dr **Anna Chochowska**
ORCID: https://orcid.org/0000-0002-4146-9951
State Vocational University of prof. Stanisław Tarnowski in Tarnobrzeg
dr hab. **Krzysztof Chochowski**
ORCID: https://orcid.org/0000-0003-3198-9619
prof. of the State Vocational University of prof. Stanisław Tarnowski in Tarnobrzeg
dr **Anna Zych**
ORCID: https://orcid.org/0009-0009-8836-3212
State Vocational University of prof. Stanisław Tarnowski in Tarnobrzeg
dr hab. **Igor Britchenko**
ORCID: https://orcid.org/0000-0001-9862-7554
Professor
University of the National Education Commission
(Tarnobrzeg, Krakow, Poland)

OPPORTUNITIES AND THREATS FOR THE DEVELOPMENT OF THE DEFENSE INDUSTRY IN POLAND

https://doi.org/10.5281/zenodo.15709969

Abstract
This review article presents the issues regarding the opportunities and threats for the development of the defense industry in Poland. It discusses, among other things, the state of the domestic defense industry, indicates opportunities and threats to its development, as well as the general assumptions of the Technical Modernization Plan of the Armed Forces of the Republic of Poland. In addition, it defines the essence of agreements concluded with entities of the domestic defense industry, namely offset, framework and implementation agreements. It also analyzes the sources of financing of agreements concluded for the purpose of modernization and re-equipping not only the Armed Forces of the Republic of Poland but also other formations guarding public security and order, such as the Border Guard.
The entire discussion ends with conclusions, the implementation of

which may contribute to optimizing the condition of the domestic defense industry, as well as improving the security of the state and the effectiveness of the Polish Army.
This article is based on, supplementing and expanding on, the earlier study by A. Chochowska, K. Chochowski, A. Zych, I. Britchenko entitled Prospects for the development of the defence industry in Poland, published in "Politics & Security" 2024, Vol. 10, No. 4.

Keywords: *European defense industry, Polish defense industry, Technical Modernization Plan of the Armed Forces of the Republic of Poland, offset, state security.*

Introduction

One of the factors influencing the state of security of a country are its economic potential and industrial base. This is particularly true for the defense industry, which has been highlighted by the ongoing aggressive war of Russia against the Ukraine. After only half a year of military operations, both sides began to experience the shortages of equipment and supplies concerning especially large-caliber artillery ammunition.

Poland is currently breaking records in defense expenses – next year, the funds at the disposal of the Ministry of National Defense (state budget, Armed Forces Support Fund) are to be 10% higher than in 2024. The amount will be up to PLN 169 billion, or 4.2% of GDP.

PLN 53 billion, or $13.25 billion in 2025 alone of this amount is supposed to be spent directly for the purchases of weapons and military equipment.

The aim of the research in this article is to present the development prospects of the Polish defense industry and to indicate its strengths and weaknesses. The practical aim is also to develop conclusions and proposals that may improve its condition.

The subject of the research is the Polish defense industry.

The work uses the document and literature study method as the leading method and the historical and dogmatic methods as auxiliary methods. The use of the first method was justified by the fact that a number of written sources had been collected, such as monographs, scientific articles and reports, which were analyzed and interpreted. It allowed to draw conclusions. In turn, the use of the historical

method allowed for the identification of events that had had an impact on the state and prospects of the Polish defense industry and a better understanding of its current condition and an attempt to predict its prospects. Thanks to the lessons from the past, the later decisions might be made more accurately in the present and the future. On the other hand, the use of the dogmatic method allowed for the analysis and interpretation of the applicable legal norms that regulate the functioning of the Polish defense industry sector. By examining legal texts, it became possible to explain the meaning and scope of the above-mentioned legal norms.

The use of the above research methods made it possible to obtain a deeper and more precise image of the condition and prospects of the domestic defense industry.

A research limitation is the access to classified information and information constituting a company's trade secret.

I. Industry defense in Poland and defense outlay

The proverb *Si vis pacem, para bellum,* despite the passage of centuries, has not lost any of its relevance. The defense industry is one of the pillars of each country's security. For this reason, we must not forget that "Modern armed forces are not only the level of specialized training of soldiers, equipment and weapons that meet the requirements of the modern battlefield. It is also their own modern arms industry and modern research and development centres, international cooperation, export and import, the amount of financial resources, staff, innovative management, access to information on the directions of research on new types of weapons and their introduction to equipment of troops by the enemy, as well as the knowledge of the markets focused on purchasing weapons, etc." [6].

During the Polish People's Republic, the state absolutely dominated the armaments sector. All plants producing for the defense industry were state-owned and had the status of state-owned enterprises. The state decided about what was to be produced, in what quantity and what parameters the ordered products were to have

[6] *A. Żebrowski, Zagrożenia i bezpieczeństwo przemysłu zbrojeniowego... u progu XXI wieku (wybrane aspekty), [w:] Przemysł zbrojeniowy. Tendencje, perspektywy, uwarunkowania, innowacje, pod red. R. Kopeć, Kraków 2016, s. 18 i 19.*

[7].

Poland's departure from the centrally controlled socialist economy in the 1990s in favour of a free market economy resulted in a number of structural changes that had a negative impact on the condition of the Polish defense industry. Many armaments factories were closed or their production profile was completely changed to civilian production. A number of capabilities in the production of armaments and ammunition were lost, in particular cluster or thermobaric ammunition. One of the reasons for this state of affairs was that "Practically the entire range of manufactured armaments was manufactured under Soviet licenses. The conditions of the licenses which were granted, limited the independence of the plants in modernising armaments, using other components and the right to introduce changes"[8]. The situation is made worse by the fact that over the course of thirty years, new technologies have appeared, unknown in the 20th century, which have now become standard equipment in modern armies. Here, the Polish defense industry shows certain deficits.

The source of the "rolling up" of the defense industry was primarily the lack of significant orders from the Ministry of National Defense carried out by the domestic defense industry sector. Arms exports also decreased significantly which inevitably affected the condition of entrepreneurs in the arms industry. This situation began to change under the influence of external factors, namely Poland's accession to NATO, as well as growing political and military pressure from Russia on neighboring countries. The alarm signal that caused the intensification of Poland's defense effort was Russia's aggression against the Ukraine, which began on February 24, 2022. The amount of equipment, weapons and ammunition ordered increased, both domestically and abroad. It gave new opportunities whether as a part of the so-called offset or joint ventures to acquire technologies to which the Polish defense industry had not had access until now.

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[7] *K. Piątkowski, Polski przemysł zbrojeniowy na rozdrożu, „Polska w Europie" 2003, Nr 1, s. 154.*

[8] *M. Szlachta, A. Ciupiński, Od politycznej współpracy do gospodarczej konkurencji – przemysł obronny krajów Europy Środkowo-Wschodniej po upadku ZSRR, „Rocznik Instytutu Europy Środkowo-Wschodniej" 2021, Nr 19, Z. 2, s. 84.*

Poland's economic development and the growth of its GDP also have a positive impact on the level of orders in the domestic defense industry. The constant and long-term financing of purchases for the army and other formations serving the security of the state is also a factor that has a positive impact on the prospects for its development.

Poland's significant defense spending is not unique on the European continent. Since 2014, a slow upward trend has been observed among NATO member states which increased significantly in 2023.

For example, the defense expenditures of Poland, the Czech Republic, Hungary, Slovakia, Germany and, in contrast, Russia was analysed, using the criterion of percentage share in GDP as well as the monetary criterion (funds spent in millions of dollars).

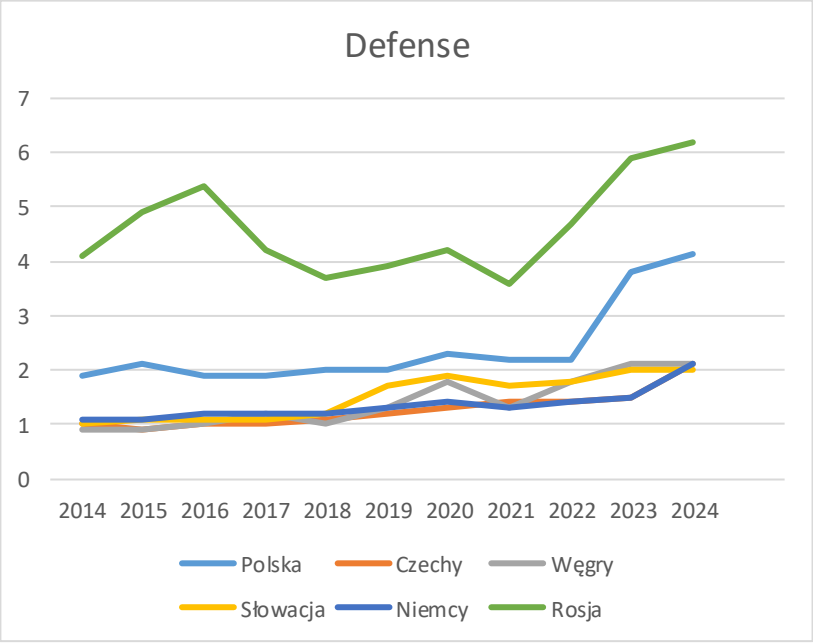

Figure 5.2 Defense expenditures, percentage share in GDP, (2014-2024)

Source: own study based on SIPRI data and NATO

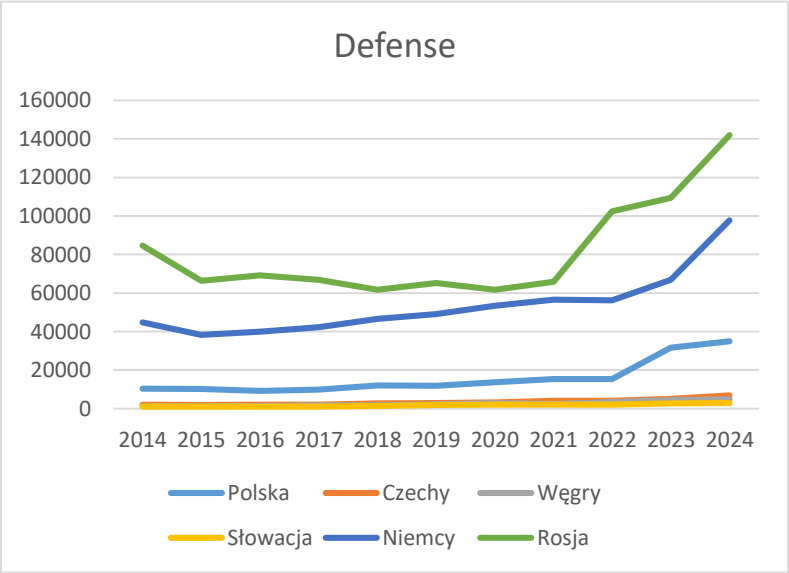

Figure 5.3 Defense expenditures, monetary criterion (funds spent in millions of dollars), (2014-2024)

Source: own study based on SIPRI data and NATO

According to information provided by NATO, in 2014 only three member states spent at least 2% of GDP on defense. This situation changed positively over time, to reach 23 NATO member states in 2024 which spend at least 2% of GDP on defense. Inevitably, this spending also concerns the defense industry. Orders for weapons and ammunition were increased, research work was accelerated, new factories were built, arms companies were consolidated, and new sources of financing were launched, including for startups.

It is worth pointing out here that equipment expenditures as a share of defense expenditure in % in case of Poland for 2024 is 51.1%, Hungary 47.8%, the Czech Republic 37.9%, Slovakia 27.2%, Germany 28.7%.[9] The example of Poland shows that financial resources are not spent on maintaining personnel, but on the

[9] *Defence Expenditure of NATO Countries (2014-2024), 240617-def-exp-2024-en.pdf s. 14. date of access 18.02.2025.*

modernization of the army and the technological leap in terms of the weapons and ammunition held.

Based on the above data, it might be concluded that from 2014 to 2022, defense spending in the presented countries grew slowly, heading towards 2% of GDP. A significant increase was recorded from 2022 to the present, which is undoubtedly related to Russia's aggression against the Ukraine. The so-called expeditionary army model in case of a full-scale and long-term armed conflict, in which both sides have advanced military technology, proved to be useless. The amount of destroyed military equipment, the consumption of ammunition and other materials during the war in the Ukraine, made it clear to NATO countries that they were not prepared for this type of clash. The existing industrial base, material resources and personnel reserves turned out to be insufficient, which forced the governments of these countries to respond, among others, by increasing defense spending.

II. European defence industry

The European defense industry, as A. Rogala-Lewicki emphasizes, has been undergoing a process of very intensive consolidation of the arms sector since the 1990s, initially at the national level, and later internationally (although it did not cover all concerns; for example, the Swedish Saab remained outside the European consolidation process). It can be seen that these activities have resulted in a significant increase in the competitiveness of the concerns that joined this process. On the other hand, however, the increase in orders, innovation and income also went hand in hand with the closure of the most unprofitable enterprises[10]. The European defense industry, which also includes the Polish industry, is currently experiencing a kind of renaissance. While before 2022, European defense companies operated in an environment of reduced defense spending, which resulted in gaps in the production of main platforms and small production series, they now have to cope with the expectations of governments to produce quickly and in large series, which often exceeds their capabilities.

[10] *A. Rogala – Lewicki, Integracja europejskiego przemysłu obronnego, „Przegląd Geopolityczny" 2017, Nr 19, s. 158.*

The 2022 European Defense Industry Report accurately presents its SWOT analysis. According to it, **the strengths of** the European industry include: an efficient industrial base in all sub-areas; companies with the ability to integrate systems in all sub-areas; functioning integration with commercial industrial sectors; particular efficiency in the construction of submarines, combat aircraft, tanks, artillery and small arms, technological advancement in many sub-areas; a skilled workforce with a large share of engineers. On the other hand, **the weaknesses** include: the multitude of competing types of weapon systems; cyclically changing capacity utilization; limited efficiency due to domestic competition; technological gaps in relation to the US (cybernetics, fighter aircraft, unmanned drones, automated battlefield); the influence of national interests on complex orders and production; uncoordinated export policy; technological dependence on the US. The authors of the report include **the opportunities**: significantly greater financial resources in the coming years and increasing military spending; greater cooperation in Europe promoted by EU programmes; greater defence competences in the European Commission; greater coordination of armed forces equipment and weapon systems. On the other hand, they see **threats** in: cost explosion due to complex coordination processes and divergent requirements; planning without Great Britain (Brexit); lack of qualified specialists; too many competing development projects [11].

In turn, according to the 2024 IISS Report *Building Defense Capacity in Europe: An Assessment*, the European defense industry has significantly increased some aspects of its production capacity since 2022, particularly in sectors where the Ukraine's demand is the strongest, such as air defense and artillery. For example, Rheinmetall's global annual production rate of 155mm ammunition has increased tenfold to 700,000, thanks to a combination of mergers and acquisitions, as well as investments in existing plants and new factories in Hungary, Lithuania and the Ukraine, and is very likely to reach one million rounds per year by 2026. Despite this, it is important to recognise that European states remain dependent on the United States for some important aspects of their military capabilities, such as rocket artillery, extended-range air defence and

[11] *Przemysł obronny w Europie. Raport 2022, s. 16. Defence Industry report_ PL.pdf date of access 21.02.2025.*

low-observability strike systems. However, where options for European equipment have emerged, European allies have chosen to invest in such systems since 2022. Indeed, IISS data shows that as of February 2022, 52% of NATO Europe's total platform procurement costs came from European companies. Only 34% came from the United States in the following categories: armored fighting vehicles; self-propelled artillery; medium- and long-range surface-to-air missiles; all manned aircraft; all manned naval vessels; and combat intelligence, surveillance, and reconnaissance (ISR) unmanned aerial vehicles and guided missiles[12].

As it may be seen from the above examples, the defense industry in Europe is gradually waking up from its thirty-year slumber, gaining new capabilities and increasing the volume of weapons and ammunition produced, as well as specialized equipment. Of course, it encounters certain barriers to development, but it seems that a significant part of them might be overcome.

III. The State of the Polish Defense Industry

Regardless of whether we are dealing with state-owned or private enterprises operating in the defence industry sector, it is necessary to remember that "PPO (Polish defence industry – K.Ch.) must have the ability to provide the Polish Armed Forces with the most modern and technologically advanced equipment, ensuring the possibility of use for a period of several years to several decades. The equipment offered should also meet the requirements of interoperability and compatibility in the context of cooperation with allies. Another requirement is the open, flexible and modular design of systems, enabling adaptation to needs within the framework of tasks carried out by the army, as well as reducing the costs of production, use, servicing and repair"[13]. The chance to achieve this state may be the transfer of innovative technologies between the civilian and military

[12] *Raport IISS Building Defence Capacity in Europe: An Assessment, London, 2024, s. 111 i n. European Defence-Industrial Capability date of access 21.02.2025.*

[13] *W. Skrzypczak, P. Luzak, Miejsce, rola i zadania polskiego przemysłu zbrojeniowego w systemie bezpieczeństwa państwa, „Przegląd Strategiczny" 2014, Nr 7, s. 477.*

sectors[14]. This requires a rational and coherent industrial policy of the state. Therefore, one should fully agree with the thesis of W. Lewandowski and P. Fonrobert that "The state's policy towards the defense industry should result from long-term plans for its functioning and development, not only for its own armed forces, but also as an element of the export of products, technologies or services to world markets. Each state with specific aspirations and technological capabilities, taking care of its own security, bases its defense production primarily on its own enterprises and domestic solutions. Otherwise, there is no question of effective operation of its own armed forces in the long term."[15]

Currently, the Polish defense industry includes both companies associated within the Polish Armaments Group (hereinafter referred to as PGZ), the WB Group, as well as those that operate fully autonomously and independently, such as Advanced Protection Systems SA, **Hertz Systems Ltd Sp. z oo,** Creotech Instruments SA, Lubawa SA, PZL Mielec Sp. z oo, Protector SA, AMZ – Kutno SA, or Scanway SA

Polska Grupa Zbrojeniowa is one of the largest defense concerns in Europe. It brings together over 50 companies in five domains (areas), namely land, weapons and ammunition, C4ISR (electronics, information technology, cyber technology), aviation, naval. It should be noted that in 2022 it took 73rd place on the list of 100 largest defense companies, achieving revenues of $ 1,890 million, while a year later it improved its position, taking 64th place and achieving revenues of $ 2,060 million, thus recording a 9% increase[16].

The land domain includes the following companies: Huta Stalowa Wola; Stomil – Poznań SA; Zakłady Mechaniczne „Bumar – Łabędy" SA; Research and Development Centre for Mechanical Devices OBRUM; Rosomak SA; Wojskowe Zakłady Motoryzacyjne SA; Jelcz Sp. z o. o.; Research and Development Centre for the Tire

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[14] *B. Pacek, Konsolidacja przemysłowego potencjału obronnego w Polsce. Uwarunkowania, dylematy i szanse, „Zeszyty Naukowe AON" 2014, Nr 1 (94), s. 13.*

[15] *W. Lewandowski, P. Fonrobert, Polski przemysł obronny - ambicje i perspektywy, „Problemy Techniki i Uzbrojenia" 2021, Tom 158, Nr 3-4, s. 115.*

[16] *THE SIPRI TOP 100 ARMS PRODUCING AND MILITARY SERVICES COMPANIES, 2023, The SIPRI Top 100 arms-producing and military services companies, 2023 s. 10. date of access 21.02.2025.*

Industry “Stomil”; Zakład Mechaniczny “BUMAR-MIKULCZYCE” SA; H. Cegielski-Poznań SA

The domain of weapons and ammunition includes the following companies: MESKO SA; PCO SA; CENZIN Sp. z oo; Fabryka Broni „Łucznik” – Radom sp. z oo; Wojskowe Zakłady Uzbrojenia SA; Bydgoskie Zakłady Elektromechaniczne „BELMA” SA; Zakłady Produkcji Specjalnej „GAMRAT” Sp. z oo; Zakłady Chemiczne „NITRO-CHEM” SA; Zakłady Metalowe „DEZAMET” SA; Przedsiębiorstwo Sprzętu Ochronnego „Maskpol” SA; Zakłady Mechaniczne „Tarnów” SA

The C4ISR domain (electronics, information technology, cybertechnology) includes the following companies: PIT-Radwar SA; Research and Development Center of Maritime Technology SA; Military Electronic Works SA; Military Communication Works No. 1 SA; Military Communication Works No. 2 SA; ZURAD Sp. z oo

The aviation domain includes the following enterprises: Military Aviation Works No. 1 SA; Military Aviation Works No. 2 SA; Military Central Design and Technology Office SA; Communication Equipment Factory “PZL-Kalisz” SA; Tool Shop-Mechanik Sp. z oo

The maritime domain includes the following companies: PGZ Military Shipyard Sp. z o. o.; Nauta Ship Repair Yard SA.

Noticeably, for several years now, PGZ has been systematically developing its potential, taking over and incorporating new companies into the group, as well as modernizing and expanding its machinery and production lines, as well as the production volume. Moreover, its products meet the requirements of the 21st century battlefield, and therefore the thesis that PGZ significantly contributes to the generational leap of the domestic defense industry seems to be justified. Cooperation with foreign partners, who transfer technologies that were previously beyond the reach of Polish entrepreneurs, is helpful in this respect. Offset agreements also play a positive role[17].

The second most serious domestic player on the Polish arms market is the WB Group. It consists of 12 entities, namely: Zakład Automatyki i Urządzeń Pomiarowych AREX Sp. z oo; Flytronic SA;

[17] *K. Chochowski, Blaski i cienie ustawy offsetowej, [w:] Bezpieczeństwo a perspektywy przemian globalizującego się świata, pod red. A. Szylar, P. Maciaszczyka, Tarnobrzeg 2020, s. 181 – 195.*

Mindmade Sp. z oo; Polcam Systems Sp. z oo; Radmor SA; WB America LLC; WB Electronics SA; WB India; WB Middle East LLC; WBE Technologies Sbn Sdh; WB UKRAINE LLC; PNS Sp. z oo They offer communications and command technologies, as well as advanced solutions for the armed forces in such areas as: observation and reconnaissance systems; command, communications and battlefield management systems; fire control systems; strike systems; IT and cybersecurity systems; equipment and modernization of military equipment.

It is neither possible nor advisable to present here a larger number of entities involved in armaments production in Poland. It should be emphasized, however, that practically all of them have recorded a significant increase in the sales of products and services in recent years, which has resulted in the profit achieved.

IV. The most important achievements of the Polish defense industry in recent years

The most important achievements of the Polish defense industry are, above all, the "Krab" howitzer, the M120 "Rak" self-propelled mortar, portable anti-aircraft missile systems – "Piorun" – manufactured by ZM Mesko SA or the FlyEye loitering ammunition and unmanned aerial vehicles. This equipment has proven itself in front-line conditions, and has been successfully used by the Ukrainian army in its defensive war with Russia[18].

It is also worth paying attention to the DRAGONFLY loitering ammunition system (LMS), the core of which is a vertical take-off and landing warhead carrier in a quadrocopter system, which is a unique solution on a global scale. Its greatest advantage is mobility, low weight and dimensions, very short system launch time, as well as the possibility of using various warheads starting from the GK-1 HEAT cumulative warhead, through the GTB-1 FAE thermobaric warhead, the GO-1 HE fragmentation warhead, ending with the GO-1 HE-TP / GO-1 HE-TR training warhead[19]. Another promising loitering ammunition system for precision destruction is the GIEZ system consisting of a transport container – a launcher for unmanned aerial vehicles, an air platform with a warhead, a ground C2 station

[18] *Katalog_BBN_2024.indb s.5, date of access 11.02.2025.*
[19] *Ibid, s. 15.*

and a tracking antenna. The system is characterized by ease of use, short time of preparing the platform for launch and the possibility of operating the system by one soldier and the possibility of using various warheads[20].

The successes of the Polish defense industry in the sphere of space technologies are undoubtedly worth noticing. As an example, it is worth mentioning HyperSat as a family of versatile microsatellite platforms developed by Creotech Instruments SA, which can be easily integrated with various payloads and launched into low Earth orbit. Two platform configurations are available, namely: Eagle – total satellite mass from 60 to 80 kg, optimized for Earth observation reconnaissance payloads with a resolution of approx. 1 m, but adaptable to many other payloads or Kestrel – total satellite mass from 15 to 25 kg, optimized for Earth observation reconnaissance payloads with a resolution of approx. 4 m, equipped with inter-satellite laser links, capable of operating as swarms in close proximity formations[21].

Other examples of the successes of the domestic defence industry include the POPRAD Self-Propelled Surface-to-Air Missile System which is designed to detect, recognise and destroy air targets at close range and low altitudes, using short-range anti-aircraft missiles[22]; the PILICA anti-aircraft missile-artillery system, which is a very short-range air defence system (V-SHORAD)[23]; the BYSTRA 3D multifunctional and multi-task radar for SHORAD systems used to protect tactical combat units against air threats with versatile capabilities and various applications[24]; the P-18PL long-range radar station and the Passive Location System radar, which can see the enemy while remaining invisible to him; the BORSUK infantry fighting vehicle[25]; the ZSSW 30 remotely controlled turret[26]; and the GROT automatic rifle[27].

The above list is only an example, and the Polish defense industry

[20] *Ibid*, s. 19.
[21] *Ibid*, s. 22.
[22] *Ibid*, s. 46.
[23] *Ibid*, s. 52.
[24] *Ibid*, s. 47.
[25] *Ibid*, s. 60.
[26] *Ibid*, s. 75.
[27] *Ibid*, s. 178.

is able to provide the Armed Forces of the Republic of Poland with a number of modern products. Of course, this does not mean that it has the full capabilities to meet all the needs of the Polish army because it still shows gaps and deficits in many aspects. The way to overcome them may be the cooperation with foreign partners or a purchase of a given technology.

V. Main problems of the Polish defense industry

Despite the undoubted successes of the Polish defence industry, it still struggles with unresolved problems that negatively affect the competitiveness of the industry. These include, first and foremost: fragmented and unstable supply chains, lack of multi-year and large-scale orders, lack of financial resources for generational replacement of equipment, weapons and ammunition, lack of centralised orders at the EU level carried out by the European industry, low absorbtion of new technologies, lack of a developed industrial base, poor cooperation between industry and the R&D sector, orders do not cover comprehensive modules but only individual components which makes it difficult for defense companies to optimise production and ensure an appropriate product life cycle.

The authors of the Polish Arms Industry 2024 Report draw attention to similar problems, according to whom the basic shortcoming is the too small production capacity of the domestic defense industry and the unknown scale of technology transfer from South Korea to Poland. In their opinion, "The huge purchases of arms in Korea were to be accompanied by a wide stream of advanced technical and technological solutions, which would raise the domestic defense industry to a new level of modernity. So far, we have managed to obtain rather little for our arms industry – simple service and servicing of the ordered equipment".[28] This situation should be changed as soon as possible in order to gain new production capacities and technological independence.

F. Seredyński, co-author of the Sobieski Institute Report 2024 entitled How to arm Poland? Deterrence, army, industry, state immunity, takes a similar position. In his opinion, "In many cases, Poland has acquired equipment abroad on a large scale, but at the

[28] *Raport: Polska branża zbrojeniowa 2024 | MM Magazyn Przemysłowy date of access 13.02.2025.*

same time the possibility of its own servicing and repairs at the industrial level of the acquired weapons was not ensured, not to mention the possibility of replenishing losses with new weapons of domestic production. (...) However, it is becoming crucial to develop the ability of the Polish arms industry to produce military equipment, ammunition and to independently service and repair equipment at an industrial level. No army in the world independently services equipment at all repair levels, and in war conditions the possibility of replenishing weapons and conducting service abroad is also limited. It then becomes necessary to militarize our own industrial plants, previously prepared to conduct operations in war conditions, and using such a fully available base – to restore the combat capabilities of the equipment and replenish losses. In order to produce new military equipment, the possibilities of locating it in Polish plants should be maximized. This will benefit the Polish economy, raise the level of technical culture and ensure access to production capacity in the event of an armed conflict".[29]

Therefore, the thesis that "Every contract for the purchase of foreign equipment should require the supplier to guarantee having a Polish partner who, after the delivery, will take over its servicing. In the case of large purchases, this should also include the requirement to transfer the production of basic spare parts to Poland. Another guaranteed activity should be the transfer of repair and servicing technology to Poland and the transfer of knowledge enabling, in the case of the purchase of new, not used, equipment, its mid-life modernization to be carried out in Poland".[30]

P. Soroka and PL Wilczyński have a similar view on this issue, according to whom "In accordance with the principles of geoeconomics, even if countries buy foreign armaments and military equipment, they ensure the right to repair and service it, and preferably also modernize it on their own territory which requires gaining access to the technology of its production. On average, about 30 years pass from the time of acquiring the product to the time of the end of its use. During this period of use, the product is subject to repair and modernization works. Ensuring the buyer's independence

[29] *23.10.2024-Jak-uzbroic-Polske.pdf s. 42. date of access 14.02.2025.*

[30] *Co dalej z polskim przemysłem obronnym? [ANALIZA] | Defence24 date of access 15.02.2025.*

in repairing, servicing and modernizing the armaments purchased abroad should be the basic condition for concluding a contract with a foreign manufacturer".[31]

Another problem is the mismatch of legal regulations to the current needs of security system entities, which are to be met by, among others, the domestic defense industry. This issue is subjected to a detailed analysis by AS Jarubas, according to whom "Despite many legal acts and government documents, since the establishment of the Polish Armaments Group, the government and the Ministry of Defense have not led to the adoption of an act that would regulate issues related to the functioning of the arms sector in a systemic and uniform manner. The dispersion of regulations and often their ambiguity have undoubtedly had a negative impact on the functioning of the arms industry sector in the difficult time of the pandemic".[32] The issue of undertaking quick legislative work in the above-mentioned area seems necessary, in order to facilitate the functioning of arms companies and overcome this specific normative confusion.

The method of communication between the industry and the Ministry of Defence also raises concerns, as armaments companies have doubts as to whether the Ministry of National Defence is really ready to buy large quantities of military equipment in Poland. On the other hand, the other side (the Ministry of National Defence) believes that the terms of supply proposed by domestic entrepreneurs are very often insufficiently attractive in terms of the quantity of armaments available in a short time, their price and tactical and technical parameters of the products. This situation results from the lack of a clear industrial policy concerning the defence industry, which would specify in what direction we want to develop this industry and how the state is ready to support this development.[33] "We should also strive to maximally allocate purchases of military

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[31] *P. Soroka, P.L Wilczyński, Potencjał polskiego przemysłu zbrojeniowego, „Przegląd Geopolityczny" 2018, Nr 23, s. 67.*

[32] *A.S. Jarubas, Zmiany w prawie dotyczącym przemysłu zbrojeniowego w polsce. Perspektywa postpandemiczna, „Przegląd Geopolityczny" 2021, Nr 38, s. 74.*

[33] *Polski przemysł obronny w pigułce | MM Magazyn Przemysłowy date of access 13.02.2025.*

equipment in the Polish defence industry, including private companies, eliminating their discrimination in the purchases of this technology".[34]

All this has a negative impact on the competitiveness of not only the domestic defence industry but also the competitiveness of the European industry.

VI. General assumptions of the Technical Modernization Plan of the Polish Armed Forces

There is no army in the world that could be said to be 100% modern. "Technical modernization is one of the key elements of the functioning of the armed forces of every country. Due to the fact that, when efficiently and properly carried out, it improves the capabilities, effectiveness and safety of soldiers and the armed forces as a whole, almost every country in the world with its own armed forces, constantly subject them to technical modernization".[35]

The ongoing technological progress means that the process of modernization of the armed forces is by its nature endless. It is no different in the case of the Polish Army, for which the Technical Modernization Plan of the Polish Armed Forces, hereinafter referred to as the PMT, has been implemented. This plan was approved on October 10, 2019 by the Minister of National Defense for the years 2021-2035, taking into account 2020. The legal basis for the Technical Modernization Plan for the years 2021-2035 is the Act of May 25, 2001 on the reconstruction and technical modernization and financing of the Armed Forces of the Republic of Poland. [36]The amount of planned expenditure is PLN 524 billion, i.e. approximately USD 133 billion, and in the context of the ongoing war in Ukraine, it is highly likely that it will increase further.

PMT is closely related to the Polish Armed Forces Development Program, which is a classified document, and therefore the Authors

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[34] *Microsoft Word - 2022.01.13 Raport Gospodarczego Gabinetu Cieni BCC - PRZEMYSŁ OBRONNY.docx date of access 13.02.2025.*

[35] *D. Jasiński. Modernizacja techniczna w Siłach Zbrojnych Rzeczypospolitej Polskiej i w Siłach Zbrojnych Federacji Rosyjskiej – wybrane zagadnienia, „De Securitate et Defensione. O Bezpieczeństwie i Obronności" 2018, nr 1 s. 165.*

[36] *Ustawa z dnia 25 maja 2001 roku o przebudowie i modernizacji technicznej oraz finansowaniu Sił Zbrojnych Rzeczypospolitej Polskiej, tekst jednolity Dz.U. z 2019 roku, poz. 1453, zwana dalej w skrócie umt.*

cannot present it to the Reader.

Referring directly to the PMT, it should be stated that it includes several programs, the implementation of which in the Polish army will allow it to gain new capabilities and raise it to a higher level of combat effectiveness. In this way, it will increase the security of not only Poland but also other NATO countries.

These programs include the following programs: PATRIOT system; HIMARS launchers; HOMAR-K launchers; ABRAMS M1A2 SEP v.3 tanks; ABRAMS M1A1 tanks; K2 tanks; BORSUK infantry fighting vehicle; F-35 aircraft; FA-50 aircraft; M-346 aircraft; Saab 340 AEW aircraft; JASSM-ER; K9 gun-howitzers; KRAB gun-howitzers; RAK mortars; Naval Missile Unit; Frigates from the MIECZNIK program; KORMORAN II class destroyers; ORP ŚLĄZAK patrol corvette; Carl Gustaf M4 grenade launchers; AW149 helicopters; APACHE helicopters; AW101 helicopters; Black Hawk helicopters; Rosomak ZSSW-30; ŻMIJA vehicles; PIORUN; BAYRAKTAR TB2 drones; GLADIUS drones; WIZJER drones; FLY EYE drones; ORLIK drones; Barbara aerostats; LMP-2017 mortars; VIS 100; EOD/IED robots; Tugboats; MSBS GROT.

"The Technical Modernization Plan of the Polish Armed Forces for 2021-2035 is very ambitious, and its implementation is to take the domestic army to a higher level of combat capabilities. It takes into account the ongoing technological progress, especially in the field of cybernetics and information technology, although the question remains whether it is sufficient. It includes new areas of armed struggle such as cyberspace and outer space".[37]

PMT is a lever that can elevate not only the Polish army, but also the Polish defense industry to a new level. If we also take into account the East Shield program, the Gear action, or the needs of the reactivated Civil Defense, the prospects for this branch of industry in Poland are optimistic.

VII. Offset, framework and implementation agreements

In the Polish media space, information about new agreements

[37] *K. Chochowski, Plan Modernizacji Technicznej Sił Zbrojnych Rzeczypospolitej Polskiej na lata 2021 – 2035 jako przejaw polityki publicznej państwa polskiego, [w:] Oblicza polityk publicznych, pod red. S. Falińskiego, D. Strus, Wydawnictwo UPH w Siedlcach, Siedlce 2022, s. 25.*

concluded with both domestic and foreign entities, the subject of which are new types of military equipment and technology, appears every now and then. This gives the impression that the Polish army is being flooded with a huge amount of various types of weapons. However, this is not the case, because in the media coverage, little attention is paid to the distinction between agreements. Offset agreements are one thing, and framework or implementation agreements are another.

Offset agreements "These are agreements between the State Treasury of the Republic of Poland and a foreign supplier. As a result, there is forced cooperation between domestic entities and a foreign supplier. According to the Offset Act, the offset agreement is to ensure the participation of foreign suppliers in the process of restructuring and development of the economy of our country, and in particular the arms sector".[38] Therefore, in the case of what is popularly referred to as offset, we are dealing with compensation agreements.

The legal definition of offset is provided by the legislator in art. 2 item 14 of the Act of 26 June 2014 on certain agreements concluded in connection with the implementation of orders of fundamental importance to state security (consolidated text Journal of Laws of 2017, item 2031). According to the above provision, offset means cooperation between the State Treasury and the offset recipient and a foreign supplier necessary to maintain or establish in the territory of the Republic of Poland the potential in the scope of production, service and maintenance and repair capabilities, as well as other capabilities necessary from the point of view of protecting the fundamental interests of state security, consisting in particular in the transfer of technology, know-how together with the transfer of copyrights or use of the work on the basis of a granted license in order to ensure the independence from the foreign supplier required by the State Treasury.

Offset transactions, as stated by K. Rawska, are a manifestation of state intervention in the economy and strengthening the capabilities

[38] *C. Banasiński, E. Piontek, Art. 119. W: Ustawa o ochronie konkurencji i konsumentów. Komentarz [online]. Wydawnictwo Prawnicze LexisNexis, 2019-04-10 04:17 [date of access: 2019-05-01 10:53]. URL: https://sip.lex.pl/#/commentary/587550288/347728.*

of the domestic industry.[39] A similar position is taken by W. Walczak, who believes that "(...) it must be recognized that offset can contribute to the development of economic entities in the defense industry, leading as a result to the enrichment of their production potential with new technologies".[40] The main advantage of offset agreements is therefore the possibility of transferring modern technologies. Poland, despite having a developed defense sector, often needs the latest technologies, which can only be available from foreign partners. Thanks to such cooperation, Polish companies can gain access to innovative solutions, which are key to the modernization of military equipment.

Framework agreements define the maximum foreseeable value of the subject of the order and its quantity. However, they do not give rise to a claim on the part of the contractor for the execution of the order. In simple terms, framework agreements are a form of a letter of intent in which both parties declare their willingness to cooperate in the execution of the subject of the agreement.

Implementation agreements are provisions binding on both parties that indicate the specific value and quantity of what is ordered, as well as the contract execution time and delivery schedule.

In the thicket of information regarding arms contracts for the Polish army, it is necessary to distinguish between different types of contracts in order to be able to cut through the information noise and draw accurate conclusions.

As an example, it is necessary to present several agreements concluded for the modernization of the Armed Forces of the Republic of Poland. On April 28, 2023, an executive agreement was signed for the delivery of 22 Rocket-Artillery Sets (ZRA) Pilica+. The value of the order is almost **three billion PLN** . Fabryka Broni "Łucznik" signed a contract for the delivery of an additional 70 thousand MSBS Grot A2 rifles for the amount of **PLN 826 million**. The next orders for this factory include the delivery of 250 Grot

[39] *K. Rawska, Pozyskiwanie nowych technologii oraz modernizacja uzbrojenia z wykorzystaniem offset transakcji wiązanych, „Współczesne Problemy Zarządzania" 2020, Volume 8, Number 1 (16), s. 63.*

[40] *W. Walczak, Umowy offsetowe jako szansa rozwoju spółek polskiego przemysłu obronnego, [w:] Międzynarodowa współpraca gospodarczo-obronna, pod red., P. Soroka, K. Wątorek, A. Zagórska, Warszawa 2017, s. 131.*

762N sniper rifles and an additional 88 thousand Grot rifles worth **PLN 1 billion. PLN** , as well as 28 thousand VIS 100 pistols worth **PLN 160 million**. The Maskpol company signed a contract with the Armament Agency for the delivery of several dozen thousand bulletproof vests, worth **PLN 490 million.** On December 19, 2023, the Armament Agency and the PGZ-NAREW Consortium signed an implementation contract for the delivery and servicing of 24 P-18PL (UW-10) long-range radar sets. The contract is to be implemented in the years 2023-2035, and its value is **over PLN 3.1 billion**. On December 22, 2023, the PGZ-Amunition Consortium and the Armament Agency concluded an implementation contract for the delivery of nearly 300 thousand pieces of 155 mm artillery ammunition implemented under the National Ammunition Reserve program. The value of the order is **nearly PLN 11 billion**, and its implementation will take place in 2024-2029.

An agreement was also signed between PIT-RADWAR and Wojskowe Zakłady Elektroniczne and the Norwegian concern Kongsberg Defence & Arerospace (KDA) for the production and delivery of two Naval Missile Units and the servicing and production of NSM missiles. In addition, PGZ companies signed agreements with the Armament Agency for the delivery of nearly 400 Light Reconnaissance Vehicles and two framework agreements for the delivery of Heavy Infantry Fighting Vehicles and a New Wheeled Armoured Personnel Carrier, as well as for the delivery of BAOBAB-K Scattered Mine Laying Vehicles and mines manufactured by the Bydgoszcz company Belma. It is also worth mentioning that the Armament Agency of the Ministry of National Defence signed an agreement with the RADMOR company (part of the WB GROUP) for the delivery of software-defined radio stations and accompanying equipment. The order includes devices intended for installation on mobile platforms. In turn, on September 5, 2023, the Armament Agency of the Ministry of National Defense signed a contract with GRUPA WB for the delivery of nearly 1,700 FlyEye unmanned aerial systems. The framework contract is to be completed by 2035.

These are just some of a number of new agreements, both framework and executive. There is also growing talk about the need to buy a squadron or two squadrons air superiority fighters,

indicating here the American F-15 and heavy transport helicopters CH-47 Chinook. In the case of conclusion of these agreements, the value will be counted in billions of zlotys.

VIII. Opportunities and Threats for the Defence Industry in Poland

The ambitious plans of the Polish authorities to modernize and expand the army and increase its combat capabilities necessarily require huge financial outlays. At this point, it is worth paying attention to the information provided by the Ministry of National Defense according to which, "in 2024, the Armaments Agency (AU) concluded 99 contracts (including 20 with PGZ SA), with a multi-year value of approx. PLN 145 billion (including PLN 32.5 billion with PGZ SA) and 19 annexes to increase the number of acquired military equipment. In addition, the Agency launched 10 orders under the "option right" and concluded 3 offset agreements. As of December 31, 2024, the Armaments Agency implemented a total of 467 contracts, the multi-year value of which amounted to approx. PLN 540 billion. 235 contracts were implemented with entities of the Polish defence sector – for a multi-year value of approximately PLN 198 billion (37%), including: with companies of the PGZ Capital Group – 135 contracts for the amount of approximately PLN 171 billion; with other domestic entities – 100 contracts for the amount of approximately PLN 27 billion. The value of all the above-mentioned multi-year contracts in 2024 amounted to approximately PLN 57 billion, including contracts implemented by domestic entities – approximately PLN 25 billion (44%), of which: by companies of the PGZ Capital Group – 135 contracts – for the amount of approximately PLN 19 billion; by other domestic entities – 100 contracts – for the amount of approximately PLN 6 billion. At the same time, the Inspectorate for Support of the Armed Forces, from the budget of the Ministry of National Defence, as part of the orders implemented, directed over PLN 2 billion to the Polish Armaments Group and almost PLN 1.3 billion to Polish arms factories that are not part of the Polish Armaments Group".[41]

Referring to the domestic capabilities of supporting the Polish

[41] *Ministerstwo Obrony Narodowej publikuje dane dotyczące środków kierowanych do krajowego przemysłu obronnego date of access 21.02.2025.*

defence industry, it should be noted that they are related to the Act of 7 October 1999 on supporting the restructuring of the industrial defence potential and technical modernisation of the Armed Forces of the Republic of Poland (Journal of Laws 2020.1663, i.e. of 2020.09.28)[42], the Act of 11 March 2022 on the defence of the Homeland (Journal of Laws 2022.2305, i.e. of 2022.11.14, hereinafter referred to as the[43] Armed Forces Support Fund), as well as the Fund for Support of the Armed Forces established pursuant to Art. 41 of this Act. This Fund was established in the Bank Gospodarstwa Krajowego, and its resources are allocated to the implementation of the objectives specified in the Armed Forces Development Programme[44].

In addition to the domestic funds mentioned earlier, it is also worth considering the possibility of obtaining external funds from the European Union (European **Defence Fund**, The European Defence Industry Programme**, the EU's ASAP** ammunition production support programme),[45] NATO (**NATO Innovation Fund**, NATO **Security Investment Programme)** or received under special programmes such as FMF Foreign Military Financing, under which, on 6 December 2024, Poland received a USD 4 billion loan for the rapid transformation of the Polish army.

When considering the financing of the defense industry in Poland, it is also necessary to mention the decisions to recapitalize specific companies in the defense industry. For example, **PGZ received PLN 400 million in funding** from the State Treasury for its investments in the plants in Pionki and Skarżysko Kamienna, and the total value of the investment will amount to PLN 466.7 million. For investments in **Huta Stalowa Wola,** the plant received **PLN 600 million in funding from the State Treasury**, and the total value of the investment will amount to almost PLN 665 million. In turn, for investments in **ZM Bumar, it will receive PLN 850 million** from

[42] *Dz.U.2020.1663 t.j. z dnia 2020.09.28*

[43] *Dz.U.2022.2305 t.j. z dnia 2022.11.14*

[44] *K. Chochowski, Ustawa o obronie Ojczyzny – nowa jakość bezpieczeństwa państwa?, „Roczniki Nauk Społecznych KUL" 2023, Tom 51, nr 4, s. 196.*

[45] *Szerzej na ten temat, patrz np.: P. Zamelek, Budowanie odporności sektora obronnego w perspektywie Komisji Europejskiej, „Wiedza Obronna" 2024, Vol. 286 No. 1.*

the State Treasury, which will constitute 100% of the investment value.

However, it would be worth supporting not only entities from PGZ but also those from outside it, especially those involved in the production of anti-drone systems and satellites, in order to develop domestic capabilities in the indicated scope. The technical solutions that Polish entrepreneurs have at their disposal do not differ from the latest ones used in the world. They therefore fully deserve support not only to fill gaps in the state security system, but also in the context of their potential export. What is more, over time they could gradually penetrate the civilian industry, enriching its possibilities to compete on the global market. It seems, therefore, that this support will bring profits for the national economy, also in the long term.

When analyzing the opportunities and challenges facing the Polish defense industry, it is necessary to first identify **the key factors** influencing its prospects. According to the authors, these include:

– **The country's defense policy**. Political decisions regarding the country's defense, such as the defense budget, defense strategies, and decisions regarding the purchase and modernization of military equipment, have a key impact on the prospects for the defense industry. Political stability and consistent support for the defense sector are conducive to its development.

– **The changing geopolitical situation**. Tensions in the international arena and increased security threats may lead to increased demand for modern defense equipment. The Polish defense industry may benefit from such changes if it is able to deliver high-quality and modern solutions.

– **Technological advances**. Technological developments, including innovations in weapons, communication systems, cybersecurity and robotics, are shaping the future of the defence industry. Poland can benefit from these changes by investing in research and development and promoting cooperation between the public and private sectors.

– **International cooperation**. Integration with allies and participation in international defense programs can create new opportunities for the Polish defense industry. International cooperation can enable access to advanced technologies and joint development and production of defense equipment.

– **Highly qualified staff**. Access to highly qualified technical and engineering staff is crucial for the development of the defense industry. Poland must invest in education and professional training to ensure an adequate number of specialists needed to conduct advanced projects in the defense sector.
– **Security of raw material supply**. The raw materials required for the production of defense equipment can sometimes be difficult to obtain or subject to price changes on the world market. Therefore, ensuring the stability and security of raw material supply is crucial to ensuring the continuity of production in the defense industry.
- **Harmonious cooperation between industry and the R&D sector**. This issue is of particular importance within the knowledge-based economy, to which the domestic economy aspires, among others. One must agree with the thesis that "Many inventions created in research institutes working for the military later passed into everyday use by citizens".[46] Innovations implemented in the Polish defense industry can, over time, penetrate the civilian sector, increasing its attractiveness and competitiveness on the global market. Establishing cooperation between science and the arms industry is therefore of fundamental importance for the development of modern technological solutions in the area of defense. It is a process that enables the transfer of knowledge and know-how between the academic environment, where new ideas and scientific research are generated, and the industrial sector, which has production capabilities and experience in implementing these ideas in practice.

After identification basic factors influencing the prospects of the Polish defence industry, it has become possible to indicate the threats and opportunities that the domestic defence industry currently has to face. **The threats** include:
– **Shortage of multi-year military equipment purchase plans**. The Polish arms industry suffers from a lack of coherent, long-term plans for the purchase of military equipment. Uncertainty related to frequent changes in purchasing plans hinders the stable functioning of companies and effective planning of investments in the

[46] *P.L. Wilczyński, Sektor zbrojeniowy jako czynnik rozwoju gospodarki opartej na wiedzy, „Studies of the Industrial Geography Commission of the Polish Geographical Society", 2013 Vol. 21, s. 154.*

development of production and infrastructure;

– **Lack of proper investment in the development of domestic manufacturers and repair shops**. Domestic arms companies often struggle with a lack of financial support and investment in modern technologies and production infrastructure. This lack of investment hampers innovation and limits the ability of Polish manufacturers to compete on the international market;

– **Excessive dependence on foreign arms companies**. Polish national defense is largely based on imported equipment and technologies, which leads to excessive dependence on foreign suppliers. The dominance of external companies on the Polish arms market is associated with the expenditure of significant financial resources abroad and limits the state's sovereignty in the field of defense;

– **The need to rapidly increase the defense potential of the military**. Dynamic changes in the geopolitical situation, including the conflict in Ukraine, impose an urgent need to increase the defense potential of the Polish Army. However, the lack of a developed domestic defense industry means that Poland is unable to effectively and quickly respond to these changing security challenges. Understanding these key issues allows us to see the urgent need to introduce real, coherent multi-year plans for the defense industry in Poland.

In turn, **the opportunities** for this industry sector can be seen primarily in:

- Creation of new military units. A decision was made to create two new large tactical units, which, despite having the word infantry division in their name, are in fact mechanized divisions. These are: the First Legion Infantry Division (abbreviated as 1 DPLeg) and the Eighth Home Army Infantry Division (abbreviated as 8 DPAK). The 1 DPLeg will consist of 12 military units, including 4 general military brigades, an artillery brigade, 4 regiments of military types and a command battalion, a reconnaissance battalion and a chemical battalion. The 8th DPAK will consist of 11 military units: two mechanized brigades, a motorized brigade, an artillery brigade, an armored brigade, a logistics regiment, an anti-tank regiment, an anti-aircraft regiment, a command battalion, a reconnaissance battalion and a chemical battalion. The process of building these units has

already begun.

- **Construction of training grounds and centers**. As an example, it is worth mentioning the construction of a complex of facilities worth several hundred million złoty, enabling the operation of equipment and conducting training classes, including using Abrams and K2 tanks, at the Biedrusko training ground, belonging to the Land Forces Training Center in Poznań. Another example is the construction of a new training and testing center, implemented as part of the East Shield program on the premises of the Land Forces Training Center in Orzysz.
- **An active and supportive role for public administration**. Building new factories, changing the production profile, securing supply chains – all this requires activity on the part of public administration and understanding the situation in which the countries of NATO's eastern flank find themselves.
- **Development of domestic space technologies**. The Polish space industry offers a wide range of goods and services, from software, including that which uses artificial intelligence, through specialist tools and devices, to the production of nanosatellites and satellites and their launch into space. According to data from the Polish Space Agency (POLSA), our space industry consists of over 300 state and private entities, of a diverse nature, i.e. both those of a business and research nature. It employs about 12 thousand highly qualified employees.
- **Implementation of Operation Gear**. Operation Gear assumes increased purchases of various types of individual equipment and withdrawal of obsolete equipment from use. Replacing equipment with new one is intended to increase soldiers' survivability on the battlefield, as well as increase their resistance to difficult weather conditions, ability to operate at night or fight in urban areas.
- **The launch of the East Shield program**. This program involves the construction of a number of fortifications, terrain obstacles and military infrastructure along Poland's eastern border. Its value is estimated at **PLN 10 billion**.
- **Reactivation of Civil Defense**. The Act on Population Protection and Civil Defense adopted by the Parliament creates a comprehensive system of population protection and civil defense in our country. It specifies the tasks of population protection in peace

and war; bodies and entities implementing population protection tasks and the principles of planning population protection and civil defense. Funds of no less than 0.3 percent of GDP will be allocated annually for financing tasks in the field of population protection and civil defense.

- **Smart factory and industry 4.0**. In short, this concept means combining and integrating advanced digital technologies with physical production, thanks to which the vision of the so-called smart factory becomes a reality. As a result of this approach, it is possible to optimize the operations of a production plant, expressed, among others, in improved productivity and efficiency, increased flexibility, improved customer service, or reduced costs. The observable drive to transform defense plants towards a smart factory is a good trend.
- **Stable and long-term financing**. For years, Poland has been fulfilling the financial obligations set by NATO to spend at least two percent of GDP on defense. For several years, we have been observing an upward trend in this regard, culminating in the planned defense expenditure for 2025 in the total amount of PLN 186.6 billion, which is to constitute 4.7% of Poland's GDP.
- **Cooperation with the R&D sector**. In Poland, there are a number of research and scientific centers thanks to which it is possible to quickly develop and implement innovations in the industry. A good example is the Łukasiewicz Research Network, which includes 22 Institutes, employing 4,500 scientists, and the research conducted within it covers the area of: smart and clean mobility, digital transformation, health, green and low-emission economy. It is worth paying attention to the work on rocket technology and the Polish suborbital rocket ILR-33 Amber 2K.

Conclusions

- The prospects for the Polish defense industry are good.
- The key to success will be the effective use of geopolitical and technological changes, appropriate government support and the ability to adapt and innovate. In this way, the Polish defense industry can become not only a tool for ensuring the country's security, but also a significant player in the international arena. It is worth reaching for not only domestic funds but also external ones (EU and NATO) and entering into cooperation with other entities.

- Strengthening cooperation with civilian industry, including the information and communications technology sector, can bring additional benefits in the form of technology transfer and increased innovation.
- It is advisable to conclude large-scale implementation contracts, especially with domestic entrepreneurs, in order to reduce the unit price of the product as much as possible.
- Purchases abroad should be made based on the location of the service in Poland and, if possible, the production of spare parts in the country.
- We should strive to achieve technological independence and, if this is not possible, to obtain the product source codes.

References:

1. *Chochowski K., Blaski i cienie ustawy offsetowej, [w:] Bezpieczeństwo a perspektywy przemian globalizującego się świata, pod red. A. Szylar, P. Maciaszczyka, Tarnobrzeg 2020.*
2. *Chochowski K., Plan Modernizacji Technicznej Sił Zbrojnych Rzeczypospolitej Polskiej na lata 2021 – 2035 jako przejaw polityki publicznej państwa polskiego, [w:] Oblicza polityk publicznych, pod red. S. Falińskiego, D. Strus, Siedlce 2022.*
3. *Chochowski K., Ustawa o obronie Ojczyzny – nowa jakość bezpieczeństwa państwa?, „Roczniki Nauk Społecznych KUL" 2023, Tom 51, nr 4.*
4. *Jarubas A.S., Zmiany w prawie dotyczącym przemysłu zbrojeniowego w polsce. Perspektywa postpandemiczna, „Przegląd Geopolityczny" 2021, Nr 38.*
5. *Jasiński D.. Modernizacja techniczna w Siłach Zbrojnych Rzeczypospolitej Polskiej i w Siłach Zbrojnych Federacji Rosyjskiej – wybrane zagadnienia, „De Securitate et Defensione. O Bezpieczeństwie i Obronności" 2018, nr 1.*
6. *Lewandowski W., Fonrobert P., Polski przemysł obronny - ambicje i perspektywy, „Problemy Techniki i Uzbrojenia" 2021, Tom 158, Nr 3-4.*
7. *Pacek B., Konsolidacja przemysłowego potencjału obronnego w Polsce. Uwarunkowania, dylematy i szanse, „Zeszyty Naukowe AON" 2014, Nr 1 (94).*
8. *Piątkowski K., Polski przemysł zbrojeniowy na rozdrożu, „Polska w Europie" 2003, Nr 1.*
9. *Rawska K., Pozyskiwanie nowych technologii oraz modernizacja uzbrojenia z wykorzystaniem offset transakcji wiązanych, „Współczesne Problemy Zarządzania" 2020, Volume 8, Number 1 (16).*

10. *Rogala – Lewicki A., Integracja europejskiego przemysłu obronnego, „Przegląd Geopolityczny" 2017, Nr 19.*
11. *Skrzypczak W., Luzak P., Miejsce, rola i zadania polskiego przemysłu zbrojeniowego w systemie bezpieczeństwa państwa, „Przegląd Strategiczny" 2014, Nr 7.*
12. *Soroka P., Wilczyński P.L., Potencjał polskiego przemysłu zbrojeniowego, „Przegląd Geopolityczny" 2018, Nr 23.*
13. *Szlachta M., Ciupiński A., Od politycznej współpracy do gospodarczej konkurencji – przemysł obronny krajów Europy Środkowo-Wschodniej po upadku ZSRR, „Rocznik Instytutu Europy Środkowo-Wschodniej" 2021, Nr 19, Z. 2.*
14. *Walczak W., Umowy offsetowe jako szansa rozwoju spółek polskiego przemysłu obronnego, [w:] Międzynarodowa współpraca gospodarczo-obronna, pod red., P. Soroka, K. Wątorek, A. Zagórska, Warszawa 2017.*
15. *Wilczyński P.L., Sektor zbrojeniowy jako czynnik rozwoju gospodarki opartej na wiedzy, „Studies of the Industrial Geography Commission of the Polish Geographical Society", 2013 Vol. 21.*
16. *Zamelek P., Budowanie odporności sektora obronnego w perspektywie Komisji Europejskiej, „Wiedza Obronna" 2024, Vol. 286 No. 1.*
17. *Żebrowski A., Zagrożenia i bezpieczeństwo przemysłu zbrojeniowego... u progu XXI wieku (wybrane aspekty), [w:] Przemysł zbrojeniowy. Tendencje, perspektywy, uwarunkowania, innowacje, pod red. R. Kopeć, Kraków 2016.*
18. *23.10.2024-Jak-uzbroic-Polske.pdf*
19. *240617-def-exp-2024-en.pdf*
20. *Banasiński C., Piontek E., Art. 119. W: Ustawa o ochronie konkurencji i konsumentów. Komentarz [online]. Wydawnictwo Prawnicze LexisNexis, 2019-04-10 04:17 [dostęp: 2019-05-01 10:53]. Dostępny w Internecie: https://sip.lex.pl/#/commentary/587550288/347728.*
21. *Co dalej z polskim przemysłem obronnym? [ANALIZA] | Defence24*
22. *Defence Industry report_ PL.pdf*
23. *European Defence-Industrial Capability*
24. *Katalog_BBN_2024.indb*
25. *Microsoft Word - 2022.01.13 Raport Gospodarczego Gabinetu Cieni BCC - PRZEMYSŁ OBRONNY.docx*
26. *Ministerstwo Obrony Narodowej publikuje dane dotyczące środków kierowanych do krajowego przemysłu obronnego*
27. *Polski przemysł obronny w pigułce | MM Magazyn Przemysłowy*
28. *Raport: Polska branża zbrojeniowa 2024 | MM Magazyn Przemysłowy*
29. *The SIPRI Top 100 arms-producing and military services companies, 2023*