up. Further improvement of macroeconomic stability and structural reforms in the context of economic reform programs will create conditions for regional economic integration.[13].

Finally, it can serve as an important stepping stone for the Western Balkans to better integrate into European and global value chains and converge more quickly with the rest of the continent. Indeed, in the context of the development of global value chains (75% of global trade now consisting of intermediate inputs and capital goods and services), it is essential for Western Balkan economic operators to meet

[10] 2nd "Albanian Security Forum" Conference,*Tirana – December 14, 2021.*

[11] Ibid.

[12] Ibid.

[13]"The Balkans as a Single Economy," ShtetiWeb.org, published on October 1, 2024,https://www.shtetiweb.org/2024/10/01/ballkani-si-nje-ekonomi-e-vetme/.

globally accepted standards – for European value chains and beyond, European standards that are recognized in the global market.[14]

The strategy adopted by the European Commission entitled "A credible perspective for expanding and strengthening the EU engagement with the Western Balkans", confirming the European future of the region as a geostrategic investment in a stable, strong and united Europe based on common values. These include: strengthening the rule of law, reinforced cooperation on security and migration, expanding socio-economic developments, initiatives for energy and transport connections, initiatives for digital agendas, and finally, resolving disputes or reconciliations between neighbours.[15]It sets out priorities and areas for enhanced joint cooperation, addressing the specific challenges of the Western Balkans, in particular the need for fundamental reforms and good neighbourly relations. A credible enlargement perspective requires sustained efforts and irreversible reforms. Progress along the European path is merit-based, which depends on the concrete results achieved by each country.[16]

## CONCLUSIONS

Regional and global security must be based on an open international economic system, with as few obstacles as possible in economic policies and in the free movement of goods and services.

Security of international routes for the movement of goods and services, promoting sustainable economic development, strengthening interstate cooperation to remove barriers and facilitate exchange in order to create an open and free regional market, are important elements of global security from which everyone benefits. This requires that the orientation of policy-making be focused towards new centers of development and global decision-making, with the aim of expanding economic and trade partners, attracting foreign investment and increasing the degree of integration and competition in regional and global markets, which is inextricably linked to strengthening institutions, transparency in good governance and a professional administration and diplomacy. The desired result would be the strengthening of social cohesion and national identity, the consolidation of the security and defense sector, the strengthening of our regional and international role and the acceleration of integration into the European Union.

National Security Strategy identifies and emphasizes in its strategic planning the need and ambition for a new dimension in the future. The desired result is achieved

[14]"London Summit Restores Investments for Security and Stability in the Balkans," Gazeta Ekonomia,https://www.gazetaekonomia.com/samiti-londres-rikthen-investimet-per-siguri-dhe-stabilitet-ne-balkan.

[15] "The New EC Strategy for the Western Balkans: Three Key Tasks for the Countries of the Region," BalkanWeb,https://www.balkanweb.com/strategjia-e-re-e-ke-per-balkanin-perendimor-tre-detyra-kryesore-per-vendet-e-rajonit.

[16] Right there.

when we aim for the development of the country, cooperation and accession to regional and international organizations. If an effective analysis of all these elements is made, then it can be pointed out that we are on the right track and we are more secure.

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# SECOND RUBRIC

# THE DEVELOPMENT OF TECHNOLOGY AND INNOVATION

# The Security: A New Academic Discipline – Perspectives and Emerging Challenges in the Age of Technology and Global Changes

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***Abstract**. In an era marked by rapid technological advancements, globalization, and complex geopolitical dynamics, the concept of security has evolved from a narrow, military-centered framework into a multidimensional and interdisciplinary academic discipline. This paper explores the development of security studies as an emerging academic field, emphasizing its theoretical foundations, practical applications, and integration within military education, particularly at the Albanian Military Academy (AFA). By analyzing the evolution of security paradigms, the paper highlights the necessity of incorporating contemporary threats—including cybersecurity, hybrid warfare, environmental risks, climate change, and technological disruptions—into the curriculum.*

*The study examines NATO's strategic framework, focusing on educational initiatives that support member states in preparing both military and civilian personnel to respond to evolving threats. In parallel, the Albanian Military Academy is analyzed as a case study for national adaptation, illustrating how interdisciplinary curricula, research-oriented approaches, and international collaboration can cultivate a new generation of security professionals. This integration fosters critical thinking, strategic reflection, and ethical awareness, equipping future leaders to navigate complex and unpredictable security environments effectively.*

*The paper also addresses the challenges of integrating security studies into military curricula, including staff training, interdisciplinary collaboration, and the adoption of innovative teaching methods. By assessing opportunities for cooperation*

*with international institutions and leveraging emerging technologies, the study underscores the transformative potential of security studies in shaping both national defense capabilities and contributions to regional and global stability. Ultimately, the research demonstrates that embedding security studies as a distinct academic discipline is not only essential for professional development but also crucial for promoting resilient, informed, and strategically capable societies.*

**Keywords:** Security, academic discipline, interdisciplinary, NATO, curriculum, emerging threats, technology, global change.

## 1. INTRODUCTION

The study of security has evolved significantly over recent decades, reflecting changes in global politics, technological innovation, and social structures. Traditionally, security was narrowly defined in military and state-centric terms, emphasizing territorial integrity, national defense, and protection against conventional threats (Baldwin, 1997; Heywood, 2011). However, the post-Cold War era, globalization, technological advancement, and the rise of non-state actors have expanded security's scope. Contemporary threats—ranging from cyberattacks and terrorism to climate change and pandemics—require a holistic understanding that goes beyond traditional military frameworks (Floyd, 2019; Williams, 2020).

This expansion has fostered Security Studies as a distinct academic discipline, bridging political science, international relations, sociology, economics, environmental studies, and technology. It emphasizes interdisciplinary analysis and strategic foresight to navigate complex and interconnected security environments. Consequently, educational institutions—including military academies, universities, and research centers—are tasked with developing curricula that equip future leaders with analytical, ethical, and practical skills to address both conventional and emerging threats.

In Albania, integrating Security Studies into the Albanian Military Academy (AFA) reflects a strategic effort to align national defense education with contemporary global challenges. NATO membership underscores the need for curricula that prepare officers for national defense, ensure interoperability with allied forces, and support regional stability (NATO, 2021; NATO, 2024a). By incorporating interdisciplinary approaches, advanced technologies, and emerging threat scenarios, AFA aims to cultivate leaders capable of navigating complex operational environments, promoting ethical decision-making, and strengthening democratic institutions.

This paper examines the evolution of security as an academic discipline and its integration into AFA. Specifically, it seeks to:

- Analyze the theoretical and historical evolution of security from state-centric to multidimensional frameworks.
- Examine the role of interdisciplinary approaches in contemporary security education.

- Evaluate NATO's influence on security curricula in member states.
- Explore Security Studies' integration into AFA's Bachelor, Master, and Doctoral programs.
- Identify challenges and opportunities in modernizing military education to address emerging threats.

The study first outlines the theoretical development of security, highlighting key academic and institutional milestones. It then examines interdisciplinary approaches in contemporary education and NATO's educational initiatives for comparative insight. Finally, it focuses on AFA, illustrating curriculum modernization, interdisciplinary integration, and practical applications, before assessing challenges, opportunities, and recommendations.

By exploring theory, institutions, and practice, this research emphasizes the importance of adapting military education to contemporary realities and demonstrates how AFA can cultivate leaders equipped for the complex security landscape of the 21st century.

## 2. THE EVOLUTION OF THE SECURITY CONCEPT

The concept of security has undergone profound evolution over the past century, reflecting shifts in international politics, societal dynamics, technological progress, and the nature of threats to both individuals and states. Traditionally, security was understood primarily in military terms, emphasizing territorial integrity, national sovereignty, and the maintenance of state power within the realist framework of international relations (Baldwin, 1997; Heywood, 2011). Classical security studies focused on the prevention of war and the management of interstate conflict, with the state as the primary referent object and military force as the principal instrument for safeguarding security.

During the Cold War, this narrow conception dominated academic discourse and policy-making. The global system was characterized by a bipolar order, and threats were largely defined in terms of conventional military confrontations, nuclear deterrence, and strategic alliances (Walt, 1991). States prioritized balancing power between superpowers, maintaining strategic deterrence, and avoiding escalation into full-scale conflict. Security studies were largely confined to defense ministries, military academies, and political science departments specializing in strategic studies, international law, and diplomacy.

The end of the Cold War and the rise of globalization marked a fundamental shift in security conceptualization. Structural changes in the international system, coupled with the emergence of non-state actors and transnational threats, revealed the limitations of a state-centric, military-only approach. Issues such as international terrorism, organized crime, cyber threats, pandemics, environmental degradation, and climate change demonstrated that security challenges could no longer be confined to traditional military domains (Floyd, 2019; Williams, 2020). The concept of "human

security" emerged in the 1990s as a complementary framework, emphasizing the protection of individuals and communities from economic, social, and environmental vulnerabilities.

Human security reframed the referent object of security from the state to the individual, expanding analysis to include multiple interrelated dimensions: economic, food, health, environmental, personal, community, and political security (Floyd, 2019). This multidimensional approach emphasized the interconnectedness of threats, showing how vulnerabilities in one domain could exacerbate risks in others, including conflict and social unrest. It also highlighted ethical considerations, emphasizing rights, social justice, and human dignity (Booth, 2005).

Parallel to this conceptual expansion, academic scholarship introduced innovative theoretical frameworks. The Copenhagen School, led by Barry Buzan and Ole Wæver, developed the theory of securitization, analyzing how political actors frame issues as existential threats requiring extraordinary measures beyond normal political processes (Buzan, Wæver, & de Wilde, 1998). Securitization theory emphasizes the social and political construction of threats, highlighting that perception and framing can be as consequential as the threats themselves. Constructivist and critical approaches further expanded the field by integrating normative, ethical, and sociopolitical dimensions, arguing that security should account for justice, equity, and human welfare (Floyd, 2019; Booth, 2005).

Technological advancement and globalization have further transformed threats and response mechanisms. Cybersecurity, information warfare, artificial intelligence, and autonomous systems create new vulnerabilities while offering novel tools for defense, surveillance, and crisis management (Libicki, 2007; Zohar, 2022). Environmental security has emerged as a critical dimension, with climate change, resource scarcity, natural disasters, and population displacement increasingly affecting national and international stability and driving potential conflicts over water, energy, and arable land (Brown, 2011).

In sum, the evolution of security reflects a trajectory from narrow, state-centered military paradigms to broad, multidimensional frameworks encompassing human, environmental, technological, and societal dimensions. Contemporary Security Studies thus bridge theory and practice, providing analytical tools, ethical frameworks, and practical competencies essential for navigating the complex, interconnected, and unpredictable security landscape of the 21st century.

## 3. THE IMPORTANCE OF SECURITY STUDIES IN CONTEMPORARY EDUCATION

n today's globalized and technologically advanced world, the study of security has become indispensable for contemporary education. Security challenges are increasingly complex, multidimensional, and interconnected, transcending national borders and traditional military frameworks. Modern threats—including

terrorism, cyberattacks, hybrid warfare, pandemics, climate change, and geopolitical instability—require broad, sophisticated understanding that extends beyond conventional military training. Consequently, Security Studies have emerged as a critical interdisciplinary discipline, preparing professionals to navigate and manage these multifaceted challenges effectively (Williams, 2020; Floyd, 2019).

### 3.1 Expanding the Scope of Education

Historically, security education focused primarily on military strategy, defense policy, and state-centric models of international relations. Military academies and defense institutions emphasized tactical skills, operational planning, and conventional deterrence mechanisms. While essential, these competencies alone are insufficient to address the diverse and evolving threats of the 21st century. Modern security education must adopt a broader scope, integrating knowledge from political science, international relations, economics, environmental studies, law, information technology, and ethics (Baldwin, 1997; Heywood, 2011).

This interdisciplinary approach ensures that students are not merely trained in traditional military methods but are also equipped to analyze complex socio-political, technological, and environmental systems influencing security outcomes. By fostering critical thinking, analytical reasoning, and problem-solving skills, contemporary education empowers future leaders to anticipate threats, formulate adaptive strategies, and coordinate responses across sectors and borders.

### 3.2 Responding to Emerging Threats

The contemporary security landscape is characterized by transnational, asymmetric, and unconventional threats. Cybersecurity has become a central concern for both state and non-state actors, as critical infrastructure, communication networks, and defense systems face growing exposure to digital attacks (Libicki, 2007). Hybrid threats, combining military, informational, economic, and political tools, challenge conventional defense strategies and demand innovative, multi-domain responses.

Environmental risks—such as climate change, resource scarcity, and natural disasters—also significantly affect national and international security. Rising temperatures, water shortages, and population displacement can trigger social unrest, migration crises, and conflicts over essential resources (Brown, 2011). Integrating Security Studies into academic curricula enables students to understand these interconnections and develop strategies for preventive and adaptive responses.

Global health crises, including the COVID-19 pandemic, further highlight the necessity of a comprehensive security approach. Health security, encompassing epidemic preparedness, biosecurity, and emergency response management, is now a critical component of modern security frameworks (Mutimer, 2013). Through these educational programs, future leaders are better equipped to manage crises impacting both civilian populations and military operations.

### 3.3 Interdisciplinary and Holistic Approaches

A key advantage of modern Security Studies is its emphasis on interdisciplinarity and holism. Security cannot be understood in isolation; political, economic, social, technological, and environmental factors are deeply interdependent. Holistic academic programs equip students to analyze security challenges from multiple perspectives, fostering more effective decision-making and policy formulation (Floyd, 2019).

For example, understanding cyber warfare requires technical knowledge of network vulnerabilities alongside insights into international law, ethics, and geopolitics. Addressing climate-related security risks demands knowledge of environmental science, economic impacts, humanitarian consequences, and defense planning. By bridging these fields, security education cultivates leaders capable of integrating information, anticipating challenges, and implementing comprehensive solutions (Williams, 2020).

### 3.4 Developing Leadership and Strategic Thinking

Security Studies are essential for cultivating leadership and strategic thinking. Military and civilian leaders must navigate complex scenarios characterized by uncertainty, rapid technological changes, and evolving geopolitical tensions. Programs integrating security education foster analytical reasoning, scenario planning, and ethical decision-making, enabling leaders to respond effectively to crises while upholding democratic values and international norms (Booth, 2005).

Exposure to case studies, simulations, and applied research develops operational competence alongside theoretical understanding. Students learn to evaluate risks, develop contingency plans, and implement coordinated responses—skills crucial for national defense, international cooperation, and crisis management. These competencies ensure graduates are prepared for both immediate operational challenges and long-term strategic planning in dynamic environments.

### 3.5 Promoting Global Awareness and International Cooperation

Security education also fosters global awareness and appreciation of the interconnected nature of contemporary threats. International cooperation is indispensable in addressing transnational challenges such as terrorism, cybercrime, and pandemics. Programs linked to NATO or international partnerships emphasize collaborative approaches, cross-cultural understanding, and adherence to international legal frameworks (NATO, 2021).

Joint programs, exchanges, and research collaborations provide insights into other countries' security policies and practices, strengthening interoperability and mutual understanding. These experiences prepare leaders to coordinate multinational operations and contribute effectively to collective security efforts.

### 3.6 Bridging Theory and Practice

Modern Security Studies integrate theory and practice, ensuring graduates are both analytically capable and operationally proficient. By combining academic rigor with practical exercises—such as war games, crisis simulations, field research, and digital modeling—students acquire skills necessary to respond to real-world security challenges (Mutimer, 2013). Ethical considerations are emphasized, ensuring leaders navigate dilemmas related to human rights, proportional use of force, cyber ethics, and environmental responsibility (Floyd, 2019).

### 3.7 Implications for the Albanian Military Academy

For the Albanian Military Academy, integrating Security Studies represents a strategic investment in human capital and national defense capability. By incorporating interdisciplinary knowledge, practical skills, and global perspectives, the Academy prepares officers and leaders to confront contemporary threats, enhancing Albania's contributions to NATO, regional stability, and global security initiatives. Emphasizing technology, environmental risks, cyber defense, hybrid threats, and human security ensure graduates are equipped for both traditional operations and emerging challenges (Albanian Military Academy, 2021).

## 4. REDEFINING SECURITY IN THE 21ST CENTURY

Historically, security was understood as a state-centric, military-focused concept, emphasizing the defense of national borders, territorial integrity, and military superiority (Heywood, 2011). In the 21st century, rapid technological innovation, globalization, and the rise of transnational threats have expanded security far beyond traditional military concerns. Modern security now encompasses human, environmental, technological, health, and cyber dimensions (World Policy Hub, 2023).

The increasing interconnectedness of states, societies, and economies means that local disruptions—whether cyberattacks, pandemics, or environmental crises—can have global repercussions. This reality necessitates a nuanced understanding of security in which threats are multidimensional, interdependent, and often unpredictable. Scholars have emphasized shifting from a narrow "state security" approach toward "human security," prioritizing the protection of individuals, communities, and ecosystems alongside national interests (Floyd, 2019).

### 4.1 Interdisciplinary Foundations of Security Studies

The evolution of Security Studies reflects the recognition that contemporary threats cannot be addressed through a single disciplinary lens. Modern programs integrate political science, international relations, law, sociology, economics, environmental studies, information technology, and psychology. This interdisciplinary approach enables students to understand security dynamics holistically, from military operations and strategic planning to cyber resilience and humanitarian response (Williams, 2020).

The Copenhagen School, led by Buzan and Wæver, introduced "securitization," analyzing how issues become framed as security threats through social, political, and discourse-driven processes (Buzan, Wæver, & de Wilde, 1998). This framework underscores the subjective and socially constructed nature of security, highlighting the influence of perception, power, and normative considerations. Constructivist and post-structuralist approaches further integrate ethical, justice-related, and normative dimensions, emphasizing that security is as much a social and political construct as a technical or military concern (Floyd, 2019).

Embedding these theories into curricula strengthens analytical capabilities and equips students with the tools to design effective, ethically grounded, and sustainable security policies.

### 4.2. Emerging Technological and Cyber Threats

Technological innovation has transformed the security landscape, creating both opportunities and vulnerabilities. Cybersecurity has become critical, as nation-states, corporations, and non-state actors increasingly rely on digital infrastructure. Threats—including state-sponsored attacks, ransomware, disinformation, and infrastructure sabotage—pose significant risks to national security, economic stability, and public safety (Libicki, 2007).

Advanced technologies such as artificial intelligence (AI), quantum computing, and autonomous systems reshape military operations and defense strategies. While enhancing operational capabilities, these technologies also introduce ethical, legal, and strategic challenges. Security education must incorporate these domains, preparing leaders to assess risks, anticipate consequences, and implement safeguards (Zohar, 2022).

The militarization of space and new warfare domains, such as cyber and information operations, require comprehensive multi-domain strategies. Academic programs must integrate technical knowledge, strategic planning, and ethical reasoning to equip students for leadership in a rapidly evolving technological landscape (Gunaratna, 2023).

### 4.3. Environmental Security and Global Risks

Environmental security has emerged as a central concern. Climate change, resource scarcity, and environmental degradation contribute to conflict, migration, and geopolitical instability (Brown, 2011). Rising sea levels, desertification, and extreme weather threaten national infrastructure and global stability, creating challenges that intersect with traditional military and political considerations.

Integrating environmental security into curricula emphasizes the interconnectedness of ecological, social, and political systems. Students learn to analyze strategic implications, develop adaptive policies, and anticipate conflicts arising from resource competition, enabling proactive risk management, humanitarian

coordination, and international cooperation (Williams, 2020).

### 4.4. Human Security and Societal Resilience

Human security—focused on protecting the rights, well-being, and dignity of individuals and communities—has become central to contemporary Security Studies. This approach encompasses health, education, economic stability, and social cohesion (Floyd, 2019). Programs emphasize ethical decision-making, civic responsibility, and inclusive policies.

The COVID-19 pandemic highlighted human security's importance, showing the interdependence of public health, economic resilience, and national security. Incorporating these lessons ensures graduates are prepared to respond to complex, interconnected crises (Mutimer, 2013).

### 4.5. Ethics, Democracy, and Governance

Modern security emphasizes ethics, democratic governance, and human rights. Security Studies explore how inclusive, transparent, and accountable institutions enhance societal resilience (Booth, 2005). Leaders trained in these principles can prevent radicalization, polarization, and misuse of security frameworks. Linking security to democracy ensures professionals balance national defense imperatives with individual freedoms, civil liberties, and international norms (Gunaratna, 2023).

### 4.6. Institutionalization of Security Studies

Security Studies' institutionalization reflects its strategic importance. Leading institutions—including NATO's Defense College, the U.S. National Defense University, King's College London, and the Baltic Defence College—offer structured programs combining theory with practical training (NATO, 2021; King's College London, 2021). These programs integrate cybersecurity, hybrid threats, crisis management, international law, and strategic planning. They serve as models for curriculum development, interdisciplinary teaching, and applied research, ensuring graduates can operate in complex, multinational, and multi-domain environments.

### 4.7. Challenges and Opportunities

The rise of Security Studies presents both challenges and opportunities. Institutions face resource constraints, faculty training needs, curriculum modernization, and technology integration. Developing interdisciplinary programs that balance theory, practice, and ethics requires careful planning and international collaboration (Williams, 2020).

Conversely, these challenges offer opportunities to innovate, expand research capacities, and establish leadership in security education. Graduates trained in contemporary Security Studies contribute to national defense, regional stability, NATO operations, and global security initiatives. By integrating technology, interdisciplinary perspectives, and ethical frameworks, institutions can cultivate

leaders capable of navigating complex and rapidly evolving security landscapes (World Policy Hub, 2023).

## 5. SECURITY AS A NEW ACADEMIC DISCIPLINE: NATO'S APPROACH AND ITS MEMBER STATES

The emergence of Security Studies as a distinct academic discipline has been strongly shaped by NATO's strategic vision. For the alliance, developing security expertise in both military and civilian spheres is essential for resilience and readiness. Contemporary threats—ranging from hybrid warfare and cyberattacks to pandemics and environmental crises—require personnel equipped with both theoretical knowledge and practical skills (NATO, 2021).

### NATO's Educational Evolution

Security education in NATO member states originated in the post-World War II period, focusing on traditional military threats, defense planning, and strategic doctrines (Walt, 1991). The Cold War highlighted the importance of intelligence, logistics, and coordinated defense alongside military capabilities. NATO initiatives aimed to produce officers capable of integrating military operations with political and strategic considerations.

The post-Cold War era brought transnational challenges such as terrorism, cybercrime, human trafficking, and environmental hazards. NATO revised its strategic framework to emphasize comprehensive security, encompassing military defense, critical infrastructure protection, cybersecurity, and human security (ACT, 2020).

### Key Institutions: NDC and ACT

The NATO Defense College (NDC) in Rome provides advanced education for senior leaders, combining strategic security, operational planning, and international relations. Using case studies, simulations, and research-based analysis, the NDC promotes interdisciplinary thinking and prepares participants for complex scenarios involving multinational coordination and hybrid threats (NATO, 2021).

The Allied Command Transformation (ACT), established in 2002, drives NATO's adaptation to evolving threats. ACT educational programs embed Security Studies into military and civilian training, emphasizing innovation, interoperability, and readiness to address cyberattacks, space militarization, and emerging technologies (ACT, 2020).

### Security Studies in NATO Member States

NATO encourages member states to integrate Security Studies into national curricula. The U.S. National Defense University (NDU) offers programs in strategic planning, crisis management, cyber defense, and international security policy, emphasizing interdisciplinary collaboration and applied research (NDU, 2021). U.K. institutions such as King's College London and the University of St. Andrews

combine military strategy with political science, law, and technology, fostering analytical skills and strategic foresight (King's College London, 2021). Germany's Bundeswehr University and the Baltic Defence College in Estonia provide applied programs emphasizing global security, NATO interoperability, and regional crisis management (Bundeswehr University, 2021; Baltic Defence College, 2021).

**Enhancing Interoperability and Collective Defense**

NATO's educational initiatives strengthen both individual expertise and collective capacity. Standardized curricula, cross-national exchanges, and collaborative research enhance alliance cohesion, interoperability, and readiness to respond to emerging cyber, environmental, and hybrid threats (NATO, 2024b).

**Security Studies in the Albanian Military Academy**

The Albanian Military Academy (AMA) has integrated Security Studies as a formal academic discipline to prepare officers for multidimensional threats. The program spans three levels:

- **Bachelor's:** Foundational military knowledge, defense policy, crisis management, analytical skills, and operational awareness (Albanian Military Academy, 2020).
- **Master's:** Advanced education in cybersecurity, hybrid warfare, international diplomacy, and collective defense strategies, emphasizing interdisciplinary perspectives (Albanian Military Academy, 2021).
- **PhD:** Original research on emerging threats, cybersecurity, environmental security, and defense policy, fostering evidence-based strategies (Albanian Military Academy, 2022).

AMA's interdisciplinary curriculum combines social sciences, technology, environmental studies, and international relations. Cadets analyze climate change, migration, cybersecurity, conflict psychology, and crisis management while engaging in practical exercises such as simulations and war games (Libicki, 2007; Brown, 2011; Williams, 2012).

**Strategic Alignment with NATO**

As a NATO member, Albania aligns Security Studies with alliance priorities in interoperability, collective defense, and crisis management. AMA graduates are trained in NATO doctrines, operational procedures, and strategic guidelines, enabling effective contributions to national and multinational operations (NATO, 2024c). Joint exercises, research collaborations, and participation in NATO networks enhance Albania's capacity to respond to hybrid threats, cyber challenges, and regional crises, reinforcing the Academy's academic programs and Albania's strategic role within the alliance.

## 6. CHALLENGES AND OPPORTUNITIES FOR THE INTEGRATION OF SECURITY STUDIES AT THE ALBANIAN MILITARY ACADEMY

The evolution of global security has fundamentally transformed the requirements of military education, necessitating the incorporation of Security Studies into the curricula of modern military academies. The Albanian Military Academy (AMA) faces both significant challenges and substantial opportunities in embedding this interdisciplinary discipline, particularly given the rapidly changing technological, geopolitical, and environmental landscapes.

### 6.1. Challenges in Curriculum Modernization

One primary challenge lies in the dynamic nature of contemporary security threats, which necessitates continuous adaptation of curricula. Traditional military education, historically focused on physical defense, strategy, and tactics, must now encompass transnational risks, including cyberattacks, hybrid warfare, terrorism, pandemics, and climate-related crises (Gunaratna, 2023). Rapid technological advancements—such as artificial intelligence, autonomous systems, quantum computing, and advanced cyber tools—further amplify this challenge, requiring cadets and faculty to acquire both theoretical knowledge and practical expertise for effective application.

Faculty development represents another significant challenge. Academic staff must possess interdisciplinary knowledge to teach emerging security domains while staying abreast of global trends and NATO standards. This includes expertise in cyber defense, environmental risk assessment, strategic analysis, and international law, integrated with classical military strategy (Williams, 2012). Recruiting, training, and retaining faculty with such comprehensive skill sets is resource-intensive and requires long-term institutional commitment.

Resource constraints also pose practical obstacles. Effective integration of Security Studies demands access to advanced educational technologies, simulation labs, digital platforms, and contemporary research materials. Limitations in funding, infrastructure, and logistics can impede the implementation of innovative teaching methods and interdisciplinary programs. Access to software for cybersecurity training, analytical laboratories, and scenario-based simulations that mirror real-world operational challenges is particularly critical.

Institutional culture and resistance to change further complicate implementation. Officers and staff accustomed to traditional military training may perceive interdisciplinary approaches as peripheral or less relevant. Overcoming this inertia requires demonstrating the practical relevance of Security Studies and aligning programs consistently with both national and NATO strategic priorities.

### 6.2. Advancing Security Education: Opportunities and Strategic Approaches

Integrating Security Studies into the Albanian Military Academy (AMA) presents substantial opportunities to modernize military education and strengthen national

and regional strategic capabilities. Interdisciplinary curriculum development equips cadets with a comprehensive understanding of contemporary security issues by combining political science, international relations, cybersecurity, environmental studies, and defense economics. This holistic approach fosters strategic foresight, critical thinking, and adaptive problem-solving skills—essential qualities for leadership in volatile and complex security environments.

International collaboration further enhances these opportunities. Partnerships with NATO institutions, European military academies, and global universities provide access to advanced knowledge, best practices, and joint training initiatives. Programs such as NATO's Defense Education Enhancement Programme (DEEP) allow AMA faculty and students to engage in multinational simulations, research projects, and capacity-building exercises, ensuring curricula align with global standards and operational requirements (NATO, 2021).

Technological innovation significantly strengthens educational outcomes. Tools such as artificial intelligence, simulation software, digital platforms, and scenario-based training enable cadets to confront realistic operational challenges in controlled settings. Cybersecurity exercises allow students to anticipate attacks on critical infrastructure, develop response strategies, and evaluate mitigation effectiveness. Environmental security modules employ modeling tools to analyze climate-related threats, resource scarcity, and population displacement, cultivating strategic awareness and crisis preparedness (Brown, 2011; Libicki, 2007).

Research and knowledge production provide another avenue for advancement. Master's and Doctoral programs enable AMA to contribute to the global Security Studies discourse, generating evidence-based solutions for regional and international challenges. This strengthens Albania's intellectual capital, informs policy development, and supports NATO strategic planning, enhancing the country's influence within the alliance and the broader security community.

Ethical and democratic leadership development remains integral, as Security Studies emphasize governance, human rights, and moral decision-making. Graduates are prepared to navigate complex security dilemmas while upholding legal and ethical standards (Gunaratna, 2023; Walt, 1991).

To fully realize these opportunities, the AMA should implement targeted strategies: continuous curriculum review, faculty development programs, infrastructure and technological investment, institutional culture transformation, and strengthened international cooperation. By adopting these approaches, the Academy can transform challenges into opportunities, establishing Security Studies as a cornerstone of contemporary military education and a driver of Albania's national and regional security.

## CONCLUSIONS

In today's rapidly evolving In today's dynamic security landscape, integrating Security Studies as a formal discipline is a strategic imperative for the Albanian Military Academy (AMA). Through interdisciplinary, research-driven, and ethically grounded curricula, the Academy equips future leaders to navigate complex and unpredictable security challenges effectively.

The evolution of Security Studies—from traditional state-centric military paradigms to comprehensive interdisciplinary frameworks—emphasizes the integration of political science, international relations, technology, environmental studies, and economics into military education. This holistic approach develops graduates' operational, strategic, analytical, ethical, and technological competencies, essential for addressing emerging threats.

Alignment with NATO priorities reinforces Albania's credibility as an alliance member. Exposure to multinational training, NATO doctrines, and interoperability standards enables graduates to engage effectively in regional and global operations, strengthening the country's capacity to respond collaboratively to hybrid threats, cyber challenges, and complex crises.

Integrating Security Studies also enhances research capacity, supporting evidence-based policy development and knowledge production. Advanced Master's and Doctoral programs cultivate expertise in cybersecurity, environmental security, and strategic planning, fostering a culture of innovation, problem-solving, and adaptive leadership.

Although challenges—such as curriculum modernization, faculty specialization, resource constraints, and institutional adaptation—persist, they can be addressed through continuous curriculum review, targeted faculty development, technological investment, cultural transformation, and international cooperation.

Ultimately, Security Studies at the AMA represent a strategic investment in national and regional stability, preparing officers to contribute to NATO missions, promote peace and resilience, and confront the multifaceted security challenges of the 21st century.

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# Classes of Small Tactical Drone Complex employed on Air Littoral in Tactical Level at the battlefields of the Russo-Ukrainian War

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***Abstract.*** *Unmanned Air Vehicles (UAV) have had an indisputable impact on the Russo-Ukrainian conflict making it a Drone Centric War. For Ukraine, attack UAVs are the main striking power of the tactical units in order to halt Russian Ground Forces. While for Russia, UAVs are one of the main weapons to support advances on Ukrainian fortification positions. This article explores the classes of Small Tactical Drones, their structure, and how they are employed and integrated inside and between classes (e.g. ISR with strike UAV) by units on the Tactical Level in order to meet kinetic and non-kinetic objectives in the Air Littoral operational environment. As well as, main factors of success and effectiveness in Air Littoral air warfare as well as their contribution to combat control management systems. Part of the analysis of the effect of UAVs on tactical and operation level includes a case study for destruction of the best Russian tank T-90M.*

## INTRODUCTION OF TACTICAL DRONE COMPLEX

Drones discussed in the next sections are considered Small Tactical Drones (STD) and they are a sub category of Unmanned Aircraft Vehicle (UAV). These drones are typically compact, portable, and optimized for frontline units. They are essential to provide tactical units[1] enhanced situational awareness, ISR, attacking and bombing objectives, etc. TD that we are mention above are between manned reconnaissance platforms and tactical and medium UAV (Hermes 450, TB-2). These UAVs offer capability and features e.g. rapid deployment, mission versatility etc. to attached units. They are designed specifically for battlefield operations, the tasks they perform

[1] MS. E. Pllaha, "The use of Tactical Drones, Tasks and Tactics, Techniques, Procedures (TTP), and their Role in the Russian-Ukrainian Conflict", Military Journal, Albania Mil. Scientific Research Institute, 4th ed. Dec 2024, p.110, https://www.mod.gov.al/images/revistaushtarake/english/revista-ushtarake-4-anglisht-2024.pdf

perform generally are in support to tactical units/subunits, and tactical formations (platoon, up to brigade). Regarding the radius of action of these vehicles, should mention that it does not depend only on the UAV parameters, e.g. theoretical range, but depends on other aspects that limit operational distance, e.g. battery, flight altitude, environmental conditions, payload, and signal range, electronic warfare, relay, etc. Therefore, during this topic will also see different operating distances in close to short and medium range from few hundred meters, up to 100 km.

Tactical drones have two categories: multi-rotor and fixed-wing. Multi-rotor drones are small and have ability to stay in the air, flying over the same point (hovering), also are less expensive, e.g. Baba Yaga. Meanwhile, fixed-wing drones are larger with more on-board equipment and expanded carrying capacity, e.g. RQ-11 Raven. Usually, on body of UAV are mounted video transmitter, radio signal receiver for control from the operator's, battery, sensors, as well as ammunition.

This paper will focus on drones that are classified by NATO[2] as "Class I", with parameters, weighing less than 150 kg/330lbs and according US DoD these drone are in Group 1-3, weighing less than 1.320lbs/598 kg. Also, discussed for two out of three categories that Class I, has "mini" and "small", and will not deal with drones that are part of "micro" category (e.g. "Black Widow"). STD which are used by both participants in the conflict are part of this class, but they do not have all parameters according to the classification set by NATO. Their operation altitude and mission radius are roughly up to 5000m (16000ft) and up to 150km, while in accordance with classification they have to be up to 1500m/5000ft, and up to 50km. Although these established classes and groups that are classifying drones according altitude, radius, and weight are more notational than specific as there are no clear boundaries[3] nowadays, but we will use them as guidelines, whereas *determining factor for this article will be: drones that are tasked and employed by tactical units and formations*. Final, this study for STD in the Russo-Ukrainian war, will use the term "*complex*". It means a grouping of UAV platforms[4] that, as a system, offers a commander of tactical units the desired effect on the battlefield. Small Tactical Drone Complexes (STDC) include the airframes, payloads, and launch crews, command links, support teams to field the capability.

## CLASSES OF SMALL TACTICAL DRONES COMPLEX

As we mention above, determining factors for creation of these UAV classes are drones that are "tasked and employed by tactical units and formations". This complex

[2] In 2009, NATO Joint Capabilities Group agreed to divide UAS into three categories, CLASS I, II, and III." STANAG 4671

[3] David Hambling, "Ukraine's Mysterious New "Rocket Drone" Will Target Russian Air Force" Forbes, 28 August 2024 https://www.forbes.com/sites/davidhambling/2024/08/28/what-we-know-about-ukraines-mysterious-new-rocket-drone/

[4] Justin Bronk, Jack Watling, "Mass Precision Strike: Designing UAV Complexes for Land Forces", RUSI, 11 April 2024, p.5, https://static.rusi.org/mass-precision-strike-final.pdf

complex of drones is being formed of five UAV classes,: *situational awareness and tactical reconnaissance* UAV in close fight over battlespace; *tactical strike* UAVs that deliver effects over battlespace; *Short Range ISR* UAVs that are able to provide feeds for tactical commander into operational depth[5]; *Short Range Strike* UAVs that can strike significant targets on operational level for tactical commander and *UAV designed specifically* to synchronize with and enable other weapons systems. In general, these classes are combination of Tactical Drones for Recce (close and short range), strike/attack drones, and drones to synchronize with, and enable other weapons systems. It should be noted that some of these tasks are not dedicated to certain classes of drones, e.g.; the attack FPVs while on mission may perform ISR by transmitting live video from battlefield to command post.

## STRUCTURE AND ORGANIZATION FOR TASK

This paragraph will describe organization for task and structure of STD classes in Ukrainian Armed Forces (UAF). Meanwhile for RFAF it will be given in below paragraphs. Starting with the smallest UAV unit which is a "group" and it is consisting from 2 up to 5 personnel; the commander, the UAV operator and the vehicle driver etc. UAV groups usually operate from a pickup truck to move and carry about six FPVs[6] or two ISR Drones, transmitting antennas, ammunition and communication radios and other necessary equipment. During the mission each drone is controlled by a single pilot. Generally, groups in operations are working in pairs (e.g. ISR with Strike UAV) in order to create redundancy on coverage with radio signal while complicating targeting of their positions. This model offers the optimal use of resources where one group launches the UAV and the other does the recovery, repeating this method repeatedly. It also makes it possible to have different vectors as angles of attack on targets. A platoon consists of four groups and a company (Coy) with three platoons. All Ukrainian formations filed a mix of attack UAVs, ranging from light and heavy bomber drones, and FPVs. Most of Brigades (Bde) have a UAV Company consisting of tactical reconnaissance, strike UAVs, and Short-Range ISR. Dedicated UAV units are allocated to support section of front between 40 and 70 km wide[7].

For their importance and role that these drones were playing in this conflict, the AFU began to create the first tactical units battalion (Bn) in early 2024 and a regiment (Regt) in June 2024 of UAVs, specialized in tasks e.g.: attack, Signal Intelligence, EW, remote mining, patrolling, and adjusting fire. UAV battalion may consist of three company; attack, ISR and support and this unit could be assigned in support units in one direction of the front[8]. UAV Regt have even special tasks for

[5] Jack Watling, Nick Reynold, "Tactical Developments During the Third Year of the Russo Ukrainian War", RUSI, 14 FEB, 2025, p.15, https://static.rusi.org/tactical-developments-third-year-russo-ukrainian-war-february-2205.pdf

[6] Watling, "Mass Precision…", p.40

[7] Reynolds, "Tactical Developments during…", p.10

[8] Watling, "Mass Precision..…", p. 26

interception and destruction of UAVs, and for experimenting unmanned systems, deliver ammunition and rations forwards, also, training capability, as well production of UAVs. On June 2024 it was created separated branch of Unmanned Systems Forces (USF) to AFU which is specializes in drone warfare and the use of unmanned military robots on land, sea, and air.

## EMPLOYMENT CLASSES OF SMALL TACTICAL DRONES COMPLEX IN BATTLEFIELDS

Before 2022, Russia Federation Armed Forces (RFAF) had UAVs as part of tactical unit organic, and these integrations were influenced from Soviet era Doctrine of "Reconnaissance-Fire Complexes (RFC)" on operational-tactical level[9]. After getting involved in the civil war in Syria, the RFAF military modernization program mainly focused on organizational relationships and system of management and extensive modernization of capabilities[10]. Part of this was increasing the employment of UAVs for different tasks, as well as reinforcing or making them an organic part of tactical units. Primary Russian RFC are the Strelets system and UAVs. The Strelets system is a network of ruggedized computers that automate the transfer of data between all sensors and shooters[11]. In this combat control system are feeds from multiple ground-based sensors, reconnaissance troops, STD ISR on tactical units (*Granat and Eleron UAV)* and from ISR UAVs of higher echelons, e.g. (*Orlan-10, Orion)*. Information flows from the ISR STD to Command Post of Tactical Formation or Tactical Units in order to support command and staff to decisions. At the start of the conflict, STD employment of RFAF was far behind Ukraine, tactically and operationally, and this began to change in the spring of 2023 before the start of the Ukrainian offensive. RFAF shifted to UAVs used extensively for different tasks like attack, correction of artillery fire, data relay, etc. In addition, they increased complexity, diversity and density of them on tactical and operation level.

Meanwhile, UAF after 2014 started to receive STD for aerial surveillance, observation, monitoring, intelligence, reconnaissance, and photomapping like 'Furia','Leleka', PD-1 that significantly increased their ISR capabilities[12]. These capabilities continued to grow after the start of conflict due to domestically built

[9] Dmitry Adamsky, "Russian Lessons Learned from the Operation in Syria: A Preliminary Assessment", *Russia's Military Strategy and Doctrine*, USA: 2019, p. 383, russias-military-strategy-and-doctrine-9781735275284.html

[10] Dmitry Adamsky, "Russian Lessons from the Syrian Operation and the Culture of Military Innovation", *George C. Marshall European Center for Security Studies*, Feb. 2020, Nº 047, https://www.marshallcenter.org/sites/default/files/files/2020-03/SecurityInsights_47.pdf

[11] Blair Battersby, "Russia Addressing Missing Links in Kill Chain", TRADOC, 01 Dec. 2024, https://oe.tradoc.army.mil/product/tradoc-russia-addressing-missing-links-in-kill-chain/

[12]Mykhaylo Zabrodskyi, Jack Watling, Oleksandr.V. Danylyuk, Nick Reynolds, "Preliminary Lessons in Conventional Warfighting from Russia's Invasion of Ukraine": February–July 2022", RUSI, November 30, 2023, p.16 https://static.rusi.org/359-SR-Ukraine-Preliminary-Lessons-Feb-July-2022-web-final.pdf

e.g. Spectator-M1, Shark, Skif, and by June 2023 had accepted around nine models of OWA drones including six FPV quadcopters and three fixed-wing versions[13]. All this as a result of the rapid change in the technologies, and domestic production[14]. In addition, UAF were supported from partners for this task with a plenty of models e.g.: Scan Eagle, RQ-11 Raven, and Vector, Bayraktar Mini, etc. These STDs contribute to intelligence mapping software, like Kropyva (Nettle in English) which is a combat control system for intelligent mapping software[15]. Also, helps map targets and coordinate artillery fire missions through a secure communication network at all levels but crucially, is devised to work in cooperation with drones. AFU has been flexible enough to insert STD into most of its military operations and using them primarily for reconnaissance, locating targets, kinetic strikes, and battle damage assessments.

***Situational awareness and tactical reconnaissance*** UAVs in close fight over battlespace are STD that can fly from a few hundred meters to about 10 km, from front line and support tactical units with situational awareness[16]. The autonomy, is from a few minutes up to few hours to fulfill tasks. The *mission* for close ISR is to provide persistent and widespread coverage for units in the close fight[17]. One of the lessons learned in this conflict is that units with uncompetitive situational awareness are liable to suffer disproportionately in engagements[18]. These drones already are part of tactical units and this task can also be performed by attack drones or EW UAVs. Rotary STDs are most efficient for close ISR e.g. "DJI Mavric 3", and they can be carried by dismounted personnel. In addition, they execute ISR during the day and at night, and transmit live video from the area they are flying over to the operators or unit commands. Also, transmitting video in higher echelons like Bde by patching the feeds back via satellite uplink or other rebroadcasting systems for the adversary activity. Combat formations can receive situational awareness for the discovered threat, objects and locations of them via live video, notice through radio, or with text[19].

Dispersal and density of this UAV at the front is key to the success of units and for this reason their losses are high, e.g. in the city of Bakmut alone, where about 50 Ukrainian drones were flying at any time conducting vital missions in surveillance,

[13]Ukrainian Military Portal, "FPV drones: weapons that changed the modern war", 2023, https://mil.in.ua/en/articles/fpv-drones-weapons-that-changed-the-modern-war/

[14]Christian Mamo, "Revitalizing Ukraine's Defense Sector, and with It, Its Military," Emerging Europe, March 26, 2021, https://emerging-europe.com/.

[15]Tom Cooper, 'Kropyva: Ukrainian Artillery Application', Medium, 19 June 2022, https://medium.com/@x_TomCooper_x/ukraine-war-17-18-19-june-2022-d8a71e864b08

[16] Watling, "Mass Precision Strike …", p.22

[17] Watling, "Mass Precision Strike …", p.24

[18] Watling, "Mass Precision Strike …", p.24

[19] Watling, "Mass Precision Strike ....", p.40

intelligence gathering, early warning, and precision strike roles[20]. In order to create desired effects it is important to have coordination and redundancy for coverage of area of responsibility under persistent threat from adversary in order to fulfill their task[21]. Their teams are working closely with strike operator and usually are in same place or command post for better coordination inside same units or with other teams. Also, they have right to call artillery as soon as they discover the threat to the unit that they belong or are supporting. Each Ukrainian Bn/ "combat formations" has at least one unit of them. Also, tactical units of RFAF use actively quadcopters for reconnaissance, e.g. DJI Mavic and also, domestically produced FPVs e.g. VT-40, Piranha[22].

***Tactical strike*** **UAVs** are drones that deliver effects with precision strike in volume in close fight over battlespace (e.g. Pegasus, Baba Yaga for UAF and "Hortensia, Piranha FPV" for RFAF). The core mission is to degrade fighting effectiveness of the adversary. The intent is to halt the movement of hostile forces before they can close to within direct-fire weapons range of friendly forces[23]. This can be achieved by destroying significant numbers of adversary capabilities e.g. personnel, armored and support vehicles, tactical EW systems, etc. Their combat radius is from a few meters out to approximately 20 km in depth and with autonomy of flight from 10 minutes up to 1 hour. Even these UAVs teams work in pairs, usually, with Situational Awareness UAVs, their operators are in same CP, where one pair/operator is discovering, and other one is attacking targets. UAF are using, FPV drones to attack anything that moves in front line and even attack helicopters e.g. Mi-28, Ka-52 and ISR drones (Zala) taking tactical victories without risking troops.

In the first year of war strike of drone were more effective than now, due to increasing protection of armored vehicle from RFAF with extra metal grids, rubber and metal layer to creating so called turtle tanks. Strike UAVs may immobilize armored vehicle and then artillery finish the job or vice versa. They are more effective to unprotected or lightly protected ground forces and less effective against armored vehicles due to passive protection attached to them. Their effectiveness increases significantly when this class of drone is used in combination with artillery. In an effort to protect troops and hardware from drones (even from this class) RFAF has invested a lot in EW, with relative success since the news coming from the front[24]

[20] Shashank Joshi, "The war in Ukraine shows how technology is changing the battlefield", The Economist, 2023, https://www.economist.com/special-report/2023/07/03/the-war-in-ukraine-shows-how-technology-is-changing-the-battlefield

[21] Pllaha, p.125

[22]Iaroslav Chornogor," Russian Unmanned Systems: Current State, Prospects of Production and Application", "Ukrainian Prism" 13, Aug, 2024, p.15, https://prismua.org/wp-content/uploads/2024/08/Russian-Unmanned-Systems_%D1%83%D1%82%D0%BF.pdf

[23] Watling, "Mass Precision Strike…", p.26

[24]ORYX Blog, "Attack on Europe: Documenting Ukrainian Equipment Losses During the Russian Invasion of Ukraine" https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html

shows drone operators continue to destroy military assets every day, even grenade-armed robotic mini-tanks[25] an experimental unmanned ground vehicle (UGV). RFAF increased the employment of them from beginning of 2023 and reached affect against armored vehicles of AUF even with via a fiber-optic cable FPV drone.

On these class can be attached 3 type of warhead, first is General-Purpose warheads that use a combination of high-explosive blast and fragmentation to create effect against personnel[26] and to damage structures[27]. These warheads usually are used by small multi-copters. Second are Shaped-Charge warheads designed for anti - armor. Most famous for this one is RPG-7 warheads which and are used especially by OWA UAVs. Third type is Multirole warheads usually used by loitering munitions and are able to destroy a wide range of targets. Part of their payloads are even explosives which are modified and produced in local workshops[28]. Also, modified infantry grenades or grenades from an automatic grenade launcher e.g. AGS-17, or 82mm mortar shells. Besides these munitions, attack drones can be armed with improvised explosive devices (IEDs) produced in home, terrain, foundry, etc. These IEDs consist of soda cans and 3D printed plastic as a body filled with explosives. Fusing is done using a hand grenade fuse, impact fuse, or electric fuse.

***Short-Range ISR UAVs*** are able to provide reconnaissance capability for commanders of tactical units and formations into operational depth with reasonable fidelity and latency out to 40 km of depth[29]. The *tasks* are to provide reconnaissance/ feeds, locating targets, and battle damage assessments etc. to commanders of tactical units and formations in order to decide for the action according the situation. They can fly at short and long ranges (up to 100 km), as well as at low and medium altitudes for operational and tactical tasks. But, after 15 km of depth[30], reconnaissance is more deliberate according to the task assigned by commander of units[31]. Short-Range ISR drones are usually fixed-wing and have ability to fly and loiter in depth and their EO/ IR sensor payloads makes it possible to fulfill their task. Endurance, in term of flying to area and identifying targets is one of main key elements of these platforms. They do not have high maneuverability, and require landing and takeoff conditions such as

[25]David Axe, "The Russians Sent a Platoon of Grenade-Hurling Robotic Mini-Tanks into Battle. The Ukrainians Blew Up the 'Bots in the Usual Way: With Drones", Forbes, 31 March 2024 https://www.forbes.com/sites/davidaxe/2024/03/31/the-russians-sent-a-platoon-of-grenade-hurling-robotic-mini-tanks-into-battle-the-ukrainians-blew-up-the-bots-in-the-usual-way-with-drones/

[26]David Hambling, "Steel Hornets: Inside Ukraine's Amazon for Drone Bombs", Forbes, 02 April 2024, https://www.forbes.com/sites/davidhambling/2024/04/02/steel-hornets-ukraines-amazon-for-drone-bombs/

[27] Bronk, "Mass Precision Strike,", p.17

[28] Osman Aksu, "A Methodology for countering Unmanned Aircraft Systems", NATO, Joint Air Power Competence Centre, p. 133, https://www.japcc.org/wp-content/uploads/A-Comprehensive-Approach-to-Countering-Unmanned-Aircraft-Systems.pdf

[29] Watling, "Tactical Developments", p.15

[30] Watling, "Tactical Developments", p.15

[31] Watling, "Tactical Developments", p.15

platforms, runways, etc. Their ability to fly high is very useful and it gives them a sort of survivability from AA gun or MAPADS. Also, they are more protected against EW systems used by front-line tactical units as they fly relatively high and the domes created by them are less effective. Usually, the command and control of them are in brigade/regimental level in both Russian and Ukrainian forces[32]. These UAVs are supporting not only the operation center of Bde with feeds over the battlefields, but also, subordinate units like, Regt/ Bn, Co. In this way they can take decisions immediately to attack objectives with their strike UAV or to send coordination to artillery units.

Each ground combat Bde of AFU generally has one Coy of UAV and part of it are drones of this class e.g. Shark, Vector, RQ-11 Raven etc. for conducting deep recce as well as fires engagements. Drones like Bayraktar Mini, Small Shark, DJI-Mavric III etc. are part of drone tactical units Bn, Regt and Coy and these units generate four to six orbits of ISR UAV to support its command[33]. At least one Reconnaissance Coy with this class are in structure of UAV Bn and in Artillery Bde. Usually, the smallest ISR UAV unit is a "group", and they work in pairs. Also, these UAVs can work closely with missile units to strike important targets e.g. operators of a Shark drone as soon as a significant target is spotted within operational depth transmit coordinates to Himars or ATACM.

Before Feb 2022 each Russian Bde had one UAV Coy with three or four platoons. On the tactical level, Granat and Eleron UAVs platoons were attached to Regt and in Bn, meanwhile Orlan-10 remained under Bde structure. Also, these UAVs were part Recon units e.g. on Recon Bde, or on Recon Bn of Mechanized Rifle Brigade or similar Tactical Formation. After 2023, RFAF began to use more and more for reconnaissance new UAVs like SuperCam and ZALA[34]. Combat groups during engagement tend to maintain five orbits on the axis of advance to support its command and for combat managements[35]. Command post, also, during engagement can be supported even with footage from OWA drone, and FPVs that are in mission. These drones are conducting reconnaissance at operational and tactical levels are creating serious problem to AFU during their tasks.

The most successful in this class for Russia is "Orlan-10", a medium-range, fixed-wing, multi-purpose tactical drone[36]. It is cheap and simple to operate, and has good performance and good resistance to jamming[37]. The maximum take-off weight is 15kg

[32] Watling, "Tactical Developments", p.15
[33] Watling, "Tactical Developments", p.15
[34] Chornogor," Russian Unmanned Systems:", p.10
[35] Watling, "Tactical Developments", p.15
[36] Frederick W. Kagan, Kimberly Kagan "Ukraine and the Problem of Restoring Maneuver in Contemporary War", Institute for the Study of War, Aug-2024, p.16, https://www.understandingwar.org/sites/default/files/Ukraine%20and%20the%20Problem%20of%20Restoring%20Maneuver%20in%20Contemporary%20War_final.pdf
[37] Bronk, "Ukraine and the Problem", p.20

with a 6 kg payload, and speed 150 km/hour, combat radius up to 110 km, a 16-hour endurance and service ceiling up to 5000 m. These features make it difficult to defeat[38]. Each Bde has one UAV Coy, which typically has up to 18 Orlan vehicles and is launched by catapult and recovered by an onboard parachute[39]. UAVs are deployed in groups of three; the first is used for reconnaissance, the second for EW and the third as a data relay. Also, this team can transmit coordinates to tactical ballistic missile units e.g. SS-26 Stone (Iscander-M), which can strike in few minutes.

***Short Range Strike UAVs*** are drones that can strike significant targets on operational level for tactical commander. The core mission of this class is to degrade the fighting effectiveness of the adversary by destroying high-value military targets like artillery, Air Defence and EW systems, depots, jet fighter on the ground, and Command Post etc.[40]. These missions are executed with RAM II and Switchblade UAVs, for AFU and Lance-3M for RFAF. Usually, they are fixed wings loitering munition and are launched by using ground catapult launcher or via a special catapult which can be installed on an armored vehicle or SUV. Their autonomy of flight is up to several hours and combat radius is from a hundred meters out to approximately 50 km. Radius of them, depend on relay station, metrological condition and EW. They can have different warheads and usually are shaped-charge munitions designed for anti-armor. Also, they can be employed alone to locate target and attack it or in pair with reconnaissance UAV. It is worth noting targets *at a distance of 30-50 km* from front line that are strike from these class, are mostly outside the range of artillery and Tactical Strike UAVs, that is, an *operational distance* where the attack against them is usually carried out by aviation. Short Range Strike UAVs after reaching operation area above mention, start searching for the target through active visual target tracking system which is using the real image coming from on-board camera. Once a target is located the operator locks on using this system to stay in sync with little or no control from him with the aim of knocking it out.

One of most efficient UAVs for this class is the Russian Lancet-3/M drone, a highly versatile system with 77.7% hit rate of their intended targets[41]. This drone is used by Special Operations Forces or mobile reconnaissance-diversion groups to target objectives in close proximity to the front line. In addition, RFAF has used it actively to hunt Ukrainian artillery in order not to support maneuver unit with firing and has created effects against these systems. Lancet-3M has dual frequency and due to this capability is more resistant to jamming. Also, it has optical-electronic and TV guidance

[38] Battersby, "Russia Addressing…"

[39] Blair Battersby, "Russia Struggling To Integrate Its Most Effective Unmanned System", TRADOC G-2, US Army, 2024, https://oe.tradoc.army.mil/product/russia-struggling-to-integrate-its-most-effective-unmanned-system/

[40] Bronk, "Mass Precision Strike", p.26

[41] Boyko Nikolov, "78 Lancet drones fired monthly with high kill rate – source", Bulgarianmilitary.com, 13 Jan 2025 https://bulgarianmilitary.com/2025/01/13/78-lancet-drones-fired-monthly-with-high-kill-rate-source/

units, that make it to be controlled during terminal stage of flight. To attack high-value military targets this drone works alongside an ISR UAV like Zala or Orlan and for greater effectiveness in distance they interface with each other through antennas in so-called Hunter-Killer teams. The ISR UAV hovers at height, acts as a relay station, and provides coordinates of the objective to Lancet-3 M in order to attack objective.

**UAVs designed specifically to synchronize** with and enable other weapons systems providing: Communication Relays, Adjusting, Correcting and Direction/ Aiming Artillery fire and Electronic Warfare[42]. These drone are conducting vital missions by improving other systems that are synchronizing. RFAF using Orlan-10 as airborne ***communication relay*** to strength signal-and-comms for others UAVs when are operating behind the FLOT. Also, enhance communication resistance from jamming and other forms of EW attack, between them and ground station. Drones like Spectator-M, Leleka-100 for AFU and Orlan 30 for RFAF are conducting vital missions by ***improving Artillery Firepower*** of tactical and operational units. During this time, UAVs continue to supply different unit commanders with aerial images to take decisions such as attack with large caliber artillery (155/152 mm), tube artillery (HIMARS, BM-30 Smerch etc.), or with aviation, as well as to make an assessment of attacks and its correction. Also, can track and spot troop movements in real time and providing this information directly to artillery units allowing fire missions to conclude in approximately in three minutes.

Each Ukrainian artillery Bde has one ISR Bn with reconnaissance UAV, even batteries field significant number of UAVs for situational awareness and to search for enemy positions[43]. Also, these drones contribute to intelligence mapping software, like on Kropyva system which helps to map targets and coordinate artillery fire missions through a secure communication network at all levels, but crucially, is devised to work in cooperation with drones[44]. The live video from the drone reports on where the artillery points of impact allowing the system to suggest adjustments to artillery units until the target is hit. According to military experts, the use of STDsto support artillery units has reduced the consumption of rounds; for example, destruction of a standard platoon in a defensive position using artillery **typically required about 75 rounds from a 120-mm, but UAV integration has reduced this to just nine rounds[45].** Combining of 'Kropyva' system with drones for fire correction has increased the effectiveness of UAF artillery and shortened the time required to deploy a howitzer battery to three minutes, the time required to engage an unplanned target to one minute, and the time required to open counter-battery fire

[42] Bronk, "Mass Precision Strike,", p.34
[43] Watling, "Tactical Developments", p.15
[44] Cooper, "Kropyva:", 2022,
[45]Oleksandra Molloy, "Drones in Modern Warfare Lessons Learnt from the War in Ukraine", Australian Army Research Centre, No. 29, 2024 https://researchcentre.army.gov.au/sites/default/files/241022-Occasional-Paper-29-Lessons-Learnt-from-Ukraine_2.pdf

to 30 seconds[46].

On this article for ***target designation*** will touch on Orlan-30 UAVs which plays a critical role for RFAF in Ukraine[47]. This drone is part of artillery Bde UAS companies and can carry laser target designators payload which radiate targets for laser-guided munitions, such as 152 mm Krasnopol shells with range approximately 40 km. Passage of target data from UAVs to artillery units is enabled by Strelets systems. Also, this drone designates targets for air-launched guided missiles Kh-38ML, fired from Su-34 aircraft[48]. Orlan-30s is part Ground Forces units and to make fulfill these tasks need effective joint force integration with Air Force.

***Small Tactical drones for Electronic Warfare*** are drones with EW payloads designed to degrade hostile sensors, either through noise jamming or through more sophisticated signal timing manipulation or protocol-based electronic attack techniques[49]. For this class, the Orlan-10, which has EW pods and can attack electromagnetic spectrum UAF through mounting interference transmitters and suppress mobile communications as part of the Leer-3 electronic warfare complex[50]. These drones in RFAF are part of Combined Arms Army electronic warfare Bn and are tasked even for suppression and destruction of air defence systems etc. Usually for the task the Orlan-10 operates in a group of three, the first one with this pod is flying in high altitude and is jamming missile fuses of SAM systems. The second Orlan-10, geolocates and cues it, meanwhile, the third one designates the launch system as a target for artillery or missile units.

## OPERATIONAL USE OF SMALL TACTICAL DRONES COMPLEX IN AIR LITTORAL

The UAF had UAVs as part of a tactical unit organic, and integration was influenced by the Soviet era Doctrine "Reconnaissance-Fire Complexes". They began using them for ISR from 2014 following the start of conflict in the east of the country with the so-called Donetsk Republic[51]. Ukrainian military leaders sought alternative ways to challenge Russia's quantitative superiority in the combat zone by studying the use of UAVs in different conflicts[52]. From mid-2022, STDC used UAVs

[46]Max Hunder, Mariano Zafra, Anurag Rao, Sudev Kiyada, "How drone combat in Ukraine is changing warfare", Reuters, 25 March 2024, https://www.reuters.com/graphics/UKRAINE-CRISIS/DRONES/dwpkeyjwkpm/

[47] Battersby," Russia Struggling", 2024

[48]Boyko Nikolov, "Russia uses Orlan UAV to target Kh-38ML missile fired from Su-34", Bulgarianmilitary.com Sep, 2023 https://bulgarianmilitary.com/2023/09/30/russia-uses-orlan-uav-to-target-kh-38ml-missile-fired-from-a-su-34/

[49] Bronk, "Mass Precision Strike:", p.19

[50]Boyko Nikolov, "Russia produces about 167 FPV drones per hour, says Moscow", Bulgarianmilitary.com, 01 Aug, 2024, https://bulgarianmilitary.com/2024/08/01/russia-produces-about-167-fpv-drones-per-hour-says-moscow/

[51] Dmitry, "Russian Lessons ", p.383

[52] Pllaha, p.113

to attack Russian resources and forces, in addition to other tasks. Videos showing the destruction of Russian tanks from FPV drones were broadcast on media and uploaded in internet showing tactical success. According to different sources, UAVs had an indisputable impact on war and provided the UAF with 86 % of all targets, and from 2023 to the summer of 2024, they were credited with the destruction of about 2/3 of the RFAF tanks or about 1550 pieces[53]. As well, UAF used UAVs with success in the Kursk offensive on 2024 achieving tactical successes to advance on this direction and to stop RFAF counter offensive[54]. Despite their limitation due to EW, weather, skills of operators, passive protection attached to armored vehicles, and difficulty to concentrate multiple drones in time and space because it can interfere with others guidance systems, STD per beginning of 2025 account 60-70% of damaged and destroyed systems of RFAF[55].

RFAF started to use STD to attack Ukrainian Forces from 2014 and after 2019 they used them in very similar tactics to what is common today[56]. During the first year of the conflict, RFAF did not show modern and aggressive use of tactical UAVs on the battlefield, choosing instead to stick strictly to its doctrine which used them for ISR, direction of artillery fire and EW[57]. This began to change in the spring of 2023 before the start of the Ukrainian offensive, when RFAF decentralized the decision-making to attack targets in the charge of local commanders or drone operators[58]. These changes reached refinement of their RFC more responsive and flexible in delivering fire to support maneuvering forces[59]. During 2024, RFAF advanced and achieved tactical successes with operational level implications in several region like in Kursk and in Donbas thanks to these drone complexes. Meanwhile western tanks like M-1 Abrams, Challenger 2 and Leopard 2 that were provided to the UAF were prey of their drones.

Air warfare of these STDCs is and has been executed (predominantly) in small segment of airspace, at *Air Littoral*[60]. A thin airspace in low-altitude, between the ground and 10,000 feet (3000m)[61]. Air Littoral has limited, and it take surface as

[53]Jack Detsch, "Ukraine's Cheap Drones Are Decimating Russia's Tanks But experts say they're not a long-term solution to a lack of artillery rounds" Foreign Policy Magazine, April 2024, https://foreignpolicy.com/2024/04/09/drones-russia-tanks-ukraine-war-fpv-artillery/

[54] Kagan, "Ukraine and the Problem of Restoring", p.12

[55] Watling, "Tactical Developments", p.10

[56] Chornogor, p.7

[57] Pllaha, p.120

[58] Watling, "Ukraine and the Problem", p.10

[59]Jack Watling, Nick Reynolds "Meatgrinder: Russian Tactics in the Second Year of Its Invasion of Ukraine" RUSI, 2023, p.12, https://static.rusi.org/403-SR-Russian-Tactics-web-final.pdf

[60] M. K. Bremer, K. A. Grieco, "Airpower after Ukraine, Air denial: The dangerous illusion of decisive air superiority," Atlantic Council, 2022, https://www.atlanticcouncil.org/content-series/airpower-after-ukraine/air-denial-the-dangerous-illusion-of-decisive-air-superiority/

[61] *Joint Maritime Operations*, Joint Publication 3-32 (Washington, DC: Chairman of the Joint Chiefs of Staff, 2023), I-5;

lower boundary and upper boundary in general is the *Coordinating Altitude* (CA)[62]. The latter one is used to vertically separate fixed-wing and rotary-wing aircraft, or to separate different types of rotary-wing during tactical operations[63]. This airspace is sliced into much smaller segment in order to operate different class of STDC. These assets have achieved freedom of movement in this war. Meanwhile manned air vehicles nearly are inexistence there. Employing STDC in Structure and Layering in drone air warfare at this airspace have created in this conflict *new operational space* and each of them are achieving localized and temporary *air superiority* at low altitude/air littoral *at a given time and place,* and through it they are executing tasks that in the traditional concept were mainly performed by aviation of whom has Air Superiority at the front to create the desired effect through delivering tactical air power [6465]. Layering classes of STDC over the front line in Air Littoral airspace is operationally important across theaters and making nearly decisive to battlefield outcomes on tactical level and with implications on operation level. During this war, air forces of both sides have not managed to completely control airspace, while they have exploited the Air Littoral and have employed a several class of STDs for a wide range of tasks. STDC are threatening everything on front line from movement of troops to the supply vehicles and making air littoral strategically and operationally important across theater[66]. The effectiveness of STDC is largely determined by their layered employment[67]. No one has full control of Air Littoral over front line and this thing create opportunity and challenges for both to establish temporarily complex of STD and to create effect to succeed tactical tasks at a given time and place.

## CASE STUDY: DESTRUCTION OF T-90 M "PRORYV" TANK

To perceive the effect of STDC on the battlefield, we will survey a case study for destruction of the newest and most advanced Russian tank T-90 M "Proryv", during this conflict[68]. This tank had multiple upgrades to protect it, in particular FPV drones like roof screens, rubber shielding, additional reactive armor, and radio-frequency jammers. Statistics for this case study mainly will be taken from the *WarSpotting* blog, an open-source intelligence defense analysis website. This web page create

[62] Dictionary of Military & Associated Terms. US, DOD, 2005

[63] M. K. Bremer, K. A. Grieco "The Air Littoral: Another Look", US Army War College, Vol 51, No.-4, Article 7, 17 Nov, 2021 ", p.3, https://press.armywarcollege.edu/cgi/viewcontent.cgi?article=3092&context=parameters

[64] NATO definition of Air Superiority: "*The degree of dominance in the air battle of one force over another which permits the conduct of operations…at a given time and place without prohibitive interference by the opposing force*"

[65] Pllaha, p.131

[66]Kelly A. Grieco, Maximilian K. Bremer, "Contesting the Air Littoral", Vol. 3, No. 3, ÆTHER: 2024, p, 21, https://www.airuniversity.af.edu/Portals/10/AEtherJournal/Journals/Volume-3_Number-3/Grieco_and_Bremer.pdf

[67] Bronk, "Mass Precision Strike", p.1

[68] WarSpotting, "T-90M 'Proryv", Accessed on 16 Jan 2025 https://ukr.warspotting.net/search/?belligerent=2&weapon=1&model=16

database according what caused the explosion/destruction of T-90M. Meanwhile Oryx blog, give only the aftermath[69]. Analyses accessed also, other publications regarding this topic, which had studied only those confirmed as T-90M destroyed by FPV drone for a certain period[70]. In conclusion, till Feb 2025, most likely, *out of 71 T-90M destroyed, 56 are confirmed by STD or 78.87% of the total*. While total destroyed, damaged and captured are 113, of which 15 are damaged, 7 captured. There could be even more T-90M destroyed by UAVs, because referring this Blog there are about 63 destroyed tanks as 'unknown tank'. According to Military Balance in 2023 approximately 60–70 tanks were produced, and in mid-2024 total there were approximately 267. If we take into consideration the production rate, we may assume that between April 2020 and December 2024 at least 300 T-90M were built or modernized. In the end of this small analyses concludes that about 1/3 of these tanks produced were destroyed in Ukraine, and a great and valuable contribution was made by the Small Tactical Drones.

## CONCLUSION

STD Complex has denied the ability to concentrate and maneuver forces to reach objective, thanks to capability to hit individual vehicles or even groups of targets with incredible precision[71]. Employment of them has made the battlefield almost transparent, from troop concentrations in depth to front line trenches. RFAF has in focus to use these drones mainly against artillery systems, a critical component of UAF defense strategy in order to weaken their ability to sustain their offensive. While AFU employs them in close coordination with artillery in order to destroy armored vehicle and supporting infantry before reaching their trenches to make it costly for attackers. Successful operations of this complex on Air Littoral require constant innovation to be able to generate new systems to overcome adversary innovation. No one has full control of Air Littoral over the front line and this creates opportunity and challenges for both to establish temporarily complex of STD, also to create desired effects in order to complete tactical tasks at a given time and place.

[69] David Hambling "Why FPV Drones Are Still Ukraine's Biggest Tank Killers" Forbes, 14 Jan, 2025 https://www.forbes.com/sites/davidhambling/2025/01/14/why-fpv-drones-are-still-ukraines-biggest-tank-killers/

[70] David Hambling "Are FPVs Game-Changing Tank Killers? Part 2", Forbes, 6, Feb, 2024, https://www.forbes.com/sites/davidhambling/2024/02/06/are-fpvs-game-changing-tank-killers-part-2-the-numbers-say-yes/

[71] Grieco & Bremer, "Contesting the Air Littoral", Vol. 3, No. 3, ÆTHER: 2024, p,27

# The increase in the use of laser weapons in military operations

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**Abstract.** *The development of directed-energy weapons, especially laser weapons, is transforming the way defense and attack are conceived on the modern battlefield. The paper provides an in-depth analysis of the technological advances, state programs, tactical uses, and challenges of these systems, with a focus on international developments and strategic implications for NATO member states and the Albanian Armed Forces, in the context of the transformation of defense capabilities. and the challenges of these systems, primarily addressing international dynamics and strategic implications for NATO member states and the Albanian Armed Forces, with regard to the transformation of defense capabilities.*

*This article examines the main factors that have contributed to the growing use of laser weapons - advances in power sources, miniaturization of optical devices, integration with existing air defense systems, and the development of mobile land, air, and naval platforms. It also analyzes their practical applications in tactical interventions, defense against drones, ballistic missiles, artillery shells, and high-risk aerial targets. Concrete examples from the militaries of the United States, Israel, China, and Russia show that these systems are already in advanced testing stages or deployed in operations, changing the balance of power and the concepts of future warfare.*

*The current challenges of using these weapons - atmospheric conditions, heat dissipation, energy constraints and the international legal framework - are also discussed, as well as the strategic and ethical impact of introducing directed energy technologies into military doctrine, raising important questions about control, the proportional use of force, and the future of the arms race.*

*In conclusion, the study argues that laser weapons are no longer just a futuristic concept, but a growing reality that is changing the way states protect their national*

*and strategic interests. It recommends an in-depth assessment of national security needs and the development of domestic capacities to meet the challenges and exploit the advantages this technology offers.*

**Keywords:** Laser weapons, directed energy, air defense, military technology, modern operations.

## INTRODUCTION

The transformation of military technologies has led to the development of new weapons, among which laser weapons occupy a central place in the concept of future warfare. Capable of neutralizing threats in real time, with minimal cost per shot and without requiring traditional ammunition, laser systems constitute an advanced solution to current challenges in defense and tactical operations.

In the 21st century, the nature of warfare is changing rapidly due to fast technological developments, most notably the introduction of laser weapons into the arsenal of armed forces. These weapons, which represent a category of Directed-Energy Weapons (DEW) technology, have transformed from a theoretical concept into a tangible reality applicable to modern military operations. They use a focused (usually light or infrared) beam of energy to strike targets with great speed and incredible accuracy, offering a powerful alternative to conventional kinetic weapons.

Countries with advanced military capabilities, such as the United States, Israel, China, Russia, Japan, and the United Kingdom, have invested significantly in the development and testing of these weapons for a wide range of tactical and strategic uses. Systems such as the US Navy's **Laser Weapon System (LaWS)**, the Israeli-developed **Iron Beam**, or the **Peresvet** in the Russian arsenal, are clear evidence that modern warfare is entering a new era – that of directed energy. These weapons are already deployed on land, air, and sea platforms and are used to defend against drones, missiles, mortar shells, and fast-moving aerial targets at a much lower cost per shot than traditional weapons.

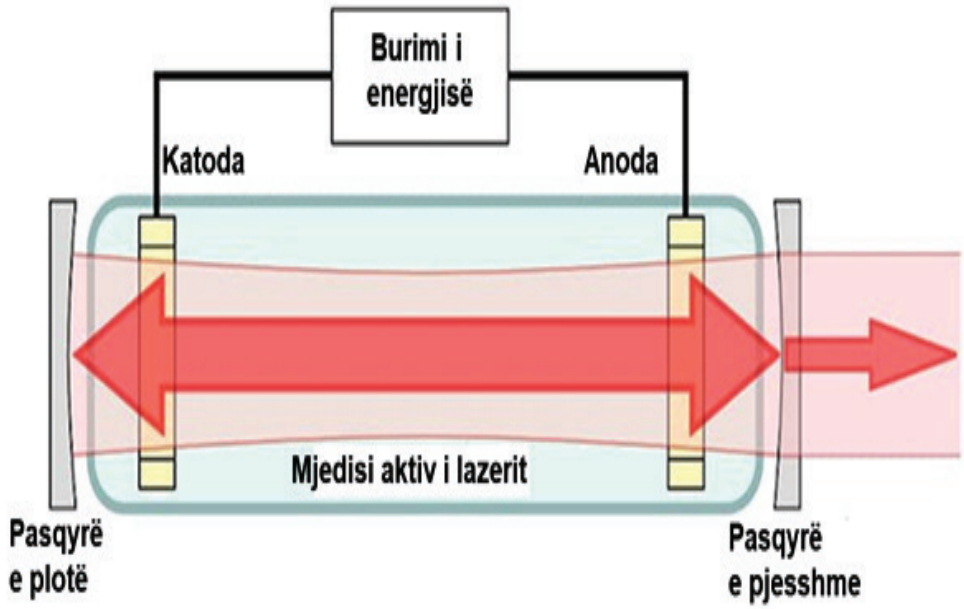
The increase in the use of laser weapons comes from the need for more effective, flexible and economically sustainable defense in the face of growing threats and the evolution of the modern battlefield. Furthermore, the lack of need for physical ammunition, the speed of impact (close to the speed of light) and the capacity to hit multiple targets with a single energy source make this technology extremely attractive. These characteristics significantly affect modern military doctrine, imposing revisions in the mode of operation, logistics and resource management. However, the development and use of laser weapons is not without challenges. The influence of atmospheric conditions (such as fog, rain or dust), the dissipation of heat generated during operation, the large amount of energy required, as well as the ethical and legal dilemmas that the use of this technology raises in armed conflicts, are issues that require special attention. In this context, this topic aims to extensively analyze the technological, tactical, strategic and legal dimensions of laser weapons, with the aim of understanding their effect on the transformation of modern military

operations and global security in general.

This analysis is particularly important for developing countries or those in technological transition, such as Albania, that aim to modernize their armed forces and adapt to the new realities of the digital and automated battlefield. The increase in the use of laser weapons is not simply a technological development – it is a clear sign of a new military revolution on a global scale.

## 1. HISTORICAL DEVELOPMENT OF LASER SYSTEMS

The development of laser technology has a history that spans more than a century of scientific research and technological advancements. The fundamental concepts that led to the invention of the laser stem from the quantum theory of light proposed by Albert Einstein in the early 20th century. In 1917, Einstein introduced the idea of **stimulated emission of radiation**, a key phenomenon that became the foundation of laser operation. However, it was not until the middle of the 20th century that this theory was transformed into practical technology. The first functional laser was created in 1960 by American scientist **Theodore Maiman**, who used a ruby crystal to produce a coherent beam of light. This moment represented the birth of the laser age and paved the way for extensive research in scientific, medical, industrial, and military applications. From the early stages, the American and Soviet militaries saw the potential of laser technology for tactical and strategic purposes.




*(How laser weapons work)*

In the decades that followed, various forms of lasers were developed, including gas (such as $CO_2$ and HeNe) lasers, optic fiber lasers, and solid-state lasers. In the military, interest in the use of lasers as weapons gained momentum during the Cold War, when the United States and the Soviet Union experimented with directed-energy missile defense systems. One of the most prominent projects was the Strategic Defense Initiative (SDI), also known as "Star Wars," proposed by President Ronald Reagan in 1983. This initiative envisioned the use of space-based laser weapons to neutralize intercontinental ballistic missiles in the early stages of their flight. However, technical advances at the time were not sufficient to make these systems feasible in practice. Problems with the power required for the laser, cooling the system, and durability in various environments remained major obstacles.

In the 2000s and onwards, with advances in power source technologies, component compactness and improved beam guidance systems, the development of tactical laser weapons usable on the battlefield began. A concrete example was the HEL (High Energy Laser) system installed on military vehicles, which aimed to neutralize drones, artillery shells and aerial threats at a low cost and high efficiency.

Currently, several countries – including the US, China, Israel, Germany and Turkey – are in advanced stages of testing and integrating laser weapons into their defense systems. Systems such as Israel's Iron Beam, the US Army's DE M-SHORAD, and Germany's Lutetium are demonstrating significant capabilities in eliminating air and missile threats in real time, at much lower operational costs compared to conventional missiles.

In summary, the history of laser weapons development traces a journey from quantum theory, through experimental prototypes of the Cold War era, to functional systems that are now being integrated into modern military operations. These developments demonstrate not only rapid technological progress, but also the transformation of the concept of firepower in the era of direct-energy warfare.

## 2. STATE PROGRAMS AND INTERNATIONAL USE

State programs for the development and modernization of military capabilities constitute the foundation of modern armed forces. They focus on major investments in technology, training, and international cooperation, ensuring strategic and operational advantages. Below are some key aspects and concrete examples:

***State development and modernization programs***

**United States of America – "Future Combat Systems" (FCS) Program:** One of the most ambitious initiatives for the modernization of the US military, it aimed to integrate advanced technologies in the fields of communications, robotics and sophisticated weapons. Although it was discontinued in 2009, this program served as a starting point for new technological developments, including autonomous systems and drones.

**Russia - "Armata" program:** A state project for the development of armored platforms and advanced weapons, including the T-14 Armata tank and integrated defense systems. This program focuses on strengthening national capabilities to meet regional and global security challenges.

**European Union – "PESCO" Program (Permanent Structured Cooperation):** A military initiative that promotes cooperation among member countries in developing joint capabilities, including projects for missile defense systems, cyber operations, and autonomous technologies.

***International cooperation and the use of technologies***

**NATO – Interoperability Program:** The North Atlantic Alliance develops common standards and coordinated training to ensure effective interoperability between forces from different countries. Common technologies and military equipment are often licensed and used jointly by member countries, reducing costs and increasing effectiveness.

**Albania – Military modernization program within NATO:** Albania, as a member of NATO, has benefited from various training programs, advanced equipment and technologies, tailored to the specific needs of the Albanian Armed Forces, increasing their capabilities to operate in international and regional environments.

***International military training and exercises***

Joint training programs such as "Exercise Defender Europe" or "Joint Warrior" strengthen operational capabilities and interoperability among forces from different countries. These exercises involve the use of advanced technologies, from fire control systems to laser-beam weapons.

***International Use of State Technologies***

**US Patriot systems** have been purchased and used by various countries in Europe and the Middle East, representing an example of the international use of military technologies of US state origin.

**Russia's S-400 systems** have been exported to several countries, creating a basis for cooperation and strategic ties, but also challenges in international relations.

In summary, state programs and the international use of military technologies represent a crucial dimension of national security strategy and global cooperation, ensuring not only the modernization of the armed forces but also the strengthening of military alliances and partnerships. US military strategists are thinking beyond lasers to consider accelerating the development of high-power microwaves – directed-energy weapons that can cover an area with powerful electromagnetic radiation, disabling multiple targets simultaneously – to fill gaps in US air defenses in the Middle East. "The biggest concern is if you start talking about swarms of drones, so we have to continue to invest in things like high-power microwaves to be able to counter a swarm of drones coming at you, "nothing is 100% and at some point, the

law of statistics will come into play, so you have to have layered defenses."[1]

## 3. TACTICAL AND OPERATIONAL APPLICATIONS OF LASER WEAPONS

The development of laser weapons has opened a new era in the tactical and strategic operations of the armed forces. These systems are increasingly becoming essential tools for active defense against air, land and sea threats, especially in the context of rapid and unexpected attacks. Laser technology offers capabilities that cannot be realized with traditional defense systems, changing the way operations are planned and conducted.

**Anti-aircraft and anti-drone defense -** One of the most widespread applications is the neutralization of small and medium-sized drones, which are used massively by state and non-state actors for reconnaissance, interception or munitions strikes. Lasers are extremely effective in eliminating these platforms with minimal cost per strike and almost instantaneous response speed. For example, a laser system can target and strike a drone before it enters the critical defense space of bases or troops on the ground.

**Defense against missiles and artillery shells -** Another area of application is defense against short-range ballistic threats, including missiles, mortars, and artillery shells. Lasers deployed in ground positions or on ships are able to stop or deflect threats in flight, giving troops on the ground a vital survivability advantage.

**Applications in the maritime and aviation fields -** At sea, laser systems are deployed on frigates and patrol vessels to protect the fleet from attacks by drones, armed boats, and cruise missiles. In the air, laser aircraft (under testing) have the potential to hit moving targets with precision, without risking secondary spread, such as fires or collateral damage.

**Role in urban and anti-terrorist operations -** In complex urban environments, laser weapons can be used for surgical strikes without causing noise or explosions, making this technology suitable for anti-terrorist missions, hostage-taking, and high-profile target elimination. Furthermore, the laser beam is invisible in many cases, which adds to the psychological effect and operational safety.

## 4. COMPARATIVE ADVANTAGES OVER CONVENTIONAL WEAPONS

Laser weapons represent a qualitative step in the evolution of modern weaponry and offer a number of significant advantages compared to traditional kinetic weapon systems. These advantages are not only related to the technical and economic aspects, but also to tactical, logistical and operational dimensions, directly influencing the conception and implementation of military missions in the modern era.

[1] Top General in Mideast Calls for Microwave Weapons for 'Layered' Defense Against Drone Swarms

**Very low cost per shot -** One of the biggest advantages of laser weapons is their low cost per use. Unlike missiles and shells that require manufacturing, storage, and transportation, a laser system uses only electrical energy for each strike. According to Pentagon estimates, a tactical-grade laser beam could cost anywhere from $1 to $10 per strike, compared to thousands of dollars for a typical interceptor missile.

**Extreme speed and precision -** Lasers travel at the speed of light, enabling near-instantaneous strikes on fast-moving, unexpected targets. This makes laser weapons particularly useful against aerial threats, like drones and ballistic missiles, where every second counts. Furthermore, focusing the beam on a single point allows for surgical precision, minimizing collateral damage, and eliminating targets cleanly and silently.

**Continuous use and longer lifespan -** Since they do not use physical ammunition, laser weapons can operate for long periods of time, as long as they have a stable power supply. They do not wear out with use and do not need constant recalibration, which reduces maintenance costs and increases combat readiness.

**Reducing logistics and explosives risk -** In contrast to conventional systems that require the continuous transport of explosive munitions, laser weapons significantly reduce the logistical burden, especially in difficult environments such as mountainous areas, isolated locations or the open sea. This also reduces the risk to personnel and military facilities from explosive accidents or sabotage.

**Psychological effect and technological advantage -** The use of laser weapons creates a psychologically intimidating effect on the adversary due to the invisible or unexpected nature of the attack. At the same time, the possession of this technology strengthens a state's strategic position in international relations and can serve as a deterrent to aggression.

## 5. TECHNICAL CHALLENGES AND LIMITATIONS CURRENTLY ENCOUNTERED IN THE USE OF LASER WEAPONS

Despite the many advantages offered by laser weapons, their full implementation on the battlefield still faces a number of technical, environmental, logistical and legal challenges. To achieve full and sustainable operational capability, it is necessary to systematically address these limitations so that these systems are reliable and effective in any type of operational environment.

**The influence of atmospheric conditions -** One of the most serious limitations for laser weapons is the impact of weather and atmosphere on the performance of the beam. The laser beam can be scattered, refracted, or lose intensity in the presence of fog, precipitation (rain, snow), dust and smog, and thermal turbulence in the atmosphere.

These phenomena impede the focus of the beam on the intended target and reduce its effectiveness, especially at long distances.

**High energy demands -** Generating a high-power laser beam requires a significant amount of electric energy. This is particularly challenging for mobile systems (tanks, vehicles, aircraft), where power capacities are limited. Building powerful power systems that can support high-intensity beams is one of the main obstacles to large-scale operationalization.

**Heat dissipation -** Laser weapons generate a lot of heat during operation, which requires advanced cooling and thermal dissipation systems. Without proper temperature management, the laser's operation can be limited in time, or in the worst case, it can damage the system itself.

**Limitation on the effect of physical damage -** Although precise, laser weapons currently do not cause explosions or immediate destructive effects on fortified targets, such as concrete buildings or heavily armored vehicles. Their use is more effective against exposed targets or sensitive structures (sensors, engines, drones, open equipment).

**Legal and ethical challenges -** The use of directed-energy weapons also raises international legal and ethical issues, particularly in relation to:

- **Targeting optical devices** of the opponent (prohibited by the Convention on Certain Conventional Weapons).
- **Use against people** – some forms of lasers can cause permanent blindness, which is considered illegal under international humanitarian law.
- **Lack of transparency** in use, as laser strikes are difficult to detect or track.
- **Legal and ethical constraints** in use against human personnel, under the UN Convention on Conventional Weapons (Protocol IV).

## 6. CONCRETE EXAMPLES FROM THE WORLD'S MILITARIES

In the past decade, several major military powers have moved from the conceptual and testing phase to the actual deployment of laser weapon systems, integrating them into their defense and offensive structures. These cases testify to the technological revolution taking place globally and clearly indicate the direction in which modern warfare is taking place.

**- United States of America – pioneers in operational development**

The US is among the global leaders in the field of laser weapons. The most well-known programs include:

- **LaWS (Laser Weapon System)** – installed on the warship USS Ponce, has been successfully used to neutralize drones and small boats in operational tests in the Persian Gulf.
- **HEL-MD (High Energy Laser Mobile Demonstrator)** – a ground-based system for defense against missiles, shells and mortars.

- **DE M-SHORAD** – a powerful laser system integrated on Stryker vehicles, for protecting troops in the field from aerial threats.
- **AHEL (Airborne High Energy Laser)** – a project that aims to mount lasers on fighter jets to neutralize missiles in flight.

The US has significantly increased investments in this technology, aiming to have full directed- energy defense capabilities by 2030.

**- Israel – Iron Beam as an addition to Iron Dome**

Israel has developed the Iron Beam system, a high-powered ground-based laser system designed to intercept short-range missiles, shells and drones. The system is part of the defense architecture along with the Iron Dome system, but of a much lower cost for a faster strike and response. According to defense officials, Iron Beam has been successfully tested and is scheduled to be operational by the end of 2025.

Neice says Israel is not technically advanced in lasers, but the Iron Beam deployment will provide crucial data about real-world operating practices, such as maintenance, repairs, and the supply chain needed to keep the lasers working. Unlike other allies, Israel can use the laser regularly.[2]

**- Russia – Peresvet system**

Russia has announced the development of the Peresvet system, a ground-based strategic laser that, according to official statements, is already in limited use. Although details remain unclear, Russian officials claim that the system is capable of damaging satellite sensors, as well as disrupting airborne surveillance and communication systems. It is believed that Peresvet is part of Russia's strategy for dominance in electromagnetic space and in the information battle.

**- China – enormous advancement in the field of lasers**

China is intensively developing a number of laser systems, including:

- **Silent Hunter** – a mobile ground system that uses high-powered lasers to neutralize drones at a distance of up to 4 kilometers.
- Classified projects in the navy and aviation, which aim to mount lasers on fifth-generation fighter aircraft, for defensive and offensive purposes.

China's laser development policy is part of a broader strategy of "computerized warfare," where control of space, sensors, and communications are as important as the destructive power itself.

**- Other countries**

– **The United Kingdom** is testing the Dragon Fire system, a high-precision ground-based laser weapon.

[2] Israel's New $1.2 Billion Laser Will Be Nearly Unstoppable—And America Wants One, Too, By David Hambling: Jul 24, 2024.

– **Germany** and France are developing laser defense systems for use on naval vehicles and frigates.

– **Turkey** has presented laser systems used to neutralize UAVs in the context of the conflict in Syria and Lebanon.

## 7. IMPLICATIONS FOR ALBANIAN NATIONAL SECURITY AND DEFENSE

In the context of an uncertain international environment and rapid technological developments in the defense sector, Albania, as a NATO member state, must also reflect on the implications of laser weapons for national security and its defense capabilities. This technology represents not only a new means of warfare, but a transformation of the way defense is conceived and implemented in the modern era.

**- The need for strategic and doctrinal adaptation**

The development of laser weapons requires a new doctrinal approach to the design of defense plans and the concept of operations of the Albanian Armed Forces. This includes:

- Integrating the concept of "directed energy" into military strategic documents.
- Training personnel in new technologies and electronic warfare.
- Assessing new asymmetric threats, such as armed drones, that could be neutralized with laser systems in the future.

**- Integration with collective defense structures**

As part of NATO, Albania has the opportunity to benefit from joint development and technology sharing programs. Cooperation with allies for access to experimental or training laser air defense systems would significantly improve the interoperability and readiness of our structures.

In this regard, the role of research institutions and military technical laboratories, which can contribute to the testing of simple directed energy devices for defensive use in sensitive strategic facilities, should also be assessed.

**- Possibility of use in critical infrastructure**

Although Albania does not currently possess laser weapons, in the medium term, the deployment of laser beam defense systems could be considered in:

- Military airports and logistics centers.
- Critical strategic defense facilities (such as energy networks, communication centers, ammunition depots).
- Border areas sensitive to aerial searches or drone violations.

**- Technical challenges and human resources**

Albania's involvement in directed energy technologies would require:

- increasing technical capacities and energy infrastructure in specific units of the Armed Forces;
- specialized trainingof technicians and officers in cooperation with the military academies of partner countries;
- careful budget investment, taking into account the country's economic conditions and national defense priorities.

**- Impact on regional security**

The Balkans is a region with the presence of various strategic actors and complex security dynamics. The development or import of laser weapons by neighboring countries (e.g. Turkey, Greece or Serbia in cooperation with third partners) would change regional balances, which requires special attention in our national security analyses.

Consequently, close monitoring of developments in this field, cooperation with international partners, and building a long-term vision for advanced military technologies are essential to guarantee the effective and sustainable protection of the interests of the Republic of Albania.

## CONCLUSIONS

In conclusion, the increase in the use of laser weapons in modern military operations marks an important step in the evolution of military technology. The key advantages offered by these systems, such as high precision, immediate response time and lower long-term operational costs, make them an essential component in the arsenals of armed forces. However, technical challenges and current limitations, including the impact of atmospheric conditions and the need for high energy, require continued investment in research and development.

Furthermore, the integration of laser weapons into military tactics and strategies must be done with caution, considering their impact on the balance of power and military ethics. Their use must be accompanied by clear rules and protocols to prevent abuse and ensure effective and sustainable use.

## RECOMMENDATIONS

1. **Continuous investment in R&D** (Research and Development)**:** The armed forces should emphasize support for scientific and technological research to improve the performance of laser weapons and minimize their limitations.
2. **Personnel training and education:** It is essential that military personnel be trained in the use, maintenance, and tactics of laser weapons to maximize operational effectiveness and safety.
3. **Preparation of the legal and ethical framework:** A legal and ethical framework that regulates the use of laser weapons in military conflicts must be developed and implemented, respecting international norms and human rights.
4. **Integration with existing technologies:** Laser weapons should be considered as part of an integrated defense system, working in harmony with sensors, drones, and traditional weapon systems.
5. **Continuous monitoring of global developments:** To maintain strategic advantage, the Armed Forces must monitor technological developments and trends on a global level and adapt their policies accordingly.

By following these recommendations, military institutions will be able to take maximum advantage of the potential of laser weapons, thus contributing to increasing defense capabilities and national security in an increasingly challenging environment.

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# CYBER DEFENSE AND INNOVATIVE DEVELOPMENTS IN THE FIELD OF CYBERSECURITY FOR 2025

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**Abstract.** *In the contemporary digital ecosystem, cybersecurity and defense are an essential component that shape the safety, functionality and efficiency of all current application technologies. As the world becomes increasingly connected through the internet, cloud services[1]and "Internet of things (IoT)"[2], protecting hardware and software infrastructures and digital data from cyber threats has never been more important, and cybersecurity technologies are evolving at a rapid pace, offering highly advanced tools and platforms for securing these "digital assets." Cybersecurity refers to practices, technologies, and processes designed to protect systems, networks, and data from "digital" attacks, "unauthorized" electronic intrusions, and damage to electronic systems. In today's digital ecosystem, cybersecurity plays a crucial role in: - securing "information and data"; -protecting critical infrastructures; - detecting and preventing cyber threats; - ensuring privacy and compliance; - real-time monitoring and incident participation.*

*During 2025, it is expected that cyber defense platforms powered by artificial intelligence[3] be more integrated and capable of addressing increasingly sophisticated cyber threats. AI-driven cyber defense systems will be more proactive, adaptive, and intelligent, able to predict and mitigate threats before they occur. Integrating AI into cyber defense will help address any concerns about the availability of skilled cyber*

[1] Cloud: It is the availability of computer system resources (data centers), especially in data storage, without direct active management by the user, available to many users via the Internet – according to the National Institute of Standards and Technology.

[2] IoT: It is a system of interconnected computing devices, mechanical and digital machines equipped with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction – according to ITU-T Y.4000/Y.2060 (06/2012).

[3] Artificial Intelligence (AI): It refers to the ability of electronic computing systems to perform tasks related to human intelligence such as learning, reasoning, problem solving, perception, and decision-making. A field of research in computer science that develops and studies methods and applications that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving specified goals.

*defense professionals by automating many of the complex and repetitive tasks involved in threat detection and incident response. The future digital ecosystem will be characterized by cyber defense systems that "learn and evolve," using AI to provide real-time, adaptive protection against an increasingly broad range of emerging threats. To truly realize these innovations, government and security and defense institutions, as well as researchers, must deepen collaboration to address the ethical, technical, technological, and regulatory challenges that arise from the intersection of cyber defense and artificial intelligence.*

**Keywords**: digital ecosystem, digital protection, cyber defense, cyber threat and crime, critical information infrastructure, artificial intelligence, "cloud", "IoT", "ransomware", computing and quantum computers, cryptography, autonomous systems, "smart" cities, "startups", "blockchain" technology.

## INTRODUCTION

During 2025, cyber threats will continue to evolve in complexity, targeting individuals, businesses, critical infrastructure, government, and security and defense institutions. Cybercriminals will increasingly use advanced technologies to carry out attacks. Criminal organizations will operate in a more organized and professional manner, using tools such as "ransomware-as-a-service" and "phishing" groups, which allow even individuals with disabilities to carry out large-scale attacks. Cybercrime will continue to grow, targeting personal data, financial systems and intellectual property, security and defense systems, with an increasing focus on exploiting vulnerabilities in new technologies. State-sponsored cyberattacks are becoming a significant threat to national security and global stability. By 2025, cyber threats will be more widespread and destructive, driven by the increasing use of digital infrastructure, advanced technologies and artificial intelligence, making these attacks more adaptive and harder to detect. Cyber defence will require continuous innovation in cybersecurity measures and technologies, together with international cooperation to address new risks in the digital ecosystem as part of geopolitical strategies. Cyber threats to Alliance security are complex, destructive and coercive, and are becoming increasingly frequent. Cyberspace is contested at all times and harmful cyber events occur every day, from low-level attacks to technologically sophisticated ones.

## HOW CYBER THREATS WILL EVOLVE IN 2025: KEY TRENDS

**Cyber and physical threats -** The increasing integration of cyber and physical systems in sectors such as energy, transportation, healthcare, defense and security will expose new vulnerabilities. Cyber attacks on smart grids, autonomous vehicles, industrial control systems, defense and civil emergency systems could lead to disruption of operational functionality, potentially impacting public safety, economic stability and national security. Cybercriminals could begin to target critical infrastructure with ransomware attacks. This would include blocking power plants,

transportation systems, defense systems causing widespread disruption and possibly even physical damage if these systems are not properly protected.

**Advanced persistent threats**[4] - Advanced persistent threats will continue to evolve, becoming more sophisticated and harder to detect. These attacks, typically state-sponsored, aim to infiltrate and persist in a given network for extended periods of time, stealing valuable data or sabotaging infrastructure. By 2025, advanced persistent threats will increasingly use AI-powered malware to adapt and evade detection, making it harder for government, defense and security institutions and organizations to identify and mitigate the threat. Advanced persistent threats will increasingly target "supply chain attacks"[5], leveraging third-party suppliers and application providers to gain access to larger and more secure systems.

**Increasing "automation" of cyber attacks -** By 2025, cybercriminals will develop "fully automated" digital attack frameworks that can carry out coordinated, multi-vector attacks without human intervention. These systems can use artificial intelligence to "learn" from ongoing attacks, adapt to new defenses, and optimize strategies, making them harder to prevent and respond to.

**Attacks powered by artificial intelligence** - Digital attackers will use artificial intelligence and "machine learning"[6]to automate and improve their attacks. AI will be used to mimic the behavior of legitimate users, bypass traditional defenses, and adapt in real time to cybersecurity countermeasures. Deep fake technology can also be used to carry out more credible social engineering attacks, such as spear-phishing, or to impersonate trusted individuals or institutions. While technologies such as 5G, IoT, and quantum computing[7]As networks become more sophisticated, cybercriminals will increasingly exploit vulnerabilities in these areas. 5G networks will offer a wider digital attack surface, allowing hackers to disrupt services or capture sensitive and sensitive data from a wide range of devices. IoT technology will also pose additional risks due to its widespread and often unsecured devices. For

[4] Advanced persistent threat (APT): It is a covert cyberattack on a computer network where the attacker gains and maintains unauthorized access to the target network and remains undetected for a significant period of time, and between infection and recovery, the hacker monitors, intercepts, and transmits sensitive information and data. The goal is to exfiltrate or steal data rather than cause network outages, denial of service, or infect systems with malware [4].

[5] Supply chain attacks: indirect attacks that target third-party dependencies – collectively referred to as a "supply chain" – to penetrate a target's system or network. These attacks are also called "third-party attacks" [5].

[6] Machine learning (ML): It is a field of study in artificial intelligence that deals with the study and development of statistical algorithms that can learn from data and generalize to unseen data and thus perform tasks without explicit instructions.[2].

[7] A quantum computer (QC) is a computer that exploits the phenomena of quantum mechanics, where physical matter exhibits both particle and wave properties, and quantum computing takes advantage of this behavior using specialized hardware. A scaled quantum computer can perform some calculations exponentially faster than any modern "classical" computer [3].

many government, security and defense agencies or businesses that rely on cloud services for their technical, administrative and financial operations, cloud-based attacks will increase. Cybercriminals can exploit vulnerabilities in cloud storage or misconfigurations in cloud infrastructures[8]to gain unauthorized access to sensitive data and systems.

**"Targeting" artificial intelligence systems -** As AI becomes more integrated into government agencies, security and defense systems, and businesses, it will also become a target for digital attackers. Techniques such as "data poisoning" and "adversarial machine learning" can be used to manipulate AI algorithms, undermining the effectiveness of AI-based cybersecurity and defense systems or causing AI-driven applications to take unintended approaches.

**Cyber threats to the "internet of thoughts" technology**- Networks of connected electronic devices in the "IoT" technology, such as "smart" devices, industrial technology and sensors, etc., which are expected to increase significantly throughout 2025, will bring new vulnerabilities and increase the "surface" of digital attacks, as ensuring their protection from the design phase will become a priority. Manufacturers will seek to integrate strong "encryptions", secure "firmware update" mechanisms to protect devices from unauthorized access and remote exploitation. As "IoT" devices operate in increasingly complex digital ecosystems, ensuring "secure authentication" of devices will be a priority. Throughout 2025, AI-based systems will be used to dynamically manage device "identities" and enforce access control policies, ensuring that only authorized devices can connect to "IoT" networks. IoT networks will require stronger protection against botnets and DDoS attacks, as digital attackers can exploit vulnerable devices to carry out large-scale cyberattacks. Intrusion detection systems[9]and "network segmentation" will be used to prevent IoT-based attacks from spreading across networks.

**Cybersecurity in "autonomous" systems -** Autonomous systems, including self-driving vehicles, drones (civilian and military), and automated industrial machinery, will face significant security concerns due to their reliance on sensors, software, and increasing communication networks. In autonomous vehicles and drones, cybersecurity will need to ensure that vehicles are not hacked and their navigation or control systems altered, causing accidents or misuse. End-to-end encryption, secure communication protocols, and AI-based anomaly detection will be used to prevent malicious intrusions into autonomous systems. Autonomous systems will play a major role in industries such as transportation, energy, manufacturing, and defense and security. Securing these systems from cyberattacks is essential to prevent service and operational disruptions, environmental risks or financial losses, where security

[8] https://cloudsecurityalliance.org/(2009–2025 Cloud Security Alliance).

[9] Intrusion detection system (IDS): They are network security systems that monitor network traffic and devices for known malicious activity, suspicious activity, or violations of security policies [6].

protocol protections and real-time monitoring will be essential for the rapid detection and mitigation of cyber threats. Autonomous systems will increasingly rely on artificial intelligence and machine learning in decision-making processes. Cybersecurity systems will need to protect AI models from manipulation or adversarial attacks that could compromise the system's decision-making capabilities.

**Cybersecurity in smart cities**- Smart cities are highly interconnected urban environments that use IoT, big data and artificial intelligence to improve the quality of life of residents and optimize city services. The large amount of data generated and the interconnection of critical infrastructure make smart cities prime targets for cyberattacks. Cybersecurity measures such as network segmentation and zero-trust architectures[10]and AI-driven monitoring systems will be essential to protect these critical systems. Data encryption, privacy-preserving technologies (such as homomorphic encryption), and secure data distribution protocols will be essential to protect sensitive information from unauthorized access. These systems will require strong cybersecurity protocols to ensure that attackers cannot manipulate the systems.

**Ransomware attacks**[11]- Cybercriminals are using ransomware to disrupt operations, steal sensitive data, and blackmail victims for money.

**Phishing attacks** - AI-driven systems will enable more reliable phishing schemes that can bypass traditional detection methods.

Through 2025, cyber threats will become more targeted, persistent, and adaptable, as adversaries use new technologies such as AI and machine learning to enhance their digital attacks. Advanced persistent threats will be more stealthy and harder to detect, and cybercriminals will increasingly focus on critical infrastructure, cloud vulnerabilities, and new techniques. The key challenge will be to defend against evolving threats by implementing advanced security measures and fostering and strengthening international cooperation to combat the growing cyber threat landscape.

By 2025, automation will be a key feature of AI-powered cybersecurity and defense solutions, enabling faster response times and reducing the burden on human security analysts. AI-powered security "orchestration," automation, and response platforms will provide rapid autonomous response to incidents, reducing the time it takes to respond to cyberattacks and ensuring critical systems recover quickly. This automation will also help avoid human error and reduce the operational burden on cybersecurity teams, allowing them to focus on more strategic tasks. Endpoint

[10] Zero trust architecture (ZTA): "Zero trust" architecture or "perimeter-less" security is a design and implementation strategy for IT systems. The principle is that users and devices are not trusted by default even if they are connected to a privileged network (LAN) and even if they have been previously "verified" [7].

[11] Ransomware: It is a form of "malware" that locks the user out of their files or device, then demands a payment to restore access. Ransomware attackers target businesses, organizations, and individuals [8].

detection and response solutions[12]AI-powered systems will be better able to identify malicious activity on devices such as laptops, servers and mobile phones. With the rise of "5G" and "internet of thoughts" networks and technologies in 2025, AI-led "network segmentation" and access control solutions will become essential to protect large and complex networks, automatically controlling which devices can communicate and ensuring that any compromised nodes are quickly isolated. Collaboration between organizations, industries and governments will be essential to improving overall cybersecurity defenses.

## HOW WILL CYBER DEFENSE EVOLVE IN 2025: KEY TRENDS

**Cyber defense based on artificial intelligence -** Through 2025, AI-powered cyber defense is expected to play a key role in strengthening defenses against increasingly sophisticated cyber threats. AI-based systems will provide advanced capabilities for threat detection, behavioral analysis, and response management, significantly improving the speed, accuracy, and efficiency of cybersecurity efforts. The way AI will revolutionize cyber defense can be summarized in the following areas: AI-based threat detection; real-time detection of anomalies(immediate identification of potential threats, such as malware infections, phishing attempts, or unauthorized access); "active" search for threats, where "machine learning" algorithms look for hidden signs of attacks that may have escaped traditional defenses; AI-based "behavior" analysis (*"behavioral biometrics")*; AI-powered and AI-driven response systems (p*"automatic" response to events)*.

**"Zero trust" architecture -** By 2025, the "zero trust" architecture is expected to become a leading model for cybersecurity and defense. The "zero trust" approach, based on the principle of "never trust, always verify," assumes that no user, device, or system – whether inside or outside the network – should be automatically trusted. This model is gaining importance for several reasons related to changes in the cybersecurity landscape such as: the increasing complexity of information technology environments such as the adoption of "cloud" and "remote work"; growing and evolving cyber threats (insider threats, "lateral" movement); a detailed control of access/entry into systems; -support for modern security technologies: - regulatory and compliance pressures.

**Quantum computing** - By 2025, quantum computing will begin to have a significant impact on cybersecurity, particularly in the areas of cryptography and data protection. While "quantum" computers are still in development, their potential to break current encryption methods poses a significant threat to the security of digital systems. The impacts of quantum computing on cybersecurity by 2025 are outlined below:

[12]Endpoint detection and response (EDR): It is a cybersecurity technology that continuously monitors endpoints for evidence of threats and takes automated actions to help mitigate them. EDR solutions help security analysts detect and remediate threats on endpoints before they spread throughout the network, can take automated actions to contain threats, and alert security professionals [9].

- **Quantum computing and cryptography:** Quantum computers have the potential to break widely used cryptography algorithms that rely on the difficulty of mathematical problems, such as RSA encryption and elliptic curve cryptography.[13]. Quantum computers can solve problems much more efficiently using the "Shor" algorithm, which can divide large numbers much faster than classical algorithms. Quantum computing could undermine the foundations of the "public key" infrastructure by making RSA and ECC "encryption" vulnerable to attack, necessitating a move to quantum-resistant cryptographic algorithms.[14].
- **Post-quantum cryptography** *(post-quantum cryptography)*[15]**:** In the face of the cyber threat posed by quantum computing, post-quantum cryptography is being developed, where cryptographic algorithms are designed to be more secure against quantum-based attacks while still being efficient enough to be used in everyday applications. By 2025, significant progress will be made in the standardization and adoption of these quantum-resistant algorithms.
- **Hybrid cryptographic systems:** In the near future, "hybrid" encryption systems may be implemented, combining traditional cryptography with post-quantum algorithms to ensure compatibility with classical and quantum computers until the transition to fully quantum-proof systems is complete.
- **Quantum key distribution** (quantum key distribution and QKD)[16]: Quantum key distribution is a technology that uses the principles of quantum mechanics to securely exchange "cryptographic keys." Unlike traditional key exchange methods, QKD is theoretically immune to "eavesdropping" because any attempt to tamper with the quantum key would change its state, alerting both parties to a potential breach. By 2025, quantum key distribution could begin to play a significant role in securing communications networks, especially for highly sensitive data. It offers a level of security that traditional cryptography cannot achieve, providing an additional layer of protection in a post-quantum world.
- **The shift and transition to "quantum-security" cyber defense:** Through 2025, as quantum computing advances, the cybersecurity landscape will see a gradual shift toward quantum defense practices. This shift will include: - updating encryption standards; - secure quantum networks; - ongoing scientific research (continuing investment in quantum computing research and cybersecurity innovations to stay ahead of new quantum threats).

[13] Elliptic curve cryptography (ECC): a technique based on public and private keys (key pairs) for decrypting and encrypting Internet traffic and data, in the context of the Rivest–Shamir–Adleman (RSA) cryptographic algorithm, that achieves one-way encryption of emails, data, and software using prime factorization.[10].

[14] https://www.technologyreview.com/2022/09/14/1059400/explainer-quantum-resistant-algorithms/

[15] https://www.nist.gov/cybersecurity/what-post-quantum-cryptography.

[16] https://www.nsa.gov/Cybersecurity/Quantum-Key-Distribution-QKD-and-Quantum-Cryptography-QC/

**Developing blockchain technology for cyber defense -** By 2025, blockchain technology is expected to play a significant role in improving cybersecurity by enhancing data integrity and self-authentication processes. The decentralized, immutable, and transparent nature of blockchain makes it an excellent tool to address many of the security challenges in digital systems.The main strength of blockchain is its ability to ensure that data is immutable and immutable. The technology "Blockchain improves authentication processes by providing more secure, decentralized, and verifiable methods for users to prove their identity. Blockchain will be used to create self-verified identities, where individuals control their own identity information, which is stored on the blockchain. This reduces the risk of identity theft or fraud, as users can share verified identity data without exposing unnecessary personal information. Blockchain can also be used to mitigate the risks associated with distributed denial-of-service (DDoS) attacks and malware. Blockchain improves secure communication by ensuring that messages or data sent between parties cannot be intercepted or tampered with. Blockchain can be combined with end-to-end encryption *(end-to-end encryption)* to secure communications, providing an "extra layer of verification" and ensuring that only the "intended recipient" has access to the message.

**The rise of AI-driven cybersecurity and defense startups. International cooperation to combat cybercrime -** By 2025, AI-driven cybersecurity startups and international collaboration will play a significant role in the fight against the increasingly sophisticated cybercrime landscape. With cyber threats evolving at an unprecedented pace, traditional cybersecurity models will no longer be sufficient to protect individuals, businesses, government agencies, and security and defense agencies. To meet these new challenges, AI-powered solutions and international collaboration will become essential to ensure the protection of digital infrastructures and the safeguarding of critical information.

## CYBER DEFENSE AND CYBERSECURITY INNOVATIONS IN NATO DURING 2025

NATO and its Allies rely on strong and resilient cyber defences to fulfil the Alliance's core tasks. Cyberspace is contested at all times, as malicious actors increasingly seek to destabilise the Alliance using malicious cyber activities and campaigns.Throughout 2025, based on the 2022 Strategic Concept[17]and the NATO 2030 initiative[18], NATO is significantly developing its cyber defence technological capabilities through strategic innovations, collaborative initiatives and the integration of new technologies, introducing several groundbreaking innovations in cyber defence and security. These technological advances reflect NATO's commitment to countering new cyber threats, integrating advanced technologies and fostering cooperation

[17] https://www.nato.int/cps/en/natohq/topics_210907.htm
[18] https://www.nato.int/nato2030/

with industry and member states. Technologies such as artificial intelligence, autonomous systems, quantum technologies and next-generation communication networks are changing the world and the way NATO operates. New technologies present both risks and new opportunities for NATO and Allies to develop and adopt new and advanced technologies, to establish international principles for their responsible use, to maintain technological advantage through innovation, by increasing cooperation with partners from the public and private sectors, academia and civil society. The main technological developments for cyber defence in NATO through 2025 are summarized in the following main directions:

**Creation of the Integrated Cyber Defense Center** - NATO is establishing a new integrated cyber defence centre, expected to be fully operational by 2028, based in Mons, Belgium. The centre will bring together existing cyber defence entities, such as the Cyber Security Centre, the Cyber Operations Centre and the Cyber Threat Analysis Branch, to provide a unified approach to cyber defence and speed up response times across all member countries.[19]It aims to improve the protection of NATO and allied networks by integrating civilian and military expertise, leveraging advanced technologies and promoting a rules-based, predictable and secure approach to cyberspace.

**Artificial intelligence-driven cyber defense initiatives** - NATO, recognizing the growing use of artificial intelligence in cyber defense, has increased its focus on developing AI-enhanced cyber defense mechanisms. The United Kingdom has launched a new laboratory dedicated to countering Russian cyber threats, particularly those involving AI. This laboratory will collaborate with intelligence agencies, academic institutions, and the technology industry to develop advanced cyber defense tools.[20].

**The "Defense Innovation Accelerator for the North Atlantic" program** and Innovation Fund" - DIANA (Defense Innovation Accelerator for the North Atlantic and DIANA) is expanding its network, now with 23 accelerators and 182 test centers in 28 Allied countries, which focuses on supporting deep-tech startups working on dual-use technologies, including those related to cyber defense. The NATO Innovation Fund, with a budget of €1 billion, invests in these startups to foster innovation in areas critical to the security of Allies. When fully operational this year, DIANA will have the capacity to employ hundreds of innovators each year in an even wider network of accelerators and test centers across the Alliance.[21].

**Developing a "cyber immune system"**- NATO's new technological strategy[22]outlines plans to implement modern cyber architectures across all member countries, emphasizing

[19] https://thedefensepost.com/2024/12/09/nato-cyber-defense-center/?utm_source=chatgpt.com
[20] https://www.nato.int/cps/en/natohq/topics_184303.htm?utm_source=chatgpt.com
[21] https://www.nato.int/cps/en/natohq/topics_216199.htm
[22] https://www.nato.int/cps/en/natohq/official_texts_229801.htm#footnote1

the principles of "zero trust" and the secure integration of information and operational technologies. A key component of this strategy is the development of a "cyber immune system" capable of "autonomously" detecting, repairing and adapting to cyber threats. This system aims to improve the Alliance's ability to respond quickly and effectively to cyber incidents.

**Implementing post-quantum cryptography** - Recognizing the potential risks that quantum computing poses to traditional encryption methods, NATO has prioritized the adoption of post-quantum cryptographic (PQC) solutions.[23]. The NATO Cyber Security Centre has successfully tested secure communication flows using a virtual private network (VPN) incorporating PQC algorithms. This hybrid approach combines traditional and quantum-resistant encryption to ensure secure communications even in the face of advances in quantum computing.

**The advancement of "quantum key distribution" technology -** NATO is exploring the use of "Quantum Key Distribution" (QKD) technology to create secure communication channels that are inherently resistant to eavesdropping. QKD exploits the principles of quantum mechanics to enable the exchange of encryption keys in a way that detects any eavesdropping attempts, thus guaranteeing the confidentiality and integrity of communications.

**Industry-academia collaboration through the DIANA program** - In February 2025 (dates: 25-27), DIANA launched the "Innovation Continuum" in Turkey, a platform for experimentation with innovative technologies in multi-domain operations and digital transformation. This initiative involves collaboration with industry, academia and NATO stakeholders to accelerate the adoption of innovative solutions, including those related to cyber defense.[24].

**Strengthening cyber resilience of critical infrastructure** - Recognizing the vulnerability of critical infrastructure, NATO (NATO Cooperative Cyber Defence Centre of Excellence and CCDCOE) is leading research into securing "5G" networks for military mobility. The project, funded by the US Department of Defence and the Estonian Ministry of Foreign Affairs[25], aims to provide recommendations for operating securely within European commercial "5G" networks during military operations. In addition, NATO is conducting exercises to train countries in responding to cyberattacks on renewable energy sources, addressing the complex supply chains and new threat vectors associated with these systems.

[23]https://www.ncia.nato.int/about-us/newsroom/nato-cyber-security-centre-experiments-with-secure-network-capable-of-withstanding-attack-by-quantum-computers?utm_source=chatgpt.com

[24]https://www.ncia.nato.int/newsroom/news/new-edition-of-innovation-continuum-kickstarts-in-turkiye

[25]https://estonianworld.com/security/the-tallinn-based-nato-cyber-defence-centre-to-lead-research-on-securing-5g-networks/

**Improved EU-NATO cooperation in the cyber domain** - In October 2024[26], the European Union and NATO held their first structured dialogue on cyber issues, with the aim of strengthening cooperation on cybersecurity and cyber defence. The dialogue focused on increasing coordination to detect, prevent and defend against cyber attacks, as well as harmonizing cyber defence frameworks to respond effectively to malicious cyber activities. The next meeting will be held in 2025.

**Automation of the cyber "range"**- NATO is improving its cyber training capabilities by developing a next-generation platform for planning and controlling the "NATO cyber range"[27]. This platform aims to automate the preparation and execution of cyber exercises, training, testing and certifications. The goal is to enable more complex and larger-scale exercises with fewer resources, higher realism and increased accuracy in addressing training requirements.

## CONCLUSIONS

Cyber defense has artificial intelligence as its "cornerstone"**.** AI's capabilities in data analysis and evaluation, pattern recognition, and machine learning will play a key role in developing cybersecurity strategies. In 2025, AI technology developments will be essential in identifying, analyzing, and responding to cyber threats in real time. AI systems will continuously "learn" from new data, helping to improve detection accuracy and predict potential vulnerabilities, making them an important asset in proactive cyber defense. The complexity and scale of cyber attacks in 2025 will require more automation in cybersecurity operations. AI will automate routine "tasks," such as monitoring cyber threats, responding to incidents, and managing vulnerabilities that emerge in systems, significantly improving response times and reducing the burden on human experts. This increasing automation will also help mitigate the effects of cyberattacks, providing real-time countermeasures and reducing downtime of technological systems and processes. The increasing sophistication of cyber threats requires "interdisciplinary" collaboration. AI experts, cybersecurity professionals and regulatory bodies will need to collaborate to share knowledge, develop the best detection tools and technologies, and create specific guidelines for the security of ICT systems. This collaboration will be essential to addressing global cybersecurity challenges.

The growing interdependence between artificial intelligence and cybersecurity is undeniable. As AI becomes more pervasive, its role in cybersecurity will become

[26]https://digital-strategy.ec.europa.eu/en/news/european-union-and-nato-hold-first-structured-dialogue-cyber?utm_source=chatgpt.com

[27]https://guardtime.com/blog/guardtime-to-develop-the-next-generation-planning-and-control-platform-for-the-nato-cyber-range?utm_source=chatgpt.com

indispensable in preventing and responding to increasingly sophisticated cyberattacks. At the same time, the security of AI systems will become a key concern, requiring new strategies, tools, and frameworks to protect these technologies from adversarial cyberthreats. By 2025, AI will not only transform the way we defend against cyberthreats, but will also require stronger and more robust cybersecurity frameworks. The interdependence between AI and cybersecurity in 2025 will not only help mitigate risks, but will also drive innovation in how we secure critical infrastructure and sensitive data. As cyber threats continue to grow in sophistication, AI will serve as the backbone of cybersecurity strategies, enabling faster detection, better risk management, and stronger protections. However, this also requires a coordinated effort to ensure that AI systems are safe, ethical, and transparent. The combination of AI capabilities and evolving cybersecurity strategies will define the digital security landscape in 2025 and beyond.

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18. Cyber Security Global Alliance (CSGA aims to create a safer world tomorrow by protecting individuals and organizations from cyberattacks and quantum threats):https://www.csga-global.org/.
19. https://www.sto.nato.int/Pages/default.aspx (NATO Science and Tech. Org.).