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Multidimensional analysis of NATO countries' defence spending changes (2014-2025)

Wielowymiarowa analiza zmian w wydatkach obronnych państw NATO w latach 2014-2025

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Abstract:

Research objectives and hypothesis/research questions

The article addresses the following research problem: which NATO member states experienced the largest increases in defence spending between 2014 and 2025? The aim of the study is to conduct a multidimensional analysis of changes in defence expenditure levels among individual NATO countries during the 2014-2025 period. Based on the adopted research problem and objectives, the following hypothesis was formulated: the most significant increases in defence spending in military defense expenditures occur among NATO member states located on the Alliance's Eastern Flank. This trend is likely driven by the increasing perception of security threats resulting from Russia's annexation of Crimea in 2014 and the subsequent full-scale invasion of Ukraine in 2022, which intensified concerns regarding regional stability, deterrence capabilities, and military preparedness. At the same time, although the relative growth rates may be higher among Eastern Flank countries, the United States is expected to remain the leader in terms of absolute growth in defence expenditures during the analysed period (2014-2025), owing to its global military commitments, strategic role within NATO, and substantially larger economic and defence budget capacity.

Research methods

The study employed the method of source analysis, supplemented by inferential reasoning techniques. The research process was supported using Microsoft Excel and Statistica AI software, which enabled the processing, organization, and multidimensional analysis of the collected data. Furthermore, defence expenditure patterns are examined comparatively across Eastern Flank and non-Eastern Flank countries, using the onset of the Russia-Ukraine war as a temporal reference point for assessing pre and post war differences.

Main results

The main findings of the study indicate a clear trend of rapidly increasing defence expenditures among Eastern Flank NATO countries. In 2025, Poland recorded the highest defence spending level, amounting to 4.48% of GDP. This represents a substantial increase compared to 1.86% in 2014 and 2.21% in 2022. Significant growth was also observed in Lithuania, where defence spending increased from 0.88% of GDP in 2014 to 4.00% in 2025, in Latvia from 0.97% to 3.73%, and in Estonia from 1.90% to 3.38%.

Implications for theory and practice

The results may also prove valuable for the defence industry sector and entities responsible for logistics and security management by identifying directions for future technological and organizational investments. Furthermore, the analysis may support forecasting processes concerning future changes in the defence policies of NATO member states in the context of geopolitical instability and the growing challenges to international security.

Keywords:

defense expenditures, GDP, NATO, Russia-Ukraine war, eastern flank

Abstrakt:

Cel badań i hipotezy/pytania badawcze

Artykuł podejmuje następujący problem badawczy: które państwa członkowskie NATO odnotowały największy wzrost wydatków na obronność w latach 2014-2025? Celem badania jest przeprowadzenie wielowymiarowej analizy zmian w poziomie wydatków na obronność w poszczególnych państwach NATO w okresie 2014-2025. Opierając się na postawionym problemie i określonych celach badawczych, sformułowano następującą hipotezę: największe wzrosty wydatków na obronę wojskową występują w państwach członkowskich NATO położonych na wschodniej flance Sojuszu. Tendencja ta jest prawdopodobnie napędzana rosnącą percepcją zagrożeń bezpieczeństwa wynikających z aneksji Krymu przez Rosję w 2014 r. i późniejszej pełnoskalowej inwazji na Ukrainę w 2022 r., co nasiliło obawy dotyczące stabilności regionalnej, zdolności odstraszania i gotowości bojowej. Jednocześnie, chociaż względne wskaźniki wzrostu mogą być wyższe wśród krajów wschodniej flanki NATO, oczekuje się, że Stany Zjednoczone pozostaną liderem pod względem bezwzględnego wzrostu wydatków na obronność w analizowanym okresie (2014-2025) ze względu na swoje globalne zobowiązania wojskowe, strategiczną rolę w NATO i znacznie większe możliwości budżetowe w zakresie gospodarki i obronności.

Metody badawcze

W badaniu wykorzystano metodę analizy źródeł, uzupełnioną technikami wnioskowania inferencyjnego. Proces badawczy wspierany był przez oprogramowanie Microsoft Excel i Statistica AI, co umożliwiło przetwarzanie, organizację i wielowymiarową analizę zebranych danych. Ponadto porównano wzorce wydatków na obronę w krajach wschodniej flanki Sojuszu i poza nią, wykorzystując wybuch wojny rosyjsko-ukraińskiej jako punkt odniesienia do oceny różnic przed- i powojennych.

Główne wyniki

Główne wnioski płynące z badania wskazują na wyraźny trend szybkiego wzrostu wydatków na obronność wśród państw wschodniej flanki NATO. W roku 2025 Polska odnotowała najwyższy poziom wydatków na obronność, wynoszący 4,48% PKB. Stanowi to znaczący wzrost w porównaniu z 1,86% w 2014 roku i 2,21% w 2022 roku. Znaczny wzrost zaobserwowano również na Litwie, gdzie wydatki na obronność

wzrosły z 0,88% PKB w 2014 roku do 4,00% PKB w 2025 roku, na Łotwie z 0,97% PKB w 2014 roku do 3,73% PKB w 2025 roku, a w Estonii z 1,90% PKB w 2014 roku do 3,38% w 2025 roku.
Implikacje dla teorii i praktyki
Wyniki mogą okazać się również cenne dla sektora przemysłu obronnego oraz podmiotów odpowiedzialnych za logistykę i zarządzanie bezpieczeństwem, wskazując kierunki przyszłych inwestycji technologicznych i organizacyjnych. Ponadto analiza może wesprzeć procesy prognozowania przyszłych zmian w polityce obronnej państw członkowskich NATO w kontekście niestabilności geopolitycznej i rosnących wyzwań dla bezpieczeństwa międzynarodowego.

Słowa kluczowe:
wydatki na obronę, PKB, NATO, wojna rosyjsko-ukraińska, wschodnia flanka

Introduction

The changing security environment after 2014, in particular the aggressive policy of the Russian Federation and the increase in hybrid and cyber threats, led to significant changes in the defense policies of NATO countries. In response to new challenges, NATO member states began systematically increasing defence spending, modernising their armed forces and strengthening deterrence and collective defence capabilities. The increase in defence spending by NATO countries enhances the security of Allies and strengthens their ability to deter potential aggressors, however, it also places a greater burden on national budgets. Defence expenditure positively influences the development of the military industry, new technologies, logistics, and the research and development sector, but they may also limit funding for other areas of the economy, such as education and healthcare. An analysis of political and military events indicates that Russia's war against Ukraine was the result of many years of escalating tensions between Russia and the West. Key factors included the war in Georgia in 2008, the annexation of Crimea in 2014, the conflict in Donbas, and the deteriorating relations between Russia and NATO. In response, NATO began strengthening its Eastern Flank, and defence expenditures among member states increased. Current trends indicate that high defence expenditures are likely to continue in the coming years due to ongoing threats to international security. The article addresses the following research problem: which NATO member states experienced the largest increases in defence spending between 2014 and 2025?

1. Theoretical foreword and historical perspective

NATO (2026), or the North Atlantic Treaty Organization, was established in 1949 as a political-military alliance of European and North American states (Rzeczpospolita.pl, 2026). NATO consists of civilian and military structures as well as specialized agencies. The civilian structure includes Permanent Representatives at ambassador level, who directly represent member states within NATO. Other key components are the Defence Planning Committee (DPC), which serves as a decision-making and advisory body on the integration of member states' military forces, the Nuclear Planning Group (NPG), the Secretary General of NATO, and the North Atlantic Council (NAC) – the highest political decision-making body within NATO (Latosiewicz, Kozicki, Tomaszewski, 2025).

The primary objective of NATO is to ensure the collective security of its member states through political and military cooperation. A significant base of NATO's functioning is the defense expenditure of member states (Górski, 2026).

According to NATO definition, defense expenditure includes all central government spending aimed at meeting the needs of a country's armed forces, other Allies, or the Alliance as a whole. This mainly covers the Ministry of Defence budget, including land, air, naval, and joint forces (such as command structures, special forces, logistics, cyber, and space units), as well as eligible parts of other security services when they perform military functions. It also includes military pensions, equipment stockpiling, operational costs (missions, peacekeeping, humanitarian operations), weapons disposal, and the military component of mixed civilian–military infrastructure. Research and development related to defense is included even if projects are unsuccessful. Military aid to Allies is counted in the donor country's spending. Excluded are civil defense and war damage payments. NATO reports all figures in USD using International Monetary Fund (IMF) average annual exchange rates for comparability (NATO, 2026a).

NATO itself is resourced through the direct and indirect contributions of its members. NATO's common funds are composed of direct contributions to collective budgets and programs. These funds (around EUR 4.6 billion for 2025, and up to EUR 5.3 billion for 2026) enable NATO to deliver capabilities and run the entirety of the Organization and its military commands (NATO, 2026b). While the direct collective budget is approved and oversighted by NAC, the substantial amount of expenditure remains at national level and may serve NATO common purposes as well as strictly national defence goals.

Within NATO, member states have committed to allocating a minimum of 2% of their GDP to defense expenditures (Osiński, 2026). This target was particularly emphasized during the 2014 NATO Summit in Wales, following Russia's annexation of Crimea in 2014 (Kamiński, 2015). In addition, it was agreed that at least 20% of defense expenditures should be allocated to military modernization and the procurement of new armament (NATO, 2026b). Considering the scale of current threats facing the Alliance, the NATO Summit in The Hague established a new target under which member states should allocate up to 5% of GDP to defense-related expenditures. According to the agreement, 3.5% of GDP should be dedicated to core defense requirements, while the remaining 1.5% should be allocated to defense-related spending, such as the protection of critical infrastructure and the development of the defense industry (NATO, 2025b).

The magnitude of defense expenditures is of substantial significance from both a military and geopolitical perspective. Increased spending enhances deterrence capability, improves operational readiness, and accelerates the modernization of armed forces. States allocating greater resources to defense are also more likely to be perceived as credible and reliable allies within the international security system. However, the aggregate level of expenditure is not a sufficient predictor of military effectiveness. Equally important are the efficiency of resource allocation, the effectiveness of military governance structures, the technological advancement of armaments, and the level of interoperability and institutional cooperation within NATO initiatives.

Oversight of defense expenditures is exercised at several levels. Within each member state, supervision is primarily conducted by governments, parliaments, ministries of defense, and financial oversight institutions, such as supreme audit offices. At the international level, defense spending is monitored by NATO structures, particularly the NATO Headquarters and the Defence Planning Committee (NAC, 2026). The Alliance evaluates expenditure levels, the degree of compliance with agreed commitments, and the military capabilities of individual member states. However, NATO does not possess direct enforcement mechanisms over its members, as decisions regarding defense budgets remain a sovereign competence of each state.

Contemporary security threats, particularly following Russia's full-scale invasion of Ukraine in 2022 (Ośrodek Studiów Wschodnich, 2026), have led to a significant increase in defense expenditures among most NATO member states (NATO, 2026a; Atlantic Council, 2026). This increase is aimed at strengthening military security, protecting national borders, and enhancing the development of new military capabilities. At the same time, it requires maintaining a balance between defense needs, the economic capacities of states, and the social needs of their citizens.

When discussing the Russian Ukrainian war as a principal factor behind the increase in the Alliance's defense expenditures, the historical background and underlying causes of the conflict appear particularly significant. Following the end of the Cold War, relations between NATO and Russia initially developed in the direction of cooperation. In 1991, after Ukraine regained independence (Senat Rzeczypospolitej Polskiej, 2023), a new stage in the formation of security architecture in Eastern Europe began. A particularly important event was the signing of the Budapest Memorandum in 1994 by Russia, the United States, and the United Kingdom (Portal Legitymistyczny, 2026), under which Ukraine's territorial integrity was guaranteed in exchange for its renunciation of nuclear weapons. In the following years, NATO regarded Russia as a potential security partner. In 2009, the so-called "reset" in Russian American relations took place, while in 2010 NATO's new Strategic Concept considered Russia as a cooperative partner (Strategic Concept, 2010). During the same period, energy projects such as Nord Stream 1 were developed (MCB, 2023), and sections of Western political and economic elites maintained close relations with Russia.

At the same time, however, an increasing number of developments indicated the resurgence of Russia's great-power policy. As early as 1993, Russia revised its military doctrine (Gołaś, 2013), emphasizing the necessity of defending its sphere of influence. In 2007, during the Munich Security Conference, Vladimir Putin openly criticized Western policy and NATO enlargement (Interia Wydarzenia, 2007). Earlier, in 2008, Georgia and Ukraine were not offered membership invitations to NATO (Forsal, 2022), which Russia may have interpreted as a sign of weakness within the Alliance. Later that same year, the Russo-Georgian War broke out (Zieliński, 2026), constituting the first evident indication of Russia's willingness to use military force against a post-Soviet state.

In the years 2004-2005, the Orange Revolution in Ukraine (Konieczna, 2005), demonstrated society's aspirations for European integration. In 2010, Viktor Yanukovych became President of Ukraine (Onet Wiadomości, 2022), pursuing a more pro-Russian policy. The situation changed again in 2014, when the protests on the Maidan led to the overthrow of the authorities and Ukraine's turn toward the West. Russia responded by annexing Crimea and initiating military operations in the Donbas region. At the same time, the Wagner Group was established, becoming a tool for hybrid and military operations outside Russia's borders. NATO responded by adopting the Readiness Action Plan (RAP) plan and beginning to strengthen the Alliance's Eastern Flank through the enhanced Forward Presence (eFP) and tailored Forward Presence) tFP initiatives (Polska Zbrojna, 2015).

In the following years, tensions continued to rise. In 2015, the Minsk Agreements were signed with the aim of ending the fighting in Donbas (Łysek, 2015), but the agreements were not effectively implemented. Russia also became militarily involved in Syria, increasing its geopolitical significance. In 2018, the poisoning of Sergei Skripal took place in the United Kingdom (Winiarska, 2018), which deepened the crisis in Russia's relations with Western countries. At the same time, Russia organized major sport events, such as the 2018 FIFA World Cup, attempting to build a positive international image despite growing political tensions (Wiśniewska, Rogoża, 2018).

Between 2018 and 2021, NATO began a broad debate on the future of security, which resulted in initiatives such as NATO 2030, NATO Readiness Initiative (NRI), and NATO Military Strategy (NMS) (MON, 2021). At the same time, energy cooperation with Russia continued, symbolized by the Nord Stream 2 project (Bajczuk, Kardaś, 2016). In 2020, fraudulent presidential elections followed by social protests took place in Belarus (TVN24, 2023), and in 2021, a migration crisis emerged on the border between Belarus and Poland and Lithuania. At the same time, reports increasingly emerged about Western politicians employed by Russian energy companies sparking discussion about Europe's dependence on Russian energy resources.

A major shift took place in 2022. NATO recognized Russia as the main threat to international security (Defence24, 2022). Russia and Belarus changed their military doctrines, and on 24 February 2022, the full-scale Russian invasion of Ukraine started (Onet, 2022). The war led to a fundamental change in NATO's security policy. Member States increased sharply defense spending, strengthening their armed forces, and expanding military presence on the Alliance's Eastern Flank. The Russian Ukrainian conflict became the most serious security crisis in Europe since the end of World War II and led to a redefinition of NATO's strategy toward Russia (Strategic Concept, 2022).

The aforementioned events significantly influenced the dynamics of defense expenditure development among individual NATO member states.

2. Multidimensional analysis of defense expenditures in NATO member states in the years 2014-2025

Differences in defense expenditures among NATO member states, viewed from a historical perspective, may serve as a useful basis for comparing the periods before and after the outbreak of the war. To provide a comprehensive assessment, the analysis was conducted from two distinct perspectives. The first approach examined defense expenditures in absolute monetary terms, while the second evaluated expenditures relative to GDP in order to account for differences in the economic capacity of member states. Employing these two perspectives provides a more comprehensive understanding of defense spending patterns, as absolute expenditure levels illustrate the scale of military investment, whereas expenditure as a share of GDP reflects the relative strategic and economic burden assumed by each state.

The study begins with an overview of defense expenditures of NATO member states, presented in Figure 1 and expressed in millions of dollars for the period 2014-2025. The data presented in Figure 1 show a gradual increase in defense expenditures, particularly after 2022. The absolute leader of the Alliance remains the United States, whose spending rose from USD 653,942 million in 2014 to approximately USD 980,000 million in 2025. This represents an increase of over USD 326 billion over eleven years. Such a high level of expenditure results from the global military role of the United States, the maintenance of military bases worldwide, a highly developed defense industry, and funding for advanced military technologies such as missile defense, strategic aviation, and space forces, as well as commitment to various military operations.

Another group of countries consists of the largest European economies. In 2025, Germany reached defense expenditures of approximately USD 113,586 million compared to USD 46,176 million in 2014. The United Kingdom increased its spending from USD 65,692 million to USD 90,508 million, France from USD 52,022 million to USD 66,531 million, and Italy from USD 24,487 million to USD 48,800 million. A particularly pronounced increase occurred after 2022, when European countries began rapidly expanding their military budgets following Russia's aggression against Ukraine. Germany launched a special fund for the modernization of their armed forces, while France and the United Kingdom accelerated investments in missile systems, aviation, and cyber defense.

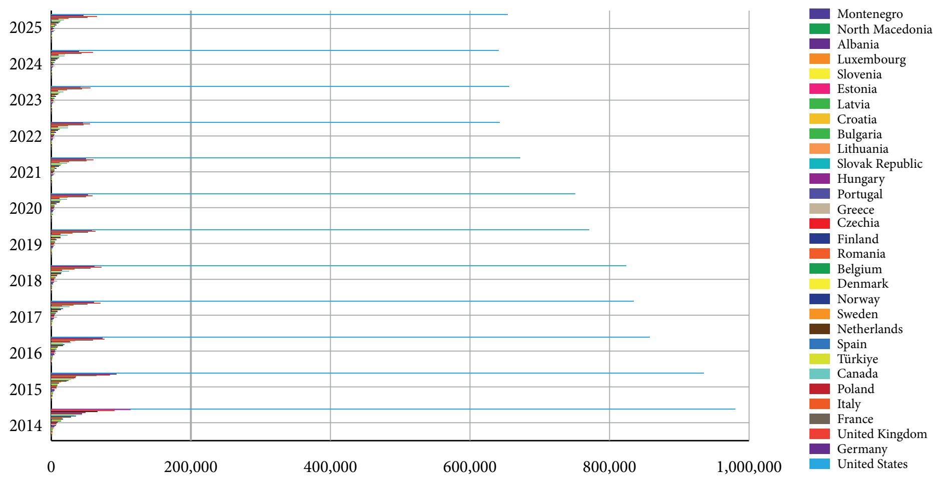

Fig. 1. Categorized bar chart of defense expenditures of NATO member states, expressed in millions of dollars, for the years 2014-2025 (data for 2024/2025 are estimated)

Source: own elaboration based on: NATO, 2025a; *Wydatki wojskowe Niemiec*, 2025

One of the most dynamic increases can be observed in Poland. Defense expenditure rose from USD 10,107 million in 2014 to approximately USD 44,314 million in 2025, representing more than fourfold increase. A particularly strong upward trend is visible after 2022, when Poland began extensive arms procurement, including Abrams and K2 tanks, multi-launch rocket systems such as HIMARS and Patriot – air and anti-ballistic system, and F-35 aircraft. This increase is driven by Poland's geopolitical location and the direct security threat in the Eastern European region.

Substantial increases in defense expenditures are also evident in the Nordic countries. Sweden raised its spending from USD 6,205 million in 2014 to USD 28,107 million in 2025, Finland from USD 3,991 million to USD 13,342 million, Norway from USD 7,722 million to USD 18,042 million, and Denmark from USD 4,057 million to USD 17,046 million. This marked upward trend reflects a significant acceleration of rearmament efforts following Russia's aggression against Ukraine, as well as the strategic implications of NATO enlargement, including Finland's accession in 2023 and Sweden's in 2024. In parallel, the region has been undergoing systematic modernization of its naval and air capabilities, particularly in the Baltic Sea and Arctic operational areas.

Among the countries of Central and Eastern Europe, substantial increases in defense spending are also evident in Romania, the Czech Republic, and the Baltic states. Romania increased its expenditures from USD 2,695 million to USD 11,713 million, the Czech Republic from USD 1,975 million to USD 8,769 million, Lithuania from USD 428 million to USD 3,947 million, Latvia from USD 294 million to USD 2,280 million, and Estonia from USD 514 million to USD 2,085 million. These states have primarily focused their investments on strengthening air defense capabilities, expanding artillery systems, and increasing the size and readiness of their armed forces.

The lowest levels of defense expenditure within the entire NATO are observed among the smallest member states. In 2025, Montenegro allocated approximately USD 196 million, North Macedonia USD 362 million, Albania USD 512 million, and Luxembourg USD 1,466 million. These comparatively low figures are largely explained by limited population size, constrained economic capacity, and more modest strategic requirements. Nevertheless, even these countries have steadily increased their defense budgets relative to 2014, reflecting the broader trend of rising defense spending across the Alliance.

The most significant increase in defense expenditures appears after 2022. For most NATO member states, this period constituted a key turning point, driven by the Russian Ukrainian war, a increasing assessment of military threats, and the necessity to rebuild and expand defense capabilities following decades of force reduction policies. A significant contributing factor was also the Alliance's pressure to meet the minimum defense spending benchmark of 2% of GDP, alongside emerging commitments toward higher long-term expenditure targets (NATO, 2025b).

Substantial differences in defense spending across NATO countries are primarily explained by variations in economic capacity and population size. States with the largest economies, such as the United States, Germany, and the United Kingdom, can allocate tens or even hundreds of billions of dollars annually to defense. In contrast, smaller member states, despite often meeting or exceeding GDP-based targets, record significantly lower absolute expenditure levels. Additional determinants include geopolitical location, perceived threat intensity, force structure and manpower levels, the scale of modernization and procurement programs, and the broader strategic ambitions of individual allies.

The next stage of the study is an analysis of defense expenditures of NATO member states as a percentage of GDP over the period 2014-2025. The data presented in Figure 2 indicates a clear increase in defense expenditures among NATO member states between 2014 and 2025, measured as a percentage of GDP (with data for 2024 and 2025 being estimates). The most significant growth occurred after 2022, following Russia's full-scale invasion of Ukraine.

In 2025, the highest defense spending as a share of GDP was recorded by Poland at 4.48%. This represents a substantial increase compared to 2014, when it stood at 1.86%, and 2022, when it reached 2.21%. Significant growth is also visible in Lithuania, rising from 0.88% of GDP in 2014 to 4.00% in 2025, in Latvia from 0.97% to 3.73%, and in Estonia from 1.90% to 3.38%. The Baltic states have been increasing their defense expenditures primarily due to their direct proximity to Russia and Belarus, as well as the need to rapidly strengthen deterrence capabilities.

In 2025, high levels of defense spending were also recorded in Norway (3.35% of GDP), Denmark (3.22%), the United States (3.22%), and Greece (2.85%). In the cases of Norway and Denmark, the increase is particularly evident after 2022: Norway raised its expenditures from 1.46% of GDP in 2022 to 3.35% in 2025, while Denmark increased from 1.36% to 3.22% over the same period. This trend is linked to a deteriorating security environment in the Baltic Sea region, the Arctic, and Northern Europe.

Increases are also visible among the newer NATO members from Northern Europe. Finland raised its defense spending from 1.46% of GDP in 2014 to 2.77% in 2025, while Sweden increased from 1.07% to 2.51%. In this case, a key factor was the abandonment of earlier neutrality policies and accession to NATO following Russia's aggression against Ukraine.

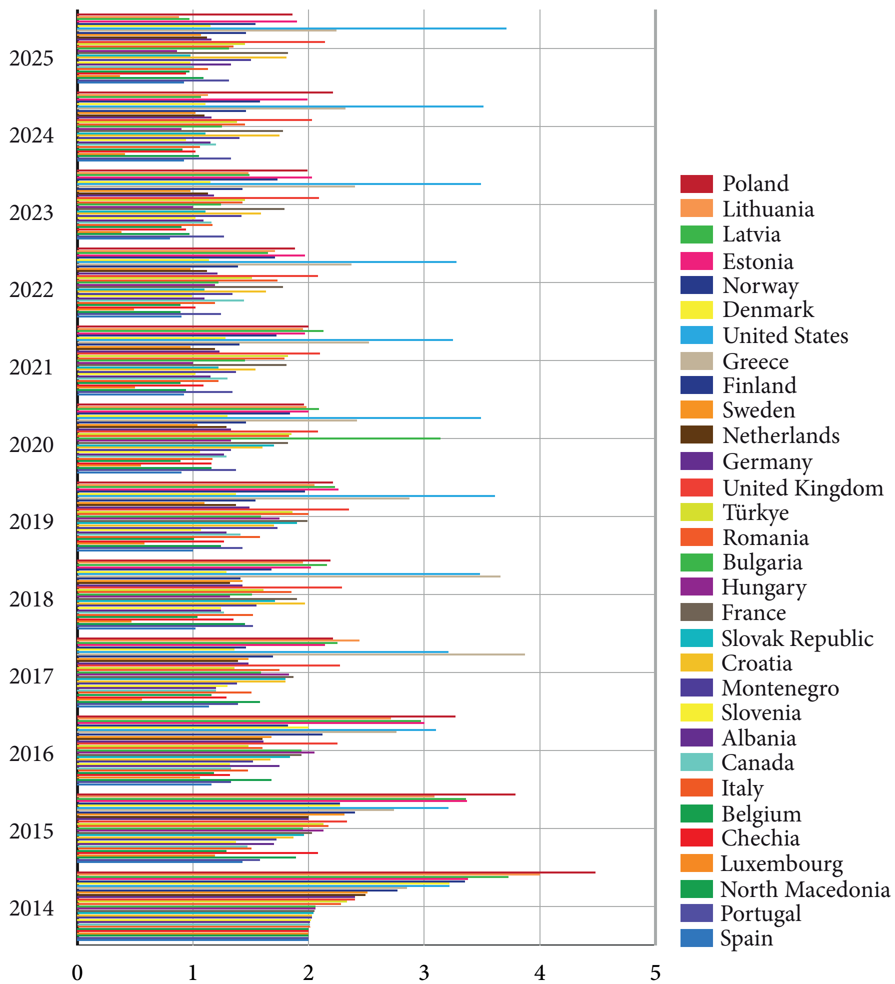

Fig. 2. Categorized bar chart of defense expenditures of NATO member states as a percentage of GDP for the years 2014-2025 (data for 2024/2025 are estimated)

Source: own elaboration based on: NATO, 2025a; *Wydatki wojskowe Niemiec*, 2025

In Western Europe, the growth is slower but still clearly visible. Germany raised its defense spending from 1.16% of GDP in 2014 to 2.40% in 2025, the Netherlands from 1.12% to 2.49%, France from 1.82% to 2.05%, Italy from 1.13% to 2.01%, Belgium from 0.97% to 2.00%, Spain from 0.92% to 2.00%, and Portugal from 1.31% to 2.00%. In these countries, the increase is primarily driven by NATO alliance pressure, the need to meet the 2% GDP threshold, and ongoing modernization of armed forces.

In Central and Southeastern Europe, growth is also evident. Romania increased from 1.35% of GDP in 2014 to 2.28% in 2025, Bulgaria from 1.31% to 2.06%, Hungary from 0.86% to 2.06%, Slovakia from 0.98% to 2.04%, the Czech Republic from 0.94% to 2.00%, Slovenia from 0.98% to 2.02%, Croatia from 1.81% to 2.03%, Albania from 1.33% to 2.01%, Montenegro from 1.50% to 2.03%, and North Macedonia from 1.09% to 2.00%.

In 2025, all countries reach at least 2% of GDP in defense spending. The largest increases over the 2014-2025 period are recorded in Lithuania (+3.12 percentage points), Latvia (+2.76 percentage points), Poland (+2.62 percentage points), Denmark (+2.07 percentage points), Norway (+1.81 percentage points), and Luxembourg (+1.63 percentage points). The only country with a lower share of GDP allocated to defense in 2025 compared to 2014 is the United States, decreasing from 3.71% to 3.22%, although it still remains well above the 2% benchmark.

It can be concluded that NATO as a whole is shifting toward higher defense spending. The most dynamic increases are observed in countries located closest to Russia, as well as in countries that previously spent relatively little and needed to rapidly reach at least the required 2% GDP.

3. Comparative defence investments analysis in periodical terms

A comparative analysis focusing on European NATO Allies was carried out in order to examine changes in European defence expenditure patterns before and after the onset of the Russia Ukraine war. For this reason, the United States and Canada were excluded from the country clusters, as they are non-European NATO members and their inclusion would substantially alter the analytical focus of the study. The Eastern Flank group consists of eight countries for which comparable defence expenditure data are available across the full observation period from 2014 to 2025. Although Finland and Sweden are now NATO members and are often discussed in relation to NATO's northern and eastern security posture, they were not included in the Eastern Flank cluster because they joined NATO only recently and do not provide comparable NATO member defence expenditure data from 2014 onward. Accordingly, the final comparison is based on eight Eastern Flank countries and nineteen non-Eastern Flank European NATO countries, allowing for a consistent longitudinal comparison across the full study period.

Table 1. Descriptive statistics for defence spending by group and period

Group	Period	Mean defence spending (in M USD)	Median	SD	Min	Max
Eastern Flank	2014 to 2021	48.53	49.47	13.07	31.46	67.30
Eastern Flank	2022 to 2025	50.34	50.01	10.58	33.21	65.93
Eastern Flank	2014 to 2025	74.47	72.94	7.74	65.87	88.14
non-Eastern Flank	2014 to 2021	23.01	23.08	13.00	−4.85	49.54
non-Eastern Flank	2022 to 2025	43.81	47.54	18.34	−4.33	70.13
non-Eastern Flank	2014 to 2025	56.76	60.23	15.74	21.81	81.27

Source: own elaboration

In the table above, descriptive statistics for defence spending by group and period, indicate consistently higher expenditure levels among Eastern Flank countries compared with non-Eastern Flank countries. In the pre-war period (2014-2021), Eastern Flank countries recorded a substantially higher mean value than non-Eastern Flank countries, while the post war period shows a marked increase particularly among non-Eastern Flank countries. Across the full 2014 to 2025 period, Eastern Flank countries maintained the highest average defence spending and displayed lower variability, whereas non-Eastern Flank countries exhibited greater dispersion, suggesting a less uniform but notable post 2022 increase in defence expenditure. To further examine whether these observed descriptive differences were statistically meaningful, inferential comparison tests were conducted across groups and periods.

Table 2. Mann Whitney U Tests comparing percentage rise in defence spending by flank group and period

Period	Flank group	*n*	*M*	*SD*	*U*	*p*
2014 to 2021	Eastern Flank	8	48.53	13.07	140.0	< .001
	non-Eastern Flank	19	23.01	13.00		
2021 to 2025 (e)	Eastern Flank	8	50.34	10.58	92.0	.418
	non-Eastern Flank	19	43.81	18.34		
2014 to 2025 (e)	Eastern Flank	8	74.47	7.74	133.0	.001
	non-Eastern Flank	19	56.76	15.74		

Source: own elaboration

2014 to 2021 (pre-war period)

The Mann Whitney U tests indicated a statistically significant difference in the percentage rise in defence spending between Eastern Flank and non-Eastern Flank countries during the pre-war period, 2014 to 2021, $U = 140.00$, $p < .001$. Eastern Flank countries showed a higher average percentage increase, $M = 48.53$, $Mdn = 49.48$, compared with non-Eastern Flank countries, $M = 23.01$, $Mdn = 24.19$. These findings suggest that, even before the 2022 escalation of the Russia-Ukraine war, Eastern Flank countries had already experienced a significantly greater rise in defence spending than non-Eastern Flank countries.

2021-2025 (after the breakout of a war period)

The results of the test indicate that the difference between the two groups is not statistically significant, $U = 63.00$, $p = .418$. While Eastern Flank countries ($M = 50.34\%$, $SD = 10.61\%$) demonstrated a slightly higher average percentage increase in defense spending compared to non-Eastern Flank countries ($M = 44.27\%$, $SD = 17.52\%$), this variance is not large enough to rule out random chance. This could be interpreted as unlike the 2014-2021 period where Eastern Flank countries outpaced the rest of the alliance by a highly significant margin, the spending growth rates from 2021 to 2025 have largely equalized. This suggests that following the escalation of geopolitical tensions in 2022, non-Eastern Flank countries accelerated their defense spending to catch up, resulting in comparable growth trajectories across both groups during this recent timeframe.

2011-2025 (entire period)

When looking at the entire period, the Eastern Flank maintains a significantly higher cumulative growth rate ($M = 74.47\%$) compared to the non-Eastern Flank ($M = 56.76\%$, $p = .001$). This confirms that while the gap in recent growth rates is closing, the total expansion of defense budgets since 2014 remains markedly higher in the Eastern Flank.

The data indicate a substantial acceleration in defence expenditure among both Eastern Flank and non-Eastern Flank NATO countries after the onset of the Russia Ukraine war. Among Eastern Flank countries, defence spending increased from \$16,992.30 million in 2014 to \$29,031.40 million in 2021, representing a rise of \$12,039.10 million or 70.85% during the pre war period. This growth intensified considerably in the post war period, increasing from \$30,748.70 million in 2022 to \$70,676.10 million in 2025, equivalent to an increase of \$39,927.40 million or 129.85%. A similar but comparatively less pronounced pattern was observed among non-Eastern Flank countries, where defence spending rose by 19.58% between 2014 and 2021 and by 63.21% between 2022 and 2025. Overall, the results suggest that while defence expenditure increased across NATO more broadly, the magnitude of after war growth was especially pronounced among Eastern Flank countries.

Table 3. Change in defence expenditure by flank group and period

Period	Flank group	Initial value (millions USD)	Final value (millions USD)	Increase in numbers (millions USD)	Increase in percentage
2014 to 2021	Eastern Flank	16,992.33	29,031.35	12,039.02	70.85%
2014 to 2021	non-Eastern Flank	254,342.04	304,135.00	49,792.96	19.58%
2022 to 2025	Eastern Flank	30,748.74	70,676.14	39,927.40	129.85%
2022 to 2025	non-Eastern Flank	298,735.46	487,566.07	188,830.61	63.21%
2014 to 2025	Eastern Flank	16,992.33	70,676.14	53,683.81	315.93%
2014 to 2025	non-Eastern Flank	254,342.04	487,566.07	233,224.03	91.70%

Source: own elaboration

Conclusions

The comparison between the GDP levels of NATO member states and their defense expenditures expressed in millions of dollars demonstrates a very strong relationship between a country's economic potential and its ability to finance military security. Countries with the largest economies, such as the United States, Germany, the United Kingdom, and France, allocate nominally far greater amounts to defense than the states of Central and Eastern Europe or the Balkans. Even when smaller countries achieve a high share of defense spending relative to GDP, their absolute financial capabilities remain limited. For example, Poland is among NATO leaders in terms of defense expenditure as a percentage of GDP, however, in nominal terms, its spending remains significantly lower than that of the United States, Germany, or the United Kingdom.

In 2025, all NATO member states allocate at least 2% of GDP to defense spending. The largest increases over the 2014-2025 period were recorded, among others, by Lithuania (+3.12 percentage points), Latvia (+2.76 percentage points), and Poland (+2.62 percentage points).

The analysis confirms the hypothesis that NATO countries on the Eastern Flank recorded the largest increases in defence spending as a percentage of GDP due to security threats arising from Russia's aggression against Ukraine. At the same time, the United States remained the leader in absolute defence expenditure growth, increasing spending from USD 653.9 billion in 2014 to USD 980 billion in 2025, an increase of over USD 326 billion reflecting its global military responsibilities and leading role within NATO.

The increase in defense expenditures primarily reflects the growing importance of military security in the policies of NATO member states. This trend constitutes a response to the deteriorating geopolitical situation, particularly after 2014 following Russia's annexation of Crimea, and especially after 2022, when the full-scale Russian-Ukrainian war began. NATO countries recognized that previous policies of downsizing armed forces and reducing military budgets were inadequate in the face of emerging security threats. Consequently, member states initiated extensive modernization of their armed forces, increased military personnel levels, expanded air defense and cybersecurity capabilities, and intensified investments in advanced military technologies.

The statistical comparisons indicate that the percentage increase in defence expenditure differed significantly between Eastern Flank and non-Eastern Flank countries during the pre-war period and across the entire 2014 to 2025 period, with the difference consistently favouring the Eastern Flank group. This finding suggests that Eastern Flank countries had already begun to adjust their defence investment trajectories in response to a perceived deterioration in the European security environment prior to the full-scale escalation of the Russia Ukraine war. By contrast, non-Eastern Flank countries did not exhibit a comparable proportional increase before 2022, indicating a more limited anticipatory adjustment in defence spending. However, the substantial increase observed between 2022-2025 among non-Eastern Flank countries suggests that the outbreak of the war functioned as a critical turning point, prompting a broader recalibration of defence investment across European NATO members. Taken together, these results imply that a more coordinated and proportionate European defence investment effort was possible before the war, yet the major acceleration in spending occurred only after the security threat had become immediate and visible.

The assessment of whether increasing defense expenditure is an appropriate solution depends largely on the analytical perspective adopted. From the perspective of national security, higher defense spending may enhance deterrence capabilities, improve the security of citizens, and reduce the risk of military aggression. Stronger armed forces and greater interoperability among NATO members also contribute to the overall stability of the Alliance. At the same time, however, a rapid increase in defense expenditures may place a significant burden on public finances, contribute to rising public debt, or limit resources allocated to other social priorities, such as education, healthcare, and social welfare policy.

Current trends indicate that the increase in defense expenditure is likely to continue at least until the end of the present decade. Most NATO member states have adopted military modernization strategies extending to 2030 or 2035, while some countries plan to further exceed the 2% GDP benchmark. High levels of defense spending are expected to persist as long as the perception of security threats in Europe and globally remains significant. Key determinants will include Russia's future actions, tensions in the Indo-Pacific region, the development of military technologies, and the economic situation of NATO member states.

The increase in defense expenditure has a significant impact on the economies of individual states. It may stimulate economic growth through investments in the defense industry, new technologies, infrastructure, and job creation. This particularly benefits sectors related to arms production, electronics, cybersecurity, aviation, shipbuilding, and the space industry. In many countries, higher military spending also contributes to the development of scientific research and technological innovation, which may later find applications within the civilian economy as well.

On the other hand, increasing defense expenditures may also generate negative economic consequences. High military spending can limit the financial resources available for other sectors of the economy and increase pressure on national budgets. In countries with weaker fiscal conditions, this may contribute to rising public debt, inflation, or the need to increase taxes. Citizens may experience these effects indirectly through reduced social spending, a higher cost of living, or lower levels of investment in public services.

The impact of defense expenditures on individual sectors of the economy is differentiated. The greatest benefits are observed in the defense industry, high-technology sectors, energy, logistics, and transport infrastructure. Industries related to information technology, artificial intelligence, and cybersecurity are also experiencing significant development. At the same time, some civilian sectors may face reductions in public funding. In the long term, maintaining a balance between military security and the economic and social stability of NATO member states will remain crucial.

It should be emphasized that a rapid increase in defense expenditures does not automatically result in an immediate enhancement of the national and Alliance defense capabilities. Owing to the structural inertia of defense systems, a significant proportion of such expenditures is typically allocated to long-term investments in military equipment, infrastructure, and personnel development, the operational effects of which may only become visible over an extended period. Consequently, the ability to respond rapidly to dynamic security threats, supported by timely budget allocation, is vital.

Equally important is the effective allocation of budgetary resources. A higher share of expenditure devoted to military equipment procurement may limit the availability of sufficiently trained personnel, whereas increased spending on personnel and operational maintenance may reduce the financial resources available for the modernization of equipment and infrastructure. Therefore, maintaining an appropriate balance between personnel development, operational readiness, and technological modernization constitutes one of the key challenges of contemporary defense policy within NATO member states.

The conclusions drawn from the analysis indicate that the increase in defense expenditure currently constitutes one of the most important directions of policy among NATO member states. This process strengthens military security and technological development; however, it also requires substantial financial resources and may influence both the structure of national economies and the standard of living of citizens.

REFERENCES

[1] Atlantic Council, 2026. *NATO defense spending tracker. How are allies contributing collective defense?*, https://www.atlanticcouncil.org/commentary/trackers-and-data-visualizations/nato-defense-spending-tracker/ (accessed: 10.05.2026).

[2] Bajczuk, R., Kardaś, S., 2016. *Antymonopolowe problemy projektu Nord Stream 2*, https://www.osw.waw.pl/pl/publikacje/analizy/2016-08-24/antymonopolowe-problemy-projektu-nord-stream-2 (accessed: 10.05.2026).

[3] Defence24, 2022. *Rosja największym zagrożeniem w deklaracji końcowej NATO w Madrycie*, https://defence24.pl/geopolityka/rosja-najwiekszym-zagrozeniem-w-deklaracji-koncowej-nato-w-madrycie (accessed: 10.05.2026).

[4] Forsal, 2022. *Dlaczego Ukraina i Gruzja nie weszły do NATO w 2008 r.? Były szef Sojuszu: Przez niechęć Francji i Niemiec*, https://forsal.pl/swiat/bezpieczenstwo/artykuly/8429169,dlaczego-ukraina-i-gruzja-nie-weszly-do-nato-w-2008-r-byly-szef-sojuszu-przez-niechec-francji-i-niemiec.html (accessed: 10.05.2026).

[5] Gołaś, K., 2013. *Doktryna wojenna Federacji Rosyjskiej*, https://geopolityka.net/doktryna-wojenna-federacji-rosyjskiej/ (accessed: 10.05.2026).

[6] Górski, M., 2026. *Rekordowe wydatki NATO. Wszystkie kraje powyżej 2 proc. PKB*, https://defence24.pl/polityka-obronna/rekordowe-wydatki-nato-wszystkie-kraje-powyzej-2-proc-pkb (accessed: 9.05.2026).

[7] Interia Wydarzenia, 2007. *Konferencja Bezpieczeństwa w Monachium*, https://wydarzenia.interia.pl/zagranica/news-konferencja-bezpieczenstwa-w-monachium,nId,816243 (accessed: 10.05.2026).

[8] Kamiński, Ł., 2015. *Szczyt w Newport*, https://polska-zbrojna.pl/home/articleshow/15337?t=szczyt-w-newport (accessed: 9.05.2026).

[9] Konieczna, J., 2005. *Pomarańczowa rewolucja na Ukrainie. Próba zrozumienia przyczyn*, https://www.osw.waw.pl/pl/publikacje/prace-osw/2005-07-13/pomaranczowa-rewolucja-na-ukrainie-proba-zrozumienia-przyczyn (accessed: 10.05.2026).

[10] Latosiewicz, D., Kozicki, B., Tomaszewski, J., 2025. *Planowanie naboru żołnierzy w korpusie szeregowych w Siłach Zbrojnych RP wobec obecnych zagrożeń bezpieczeństwa militarnego*, Warszawa: Wojskowa Akademia Techniczna.

[11] Łysek, W., 2015. *Realizacja porozumień Mińsk II*, https://pulaski.pl/realizacja-porozumien-minsk-ii/ (accessed: 10.05.2026).

[12] MCB, 2023. *Historia rurociągu Nord Stream 1 – kontrowersyjny projekt*, https://emcb.pl/historia-rurociagu-nord-stream-1-kontrowersyjny-projekt/ (accessed: 10.05.2026).

[13] MON, 2021. *Szczyt NATO – odpowiedź na współczesne wyzwania i zagrożenia*, https://www.gov.pl/web/obrona-narodowa/nato (accessed: 10.05.2026).

[14] NAC, 2026. *Rada Północnoatlantycka (NAC)*, https://libr.sejm.gov.pl/tek01/txt/nato/z5s32-1.html (accessed: 10.05.2026).

[15] NATO, 2025a. *Defence Expenditure of NATO Countries (2014-2025)*, https://www.nato.int/content/dam/nato/webready/documents/finance/def-exp-2025-en.pdf (accessed: 9.05.2026).

[16] NATO, 2025b.*The Hague Summit Declaration*, https://www.nato.int/en/about-us/official-texts-and- resources/official-texts/2025/06/25/the-hague-summit-declaration (accessed: 10.05.2026).

[17] NATO, 2026a. *Defence expenditures and NATO's 5% commitment*, https://www.nato.int/en/what-we-do/introduction-to-nato/defence-expenditures-and-natos-5-commitment (accessed: 10.05.2026).

[18] NATO, 2026b. *Funding NATO*, https://www.nato.int/en/what-we-do/introduction-to-nato/funding-nato (accessed: 10.05.2026).

[19] Onet Wiadomości, 2022. *Rządził Ukrainą, potem uciekł do Rosji. Kim jest Wiktor Janukowycz*, https://wiadomosci.onet.pl/swiat/wiktor-janukowycz-kim-jest-rzadzil-ukraina-potem-uciekl-do-rosji/h1me67g (accessed: 10.05.2026).

[20] Onet, 2022. *Rosja zaatakowała Ukrainę. Tak przebiegały pierwsze godziny wojny*, https://wiadomosci.onet.pl/swiat/wojna-rosja-ukraina-tak-przebiegaly-pierwsze-godziny-ataku-rosji/6p3l1lb (accessed: 10.05.2026).

[21] Osiński, Ł., 2026. *NATO zwiększy wymagania dot. wydatków na obronność powyżej 2 proc. PKB – Mark Rutte*, https://wszystkoconajwazniejsze.pl/pepites/nato-zwiekszy-wymagania-dot-wydatkow-na-obronnosc-powyzej-2-proc-pkb-mark-rutte/ (accessed: 9.05.2026).

[22] Ośrodek Studiów Wschodnich, 2026. *Wojna na Ukrainie, 24 lutego 2022 roku rozpoczęła się nowa faza rosyjskiej agresji na Ukrainę. Eksperci OSW od początku, dzień po dniu, śledzili ten konflikt*, https://www.osw.waw.pl/pl/wojnanaukrainie (accessed: 10.05.2026).

[23] Polska Zbrojna, 2015. *Ministrowie Polski i Holandii o implementacji RAP*, https://polska-zbrojna.pl/home/articleshow/15594?t=Ministrowie-Polski-i-Holandii-o-implementacji-RAP (accessed: 10.05.2026).

[24] Portal Legitymistyczny, 2026. *Memorandum budapesztańskie: jak Ukraina oddała broń nuklearną za gwarancje bezpieczeństwa?*, http://www.legitymizm.org/memorandum-budapesztanskie (accessed: 10.05.2026).

[25] Rzeczpospolita.pl, 2026. *Wydatki na obronność. Europa za trzy lata dogoni USA?*, https://radar.rp.pl/modernizacja-sil-zbrojnych/art44075351-wydatki-na-obronnosc-europa-za-trzy-lata-dogoni-usa (accessed: 9.05.2026).

[26] Senat Rzeczypospolitej Polskiej, 2023. *Dzień Niepodległości Ukrainy*, https://www.senat.gov.pl/aktualnoscilista/art,15734,dzien-niepodleglosci-ukrainy.html (accessed: 10.05.2026).

[27] Strategic Concept, 2010. https://www.nato.int/content/dam/nato/legacy-wcm/media_pdf/pdf_publications/20120214_strategic-concept-2010-eng.pdf (accessed: 15.05.2026).

[28] Strategic Concept, 2022. https://www.nato.int/content/dam/nato/legacy-wcm/media_pdf/pdf_publications/20120214_strategic-concept-2010-eng.pdf (accessed: 10.05.2026).

[29] TVN24, 2023. *Libereco: od czasu sfałszowanych wyborów na Białorusi w 2020 roku zatrzymano tam ponad 38 tysięcy osób*, https://tvn24.pl/swiat/libereco-od-czasu-sfalszowanych-wyborow-na-bialorusi-w-2020-roku-zatrzymano-tam-ponad-38-tysiecy-osob-st7069680 (accessed: 10.05.2026).

[30] Winiarska, M., 2018. *Wydarzenia roku 2018 – Świat*, https://archiwum.tvn24.pl/magazyn-tvn24/191/tvn24.pl/magazyn-tvn24/rok-przelomu-albo-wielki-blef%2c191%2c3337.html (accessed: 10.05.2026).

[31] Wiśniewska, I., Rogoża, J., 2018. *Mundial w Rosji – igrzyska zamiast chleba?*, https://www.osw.waw.pl/pl/publikacje/komentarze-osw/2018-09-17/mundial-w-rosji-igrzyska-zamiast-chleba (accessed: 10.05.2026).

[32] *Wydatki wojskowe Niemiec*, 2025. Trading Economics, https://pl.tradingeconomics.com/germany/military-expenditure (accessed: 9.05.2026).

[33] Zieliński, T., 2026. *Konflikt rosyjsko-gruziński 2008*, https://www.magnum-x.pl/artykul/konfliktrosyjskogruzinski2008 (accessed: 10.05.2026).