HOW TO TRANSITION AWAY FROM BEING AN IMPORTER OF WEAPONS AND BECOME AN EXPORTER OF SECURITY?

PROSPECTS FOR THE DEVELOPMENT OF THE POLISH DEFENSE INDUSTRY

REPORT
2025

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INTRODUCTION

Ladies and Gentlemen,

Poland is entering another year of increased tensions and risks in its international environment. This is reflected by the increase in defense and – more broadly - national security related expenditures. The technical modernization of the Polish Armed Forces is becoming one of key topics of the public debate, stirring the interest of both: the public opinion and media.

Fortunately, the necessity to boost defense spending is not being questioned. However, the questions about the effectiveness of this spending are being asked more and more often. Are public funds being allocated in an optimal way? To what extent do the Polish companies benefit from the increase in spending? How many jobs are being created in the country thanks to the new contracts? Can the defense sector become one of the drivers of the national economy?

Experts from the Eastern Flank Institute and the Sobieski Institute have approached these questions in a constructive and realistic manner. This report presents an analysis of the turbulent history of the Polish defense industry over the last three decades, selected foreign case studies, and recommendations on what needs to change for the national domestic defense base to develop further.

The Polish weapons industry must meet the national aspirations and the role our country plays today on NATO's Eastern Flank. The long-term goal is to create a strong industrial and technological base that will, on the one hand, meet the needs of the Polish Armed Forces and, on the other, generate innovation, compete on international markets, and participate in European projects on equal terms.

Achieving this objective will not be easy. It will require implementing actions that still seem ambitious in the Polish context: creating a cross-ministerial sectoral policy, developing a cross-party consensus on priorities, ensuring genuine equality between private and State-owned companies, increasing the attractiveness of the defense sector in the eyes of the private capital, and accepting a higher level of risk in the arms procurement system.

The current crisis should become a stimulus to increase the level of effort exerted by all communities—the political, the military, the business, and academia. Dismantling institutional barriers, mobilizing the resources of a growing economy, and making fair accounts of the needs of key stakeholders will allow us to build a modern, diversified, and competitive defense industry. This is not a choice - it is a prerequisite of the safety, security and future of our Homeland.

Michał Dworczyk
Chairman of the Program Council
of the Eastern Flank Institute

Leszek Skiba
President of the Sobieski Institute

Bartłomiej Michałowski
Member of the Management Board
of the Sobieski Institute

1. HOW TO TRANSLATE MILITARY SECURITY COSTS INTO ECONOMIC SUCCESS?

Leszek Skiba

1.1. INCREASE IN DEFENSE EXPENDITURE

Russia's invasion of Ukraine has radically changed the approach of many European countries to their own security. As a result, the importance of military security has increased significantly, and most countries have substantially increased their national defense spending. The assumption that just a few years ago was considered reasonable – i.e. the assumption that war in Europe was not a real threat and that it was possible to maintain low levels of defense spending – has been proven wrong.

Defense spending has increased significantly not only in Poland, but also in most European countries. In NATO, the threshold of allocating 2% of GDP to the defense was established in 2006. However, it was not until the summit in Wales in 2014 that the Member States committed to reaching this level within the next 10 years - i.e. by 2024. According to data for 2024, only 23 of the 32 NATO countries have reached the required threshold of 2% of their GDP. The average level of defense spending for NATO countries was 2.6% of GDP with Poland as the record holder (4.1% of GDP), ahead of Estonia and the United States (3.4% of GDP), Latvia (3.2% of GDP), and Greece (3.1% of GDP).

During the recent NATO summit in The Hague, Member Countries announced a new target - 5% of GDP -to be achieved by 2035. This target is not restricted to sheer military spending. It was agreed that 3.5% of GDP must be allocated to traditional defense spending, such as the purchase of weapons and the maintenance of armed forces, while the outstanding 1.5% of GDP can be allocated to safety and security in a broader sense. This includes, among other things, investments in infrastructure - roads, ports, bridges, airports – as well as military vehicles, critical infrastructure protection, and cybersecurity.

Raising the spending threshold to 5% of GDP reflects the new challenges and the changing nature of threats that NATO is facing. It accounts for the growing significance of cybersecurity, critical infrastructure protection, and countering hybrid threats that go beyond traditional military operations. As a result, the new strategy calls for a more comprehensive and multidimensional approach to security, which requires not only stronger armed forces, but also extensive infrastructure and capabilities to respond to a variety of threats. The implementation of this objective will be reviewed and possibly revised in 2029.

The military threat posed by Russia has led to a stable increase in defense spending for many NATO and European Union countries. NATO Secretary General, Mark Rutte, has emphasized that Russia poses "the most significant and immediate threat" to Euro-Atlantic security. Under these circumstances, the current model of economic, industrial, and fiscal policy requires a fundamental revision.

Defense spending has become an integral part of economic policy and is no longer seen as just a matter of security. This means that increased military spending should also be treated as an instrument supporting industrial development, innovation, and employment - especially in countries like Poland, who is not only increasing its defense budget but also striving to build its own production and export capabilities in the arms sector.

The key challenges go beyond financing this higher military spending and redefining fiscal rules (deficit and public debt limits), but they also lay in ensuring that the investments translate into sustainable economic growth and technological and industrial competitiveness. Military spending, when properly planned, can stimulate Research & Development, digitization, and production automation. Such was the case of the Cold War, when many civilian innovations were developed in the course of defense-related projects.

At the European Union level, there is a growing conviction that maintaining security requires strengthening the EU's industrial base. The rising demand for ammunition, artillery systems, air defense, and digital technologies is creating a push for the development of the production capacity in Europe. Current capabilities are far under par – the difficulty to meet the commitment of furnishing Ukraine with one million pieces of artillery ammunition per year being a very telling example and the Russian arms industry operating currently in a war economy mode.

1.2. FINDINGS OF THE EUROPEAN UNION SUMMIT IN THE HAGUE IN MARCH 2025

One of the key conclusions of the European Union summit in March 2025 was the decision to repeat the application of the emergency funds mechanism, this time earmarking the funds for the development of the European defense capabilities. This constitutes the response to two strategic challenges: US President Donald Trump's announcement of reduced support for Ukraine and concerns that a possible ceasefire in the Russian-Ukrainian war would only lead to a rapid rebuilding of Russia's military capabilities.

The EU leaders' declaration clearly shows that Europe must shoulder greater responsibility not only for its own security, but also for the security of Ukraine. In practice, this means gradually lightening the load carried by the United States while meeting its expectations for Europe to become a more independent pillar of NATO and the global security system.

One of the most important decisions taken at the March summit was the decision to replicate the Next Generation EU mechanism and use it to finance the European Defense Industrial Program (EDIP). Thus, the logic of EU solidarity and joint debt mechanisms, used during the COVID-19 pandemic and the energy crisis, has also been applied to the security and defense sector.

At the same time, as part of preparations for the new budgetary perspective for 2028–2034, the President of the European Commission announced an increase in expenditures to support the defense sector. For the first time ever, the EU budget will systemically consider military capabilities not as a side issue of the policy, but as an essential component of the EU's industrial and security strategy. The formal inclusion of defense in long-term financial planning means that the arms industry will become one of the Community's priority sectors.

1.3. ECONOMIC RISKS RELATED TO THE PROXIMITY OF A POTENTIAL FRONT

Russia's war against Ukraine has exerted an extremely strong impact on the economies of Central and Eastern European countries. Questions, that were thought to belong to the Cold War era, have made their comeback to the center of the public and economic debate: political stability of the region, military security, and the risk of conflict escalation in the immediate vicinity of foreign investments. The fears of investors - which in the 1980s were related to the countries closest to the potential front line between the East and the West - are now returning and shaping economic decisions and the investment climate.

However, history shows that the proximity of a military threat does not necessarily have to mean economic stagnation. Despite being a NATO frontline state and a potential target for a rapid Warsaw Pact offensive, the economy of the post-war West Germany developed faster than economies of many of its neighbors is a good illustration of this. What is more, in West Germany's case high defense spending, amounting to around 3% of GDP since the 1970s and allocated, among other things, to maintaining an army of nearly half a million soldiers, did not prevent the country from pursuing a responsible fiscal policy and maintaining a low budget deficit.

Contemporary examples of economies that continue to function under military threat - such as South Korea and Israel - also show that high security spending do not necessarily hinder development. On the contrary, systematic investment in defense can support technological advancement, employment growth, and the building of a competitive arms industry, which over time also becomes a source of export revenue.

The debate on the role of the defense industry in industrial policy has become particularly intense in recent years. If that is the case, it is not only because of the war in Ukraine, which has exposed global shortages of ammunition and military equipment. It is also due to evident examples in various parts of the world that there can exist a synergy between the defense sector and the economy. In the United States, the debate has been going on for years, with experts often emphasizing that military spending is in fact the most consistently implemented industrial policy in the US, capable of combining national security with maintaining technological superiority and economic competitiveness.

Attempts by the Polish defense companies to obtain significant EU funding have not been particularly successful so far. The main barriers are: limited production capacity and insufficient ability to build long-term cooperation with partners from other EU member states. As a result, strong and well-integrated corporations from Western Europe have a much better chance of competing for European funds than Polish entities.

In order to ensure competitiveness and develop the capabilities of the Polish defense industry, it is necessary to provide it with a stable financial foundation at the national level. Only regular and predictable funding from the State can contribute to the creation of a base enabling companies to expand their production capacity, invest in innovation, and establish their position as partners in European value chains. Only then, when the domestic industry will have achieved appropriate scale and developed necessary competencies, will it be possible for its representatives to compete more effectively for EU funds under programs supporting defense development, such as EDIP or European Defense Fund initiatives.

A realistic approach to the sequence of necessary actions is crucial: without permanent, systemic cooperation between the State and the Polish defense industry, cooperation centered around the national budgetary funding, success at the European level will remain limited. Only after strengthening the national industrial base will the Polish companies be able to effectively access the EU funds and also play a real role in shaping the European defense policy.

In the following sections, we will present specific recommendations on how to achieve this goal.

1.4. HOW MUCH DO WE SPEND ON DEFENSE AND HOW DOES THIS SPENDING AFFECT GDP?

Poland's national defense spending is currently among the highest in NATO, exceeding 4% of GDP. In 2024 it amounted to 4.1% of GDP, and the 2025 budget provides for a further increase up to 4.7% of GDP.

The following are the most important categories of expenditure:

- equipment purchases as well as research and development (R&D) expenditure – in 2025, these are expected to amount to 2.4% of GDP, or over PLN 90 billion;
- personnel expenses – mainly salaries for professional soldiers and pensions for former uniformed service members amounting to a total of approx. 1.2% of GDP (almost PLN 50 billion);
- military infrastructure – approx. 0.3% of GDP (PLN 10 billion);
- other expenditures – with maintenance and servicing of equipment as the main item – 0.7% of GDP (approx. PLN 30 billion).

However, the structure of Polish defense spending poses serious challenges. The very high share of personnel costs, when compared to our allied countries, is a cause for concern. Until 2023, when Poland spent about 2% of GDP on its military, roughly half of that budget, or about 1% of GDP, was allocated to salaries and pensions. Deloitte forecasts show that by 2035, these expenditures will increase to 1.7% of GDP, which means that in the mid-2030s, they will consume as much as 45% of Poland's entire defense budget.

For comparison:

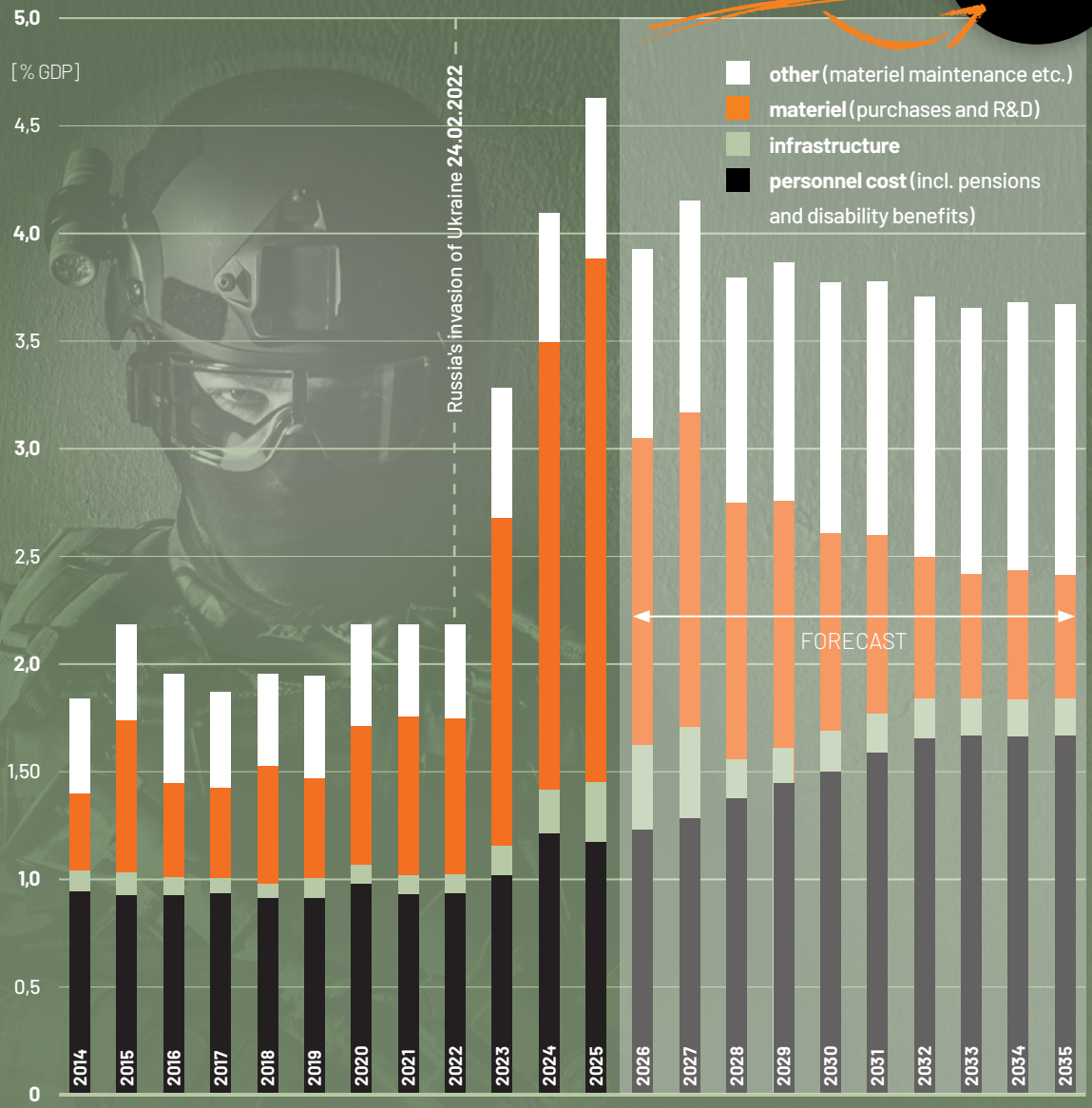
- in France, personnel expenses account for approximately 39% of the defense budget;
- in the United States, it is approximately 22%, and even when social programs and benefits for military families are included, they will amount to a maximum of 36% in 2025.

It seems that Poland is drifting toward an excessively costly defense spending structure, in which the predominance of personnel costs may limit flexibility and the ability to continue investing in the technological modernization of the armed forces. Therefore, one of the key challenges for the defense policy in the coming years will be to maintain an appropriate balance between personnel costs and investments in materiel and innovation.

MAIN CATEGORIES OF MILITARY SPENDING IN POLAND

As of today, Polish national defense spending is one of the highest in the whole of NATO, going above 4% of the country's GDP (…), while the budget for 2025 sees its subsequent rise to

4.7% of the GDP



Structure of the Polish military spending poses serious challenges (…). **The high share of personnel costs is especially worrying.** Until 2023, when Poland's military spending oscillated around 2% of GDP, 1% of GDP was spent on military wages and pensions only.

The forecast by Deloitte predicts that this category of the spending will rise up to 1.7% of GDP, which means that in mid-2030's personnel costs will eat up to 45% of the whole Polish national defense budget.

SOURCE: REPORT BY DELOITTE "INWESTYCJE OBRONNE POLSKI" / „NATIONAL DEFENCE INVESTMENT IN POLAND"

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INFOGRAFIKA: PIOTR PERZYNA

Defense spending is primarily an attempt to avoid an extremely negative scenario – war - which has a catastrophic impact on the economy. Research by Maxim Chupilkin and Zsóka Kóczán of the European Bank for Reconstruction and Development (EBRD)[1] shows that in the case of armed conflicts, at least half the countries take up to around 23 years to return to the path of GDP per capita growth that would have been possible had the war not occurred.

An analysis of historical cases shows that war means more than just a sharp decline in GDP growth, but also:

- a significant decline in investment as a result of an increase in uncertainty;
- capital escaping abroad;
- and, as a consequence, a reduction in domestic savings and resources to finance development.

The example of Ukraine is particularly telling. After the outbreak of war in 2014, the inflow of foreign direct investment (FDI) fell sharply – from an average of 4.7% of GDP between 2003 and 2013 to just 0.6% of GDP in 2014, with foreign capital actually flowing out of the country in 2015.

Wars also destabilize public finances. According to an EBRD report, within the first year that follows the start of hostilities, budget deficit increases by an average of 5 p.p. of GDP, which results in an increase in public debt by nearly 50 p.p. of GDP within two years. It is worth noting that these are average values. In the case of Ukraine, this phenomenon was even more dramatic: in 2022, after Russia's full-scale aggression, Ukraine's GDP fell by almost 30%, and the mounting costs of the war led to an increase in debt by approximately 50 p.p. of GDP in a very short period of time – a result fully comparable to the trend identified in the EBRD report.

The conclusions are clear: if we consider the cost of the alternative scenario - i.e., war itself – we must realize that military spending is not a luxury but a necessity. Investing in defense is not only a budgetary burden but it is, first and foremost, a kind of an insurance premium that shields the economy from a collapse whose scale and duration exceed by far any savings that may result from limiting security spending.

1.5. DEFENSE EXPENDITURE AND ECONOMIC DEVELOPMENT

Public spending on national defense can also be analyzed in the context of economic growth. The key question is: do high security expenditures support economic development or do they slow it down? The answer is not clear-cut, as it all depends on both: the selected sources of financing and the allocation of funds.

Many comparative studies indicate that increased defense spending is often associated with slower GDP growth[2]. This is because additional military spending often replaces development investments, e.g., in infrastructure or education. Moreover, large part of military spending, especially in the initial phase, involves imports of military equipment, which weaken the multiplier effect for the national economy. Thus, shifting part of the public expenditure towards defense may in the short term have a dampening effect on GDP growth.

1 *Transition Report 2022–23: Business unusual*, EBRD, 2022, https://www.ebrd.com/content/dam/ebrd_dxp/assets/pdfs/office-of-the-chief-economist/transition-report-archive/transition-report-2022/Transition-Report-2022-23.pdf.

2 L. Saeed, *The Impact of Military Expenditures on Economic Growth: A New Instrumental Variables Approach,* Defence and Peace Economics 2025, vol. 36, issue 1, https://doi.org/10.1080/10242694.2023.2259651.

At the same time, as Daniel Landau points out in *The Economic Impact of Military Expenditure*[3], the results depend on the strategic context. When analyzing changes in defense spending in the 1970s and 1980s for 71 countries, he noted that in the case of a real external threat, higher defense spending can have a strong positive impact on the economy, primarily thanks to the increased sense of security, political stability, and predictability for the investors. In many cases, this stability proves to be more valuable than short-term savings gained by limiting the military spending.

However, Landau emphasizes that the effect is nonlinear. Up to a certain level of defense spending, its impact can be stabilizing and pro-development. However, when spending exceeds the optimum threshold and begins to push out the investments in the human capital (education, research) or infrastructure, its impact on the economy becomes negative. The key question, therefore, lies not only with *how much* to spend on defense, but, above all, with *how* to spend – and whether these expenditures can be translated into industrial development, technological innovation, and investment security.

Another key issue is the impact of rising defense spending on technological development and innovation. The often-cited history of technological development after World War II shows how important US spending on defense and space research was for the development and implementation of breakthrough technologies. Many of these technologies were *dual-use* technologies: developed for military purposes but applied later in the civilian economy (e.g., GPS, the Internet, satellite technologies, and modern materials).

The United States remains the global leader in defense research and development (R&D) spending. Approximately 10% of the total US defense budget is allocated to innovation, which is one of the highest rates in the world. By comparison, this share is significantly lower in the European Union, with France performing best at around 5%.

Poland is at the beginning of this path: according to data for 2023, the share of R&D expenditure in the defense budget reached approximately 2.5%, but providing defense spending remains high, the potential for further growth is significant. However, it will be crucial to build appropriate institutions and mechanisms to allow for this conversion of the public funds into sustainable technological development and dual-use innovations.

The broader American context is worth mentioning here: military R&D expenditure accounts for approximately 40% of the total US public sector's spending on R&D overall. This number highlights defense's key role as an "innovation engine" that benefits the entire economic system.[4]

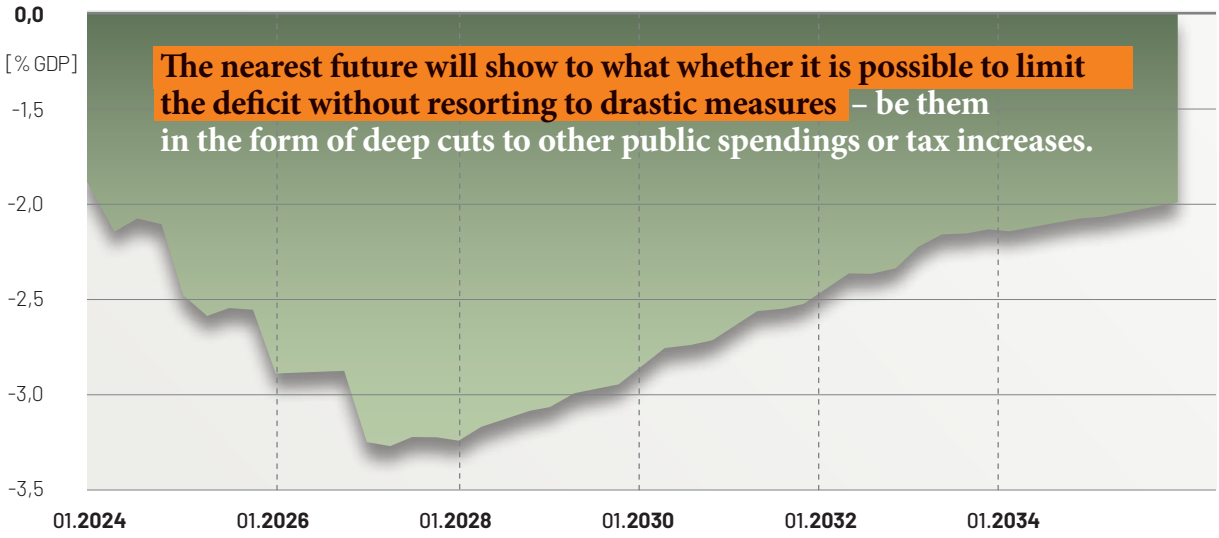
What could be the economic impact of an increase in domestic orders for the Polish defense industry? Estimates show that spending on domestic production in Poland can be maintained at the level of around 1% of GDP, or approximately PLN 50 billion per year. For clarity, in 2023 the revenues total of the Polish weapon producers amounted to slightly less than PLN 20 billion, which means that the current domestic market would have the opportunity to more than double the scale of the sector's operations.

Assuming a conservative operating margin of about 15% - this being the European average, domestic orders would generate PLN 7–8 billion in profits annually, which could be reinvested in expanding production capacity, developing new technologies, and increasing the competitiveness of the Polish companies.

3 D. Landau, *The Economic Impact of Military Expenditures,* Policy, Research working papers, no. WPS 1138, World Bank Group 1993, http://documents.worldbank.org/curated/en/979471468766166484.

4 M. Wroński, K. Bąkowski, J. Muchorowski, *Increased spending on national defense – an opportunity to improve the innovativeness of the Polish economy?*, Łukasiewicz 2025 Research Network.

MILITARY SPENDING'S IMPACT ON GG SECTOR'S DEFICIT



SOURCE: PKO BANK POLSKI

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Expansion into foreign markets could be an additional source of growth. Assuming exports equal to one-third of the domestic market, total profits could increase to as much as approximately PLN 10 billion per year. In the long term, this would translate into a capitalization of the Polish defense sector at the level of PLN 150-200 billion, which would put it on a par with major European players such as Italy's Leonardo and France's Thales.

It is therefore worth to looking at the defense policy not only from the security perspective, but to see it also as part of an industrial strategy. One of key objectives of such a strategy should be to build a strong and competitive defense sector capable of using financial instruments, generating profits, and reinvesting them in order to fuel development. A strong industrial base could not only secure domestic needs, but also increase production for export, which would result in higher tax revenues for the State, new jobs, and a boost to Poland's participation in the European value chains.

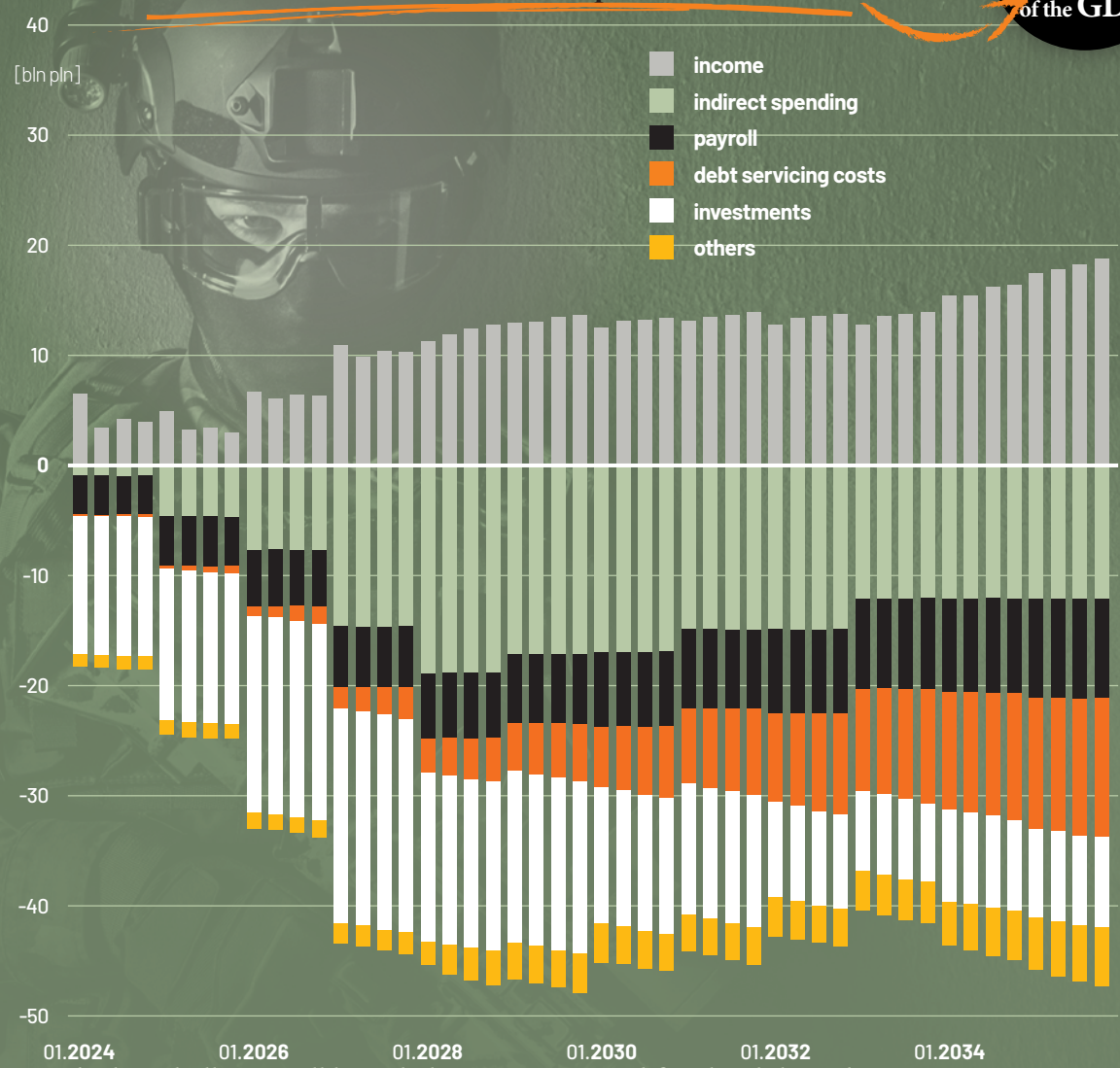
1.6. CAN WE HANDLE THE DEBT?

The dynamic increase in military spending after 2022 has clearly put weight on the public finance sector. The level of defense spending in planned for 2027 - i.e., 4.7% of GDP – shows that in the absence of an immediate threat of war, the budget deficit could be as much as 3 percentage points of GDP lower.

According to PKO BP experts, a gradual decline in defense spending relative to GDP can be expected from the 2030s onwards, which will ease pressure on the budget. However, until then, the question of scale and size of the additional debt necessary to finance extraordinary military expenditures remains open.

CHANGE TO GG BUDGET BROKEN INTO CONSTITUENT PARTS

How much more debt will need to be issued by Poland to finance its extraordinary military expenditure? The current estimates place the increase at about **16 p.p. of the GDP**



The key challenge will be to balance security and fiscal stability. The core question is:

how to structure the defense spending so that it not only boosts Poland's military capabilities but also provides a stimulus to the country's economy

– so that it supports innovation, modernization of the industry and establishment of the Polish technological capacity.

It is only then **that the additional debt will be an investment in the country's future** and not just a cost weakening its financial stability.

SOURCE: PKO BANK POLSKI

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INFOGRAFIKA: PIOTR PERZYNA

Current estimates predict an increase in public debt by approximately 16 percentage points of GDP, which would be a considerable challenge for both fiscal policy and the country's macroeconomic stability.

The coming years will show whether and to what extent it is possible to reduce the deficit without resorting to drastic measures, whether in the form of deep cuts to other public spending or tax increases. Under permanent threat of war, defense spending will remain a priority, and so the risk of debt increase seems inevitable.

The key challenge will be to strike a balance between security and fiscal stability. The fundamental question is: how do we structure the defense spending so that it not only strengthens the Polish military capabilities, but also stimulates the economy, i.e. supports innovation, industrial modernization, and the development of a domestic technology base. Only then will this additional debt be an investment in the country's future, rather than a mere cost undermining stability of the public finances.

2. INTERNATIONAL BENCHMARKS FOR THE DEFENSE SECTOR – BEST PRACTICES FROM SELECTED COUNTRIES: FRANCE, ISRAEL, SOUTH KOREA, NORWAY, TURKIYE, USA, AND THE BALTIC STATES

Aleksandra Lisicka-Firlej

2.1. INTRODUCTION

Gone are the days of the European strategic complacency. With, among others, its attacks on Georgia and Ukraine, Russia has clearly signaled its desire to change the global order and restore its former, Cold War era spheres of influence. At the same time, in line with their "offshore balancing" strategy, the USA are limiting their direct military presence in Europe, choosing to focus on the Pacific region and expecting Europe to strengthen its independent defense capabilities. As a result, Poland has significantly increased (and will continue to increase) its defense spending (the plan is to reach 5% of GDP in 2026). In view of these changes, it is worth considering allocation of some of these funds to support domestic companies and develop the Polish defense industry. Simultaneous strengthening of the defense capabilities and reforming the sector could bring a number of benefits: increased exports, new jobs, development of the advanced technologies, and building of strategic resilience in case of conflict and potential collapse of global supply chains[5].

We are facing a historic opportunity to build a strong branch of the economy in Poland. However, before one sits down to actually create something, it is always worth to learn from the experiences of those who have walked this path before us. Therefore, this report analyzes nine countries: France, Israel, South Korea, Norway, Turkiye, the United States, and the Baltic States (Lithuania, Latvia, and Estonia). Although they differ in terms of geographical location, history of their defense industries, and geopolitical conditions, each of them has focused on developing its defense industry and has been successful in this regard[6]. An analysis of the success stories of these countries' defense industries allows us to draw several key conclusions.

Firstly, all these countries are committed to technology development in the defense sector and, as a result, allocate relatively large funds to research and development. This approach allows for the production of modern military materiel and ensures technological superiority on the battlefield.

Secondly, almost all of the countries analyzed (perhaps with the exception of the Baltic States) have committed to a purposeful model of export expansion. In the face of global competition in the arms sector, the materiel on offer must be of high quality at competitive prices. A strong export orientation means that even if domestic orders decline, manufacturers have a stable portfolio of foreign orders, which translates into greater financial security for market participants. As a result, it is possible to maintain employment, increase investment in research and development, and reduce costs per unit due to economies of scale.

5 The example of Ukraine shows how important it is to be self-sufficient in terms of production capacity.

6 Measured by share in global arms exports and the number of companies from a given country in the Top 100 arms manufacturers.

Additionally, strong presence on the global markets allow for the establishment of international military alliances and joint ventures, as well as for technology transfers to a given country.

Thirdly, these countries have specialized institutions and government agencies responsible for: coordinating industrial programs, promoting their materiel abroad, export strategy, personnel training for the military industry, and conducting research and other projects aimed to boost innovation in the defense industry.

Fourthly, flexible public procurement system simplifies operation of companies in the defense sector. For example, in the United States, the OTA (Other Transaction Authority) mechanism allows a private company to fulfill a government contract within a few weeks. At the same time, companies can count on stable, long-term contracts under wider weapons programs, which not only enables effective production planning and lower equipment prices, but also long-term product development.

Fifthly, the experiences of countries such as Israel, South Korea, and the United States clearly demonstrate that investments in dual-use technologies are a key element of effective industrial and defense policy. They allow companies to draw profits from products with civilian applications, thereby gaining funds for the development of innovations in the field of defense. What is importantly, technological solutions are increasingly operating at the intersection of sectors: military technologies are being used in the civilian economy and vice versa, the best examples being unmanned aerial vehicles, quantum technologies, and modern energy storage systems.

Finally, sixthly, countries entering the weapons market late should consider specializing in narrow but promising technological niches. A good example is Norway, whose defense industry (represented mainly by Kongsberg) has focused on developing modular weapon systems that can be integrated with various platforms made by other manufacturers. This strategy - creating compatible components instead of competing in the production of entire systems - allows to build advantages in carefully selected market segments with high export potential.

Despite differences in political systems, geographical locations, and degrees of living under the threat of war, the countries analyzed in the report largely pursue convergent industrial policies and pursue similar goals. They owe their success to a relatively similar approach (focusing on innovation, investing in *dual-use*, creating a specialized agency/institution to coordinate the entire defense industry, exports, and skilled personnel).

Poland currently faces a unique - and perhaps final - opportunity to implement similar solutions. The scale of Polish defense spending creates potential for the development of additional industrial specialization. Existing threats should be viewed not only as a challenge, but also as a push to specialize in defense technologies and become an industrial powerhouse in the arms sector. Examples from other countries show that this goal can be achieved with the support of a coherent, consistent, and purposeful policy. The effects of such actions can be seen, for example, in Estonia, where government investments in the cybersecurity sector have yielded impressive results in a short period of time. Thus, even countries with smaller or comparable demographic and geographic potential, such as Israel, Estonia, and Norway, have managed to develop their defense industries to a greater extent than Poland.

What follows in the report are brief descriptions of the defense industries of selected countries and their key strengths, which may serve as an inspiration for the development of the domestic sector.

FRANCE

FINANCIAL, STRUCTURAL AND TRADE INDEXES OF THE DEFENSE SECTOR IN 2024

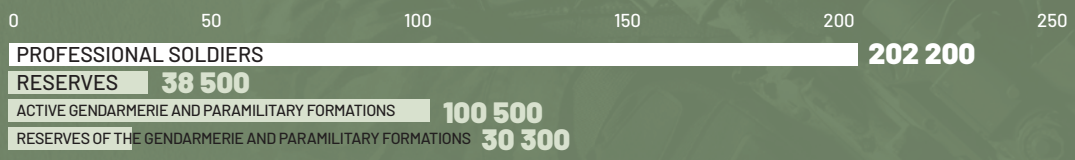
DEFENSE BUDGET
64
BLN USD

Investment spending in the defense budget, incl. R&D and arm purchases
21.6 bln USD (33.78%)

Operating expenses
42.4 bln USD
(66.22%)

The French military industry is among the most technologically advanced in the world. It is composed of approx. 4500 enterprises, (…) most of them small and medium-sized.

DEFENSE SPENDING AMOUNTS TO **2.02%** OF THE **GDP**



Share in the global arm **IMPORTS** (2020-2024)

0.5%

Main suppliers and their shares:
no data

Share in the global arm **EXPORTS** (2020-2024)

9.6% (2nd place)

Main buyers and their shares:
India (28%)
Qatar (9.7%)
Greece (8.3%)

THE LARGEST ENTERPRISES IN THE COUNTRY PRODUCING ARMS AND OFFERING MILITARY-LINKED SERVICES:

Thales (53%)	**Naval Group** (100%)	**Safran** (17%)	**Dassault Aviation Group** (63%)	**Airbus*** (18%)

(in the brackets: % of arm sales in relation to all income by the company – i.e. the degree to which the enterprise operates for the military sector and what share of its income is generated by products of other than military applications.)

SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database, SIPRI Military Arms Transfer Database, DefenseNews Top 100 Defense Companies (2024).

INSTYTUT SOBIESKIEGO | Instytut Wschodniej Flanki

INFOGRAFIKA: PIOTR PERZYNA

2.2. FRANCE

2.2.1. CHARACTERISTICS OF THE FRENCH DEFENSE INDUSTRY

The French defense industry is one of the most technologically advanced in the world. It consists of approximately 4,500 companies, 800 of which are of strategic importance. The structure of the sector is dominated by small and medium-sized enterprises (SMEs). The industry employs approximately 210,000 people, which is a significant contribution to the country's economy[7]. France is one of the largest manufacturers and exporters of weapons, with exports worth €18 billion in 2024. Key products include Rafale fighter jets (Dassault Aviation), Barracuda submarines (Naval Group), CAESAR howitzers (KNDS), MBDA missile systems, and advanced electronic, digital, and space solutions for defense purposes (Thales). The French defense industry is distinguished by a **high levels of innovation, strong support from the State institution responsible for coordinating the activities of the defense industry (DGA[8]), qualified personnel, and a pro-export approach. These excellent results can be indirectly attributed to France's policy of strategic autonomy[9], which - soundly embedded into the hierarchy of the State objectives - not only provides certainty to the public institutions, but also mobilizes private capital for the development of the sector[10].**

2.2.2. SUPPORTING INNOVATION IN THE DEFENSE INDUSTRY

France places great emphasis on research and development (R&D) in the defense sector, which is reflected in its system of tax breaks, support programs, and the existence of a specialized government agency coordinating work in the defense technology sector.

In 2018 in France, **the Agence Innovation Défense (AID)** was created. AID plays an important role in stimulating innovation in the defense sector. The agency focuses on several key areas[11]: **dual-use technologies** that have both military and civilian applications; **artificial intelligence** (an example is the project to develop decision support systems for military commanders); **cybersecurity**; and **autonomous systems** (land, air, and sea, such as underwater drones for mine detection).

AID also runs the **Red Team Défense** program[12], which aims to anticipate future threats and shape military strategy for the period of the next 20 to 50 years. This team, consisting of futurologists, technologists, and creative thinkers, develops scenario-based prediction models to explore new forms of conflict. Its conclusions and findings directly impact AID's decisions on investments in breakthrough technologies.

7 J.-M. Bezat, V. Malécot, *How the French arms industry is scaling up*, April 20, 2024, https://www.lemonde.fr/en/economy/article/2024/04/20/how-the-french-arms-industry-is-scaling-up_6668967_19.html.

8 Direction générale de l'armement, https://www.defense.gouv.fr/dga.

9 The policy consistently pursued by all French governments assumes, among other things, that France possesses know-how in all strategic areas of technology, especially nuclear, space, and aviation.

10 Examples of such initiatives: L. Thomas, M. Rosemain, *France to raise 5 bln euros to boost defense sector capital,* https://www.reuters.com/markets/ europe/france-raise-5-bln-euros-defence-sector-funding-finance-minister-says-2025-03-20/.; B. Howe, *France launches Defense Investors Club supporting SMEs, startups,* June 24, 2025, https://www.dsei.co.uk/news/france-launches-defence-investors-club-supporting-smes-startups.

11 Explained – *The French Agence Innovation Défense,* October 15, 2024, https://www.battlefieldbytes.com/p/explained-the-french-agence-innovation-d-fense.

12 *The Defense Network publishes its first two scenarios*, October 20, 2021, https://www.defense.gouv.fr/aid/actualites/red-team-defense-publie-ses-deux-premiers-scenarios.

Other initiatives aimed at supporting innovation in France include:

- the ASTRID program, which funds exploratory and innovative research projects in the defense industry;
- support for innovative projects carried out by Ministry of Defense personnel (e.g., Mission Innovation Participative)[13] ;
- the creation of regional defense innovation clusters focused on technological specializations of particular regions in France[14].

Others factors contributing to the high levels of technological advancement of the French defense industry are: clear innovation strategy developed by the French Ministry of Defense and international cooperation within the framework of projects such as FCAS (Future Combat Air System) and MGCS (Main Ground Combat System).

2.2.3. THE KEY ROLE OF THE DGA AS INSTITUTION AND THE QUALIFIED PERSONNEL IN THE DEFENSE SECTOR

The Délégation Générale de l'Armement (DGA) is the institution responsible for coordinating and managing processes related to the development of the defense industry. It acts as the central decision-making body for the procurement, production, and export of military equipment. This centralization allows for maintaining a consistent and strategic approach to the development of the defense industry.

The DGA integrates the product life-cycle: from its conceptual phase to the point of withdrawal from use. The DGA supports investments in innovative solutions, develops export strategies for defense sector products, and conducts marketing activities for these products. This institution coordinates complex defense production processes (e.g., Rafale fighter jets, Leclerc tanks, Barracuda ships).

Highly qualified personnel that encompasses both: industry newcomers and experienced employees of the sector, plays an important role in the achievements of the French defense industry. France has a long tradition of selecting its elites from the Grandes Écoles. In the case of the French defense companies, staff largely come from universities such as École Polytechnique, CentraleSupélec, and Mines Paris. These top French technical universities also display high levels of community integration among their students and alumni, which facilitates know-how and experience transfers as well as swift identification and recruitment of the best talent. The DGA employs highly qualified engineers and promotes a system of rotation between public administration and private sector, which boosts the transfer of knowledge and skills. In addition, France draws on the experience of retired defense industry employees to create a defense industry talent pool. The DGA has signed agreements with various military materiel manufacturers and built a program that aims to ensure that retiring industry personnel can pass on their skills to new employees and prevent a potential shortage of skilled labor should the country find itself at war.

13 Since 1988, the European Defense Agency ( ) has supported over 1,400 innovative projects, source: J.-P. Devaux, G. Schnitzler, *Defense innovation: new models and procurement implications. The French case*, ARES – The Armament Industry European Research Group, Policy paper no. 63, September 2020, https://www.iris-france.org/wp-content/uploads/2020/09/63-Policy-Paper-Def-Innov-France-September-2020.pdf.

14 J.-P. Devaux, G. Schnitzler, *Defense innovation...*

2.2.4. EXPORT-ORIENTED APPROACH AND PRODUCTION INDEPENDENCE

The export of arms and military equipment is an important part of the French government's strategy, and France is one of the world's largest arms exporters. In 2024, value of the French export contracts in the defense sector amounted to €18 billion. The main export goods were Rafale fighter jets, submarines, and CAESAR self-propelled howitzers[15].

France actively promotes the export of its defense products, with the DGA playing a key role in these activities. Export strategy covers large corporations as well as small and medium-sized enterprises (SMEs). Its fundamental premise is to combine advanced technologies, competitive prices with political and diplomatic support.

2.2.5. MOBILIZATION OF THE PRIVATE CAPITAL

In France, private financing of the defense sector is relatively well developed, with domestic asset management entities —managing both active and passive funds — playing a significant role in this process. Some compliant funds that meet the requirements of Article 8 and, in some cases, even the requirements of Article 9 of the European Parliament and Council Regulation on sustainability-related disclosures in the financial services sector (SFDR, Sustainable Finance Disclosure Regulation), allocate funds to large European defense companies such as Airbus, Safran, and Thales. One example is PhiTrust Active Investors France, with a significant part of its portfolio being composed of investments in the defense sector.

This trend is supported by interpretations of the European Commission[16] which, under certain conditions, allows certain activities by arms producers be treated as consistent with sustainable development goals. This is a clear regulatory signal, alleviating earlier investor concerns about ESG and reputational risks, which in turn contributes to increased private capital flows to the defense sector.

2.2.6. SUMMARY

The development of the French defense industry has been based on innovation, State support, strong role of the DGA, cooperation between large companies and SMEs, and an effective export strategy. This model can serve as inspiration for other countries, including Poland, in terms of centralized management, innovation support, public-private cooperation, and SME development.

15 *French defense exports surge to EUR 18 billion in 2024, driven by submarine, fighter jet, and artillery sales*, January 11, 2025, https://defence-industry.eu/ french-defence-exports-surge-to-eur-18-billion-in-2024-driven-by-submarine-fighter-jet-and-artillery-sales/; SIPRI *Arms Transfers Database.*

16 "The Commission recognizes the defense industry as a crucial contributor to the resilience and security of the Union, and therefore to peace and social sustainability." Commission notice on the application of the sustainable finance framework and the Corporate Sustainability Due Diligence Directive to the defense sector, Brussels, C(2025) 3800/3, https://defence-industry-space.ec.europa.eu/document/download/ac79ebc7-d2f1-4e7a-a79c-71a06a5fdbf8_en?filename=notice-application-sustainable-finance-framework-and-corporate-sustainability.pdf.

CONCLUSIONS FOR POLAND

Based on an analysis of the French model of defense industry development, the following recommendations can be formulated for the Polish defense sector:

1. **Centralized management and coordination**
   Establishment/transformation of an existing central institution (e.g., Agencja Uzbrojenia Agency) to follow the model of the French DGA and coordinate the entire process of weaons development, production and exports.

2. **Support for innovation in the defense sector**
   Introduction a comprehensive R&D support system, including tax breaks for research and development, an investment fund that would invest in the latest defense technologies on behalf of the Ministry of National Defense, and the creation of a Defense Innovation Agency, modeled on the French Agence Innovation Défense (AID), which would focus on key technological areas in the defense sector.

3. **Export strategy**
   Developing a comprehensive export strategy for the Polish defense industry, based on active promotion of Polish defense products on the international markets and the creation of specialized institutions supporting export activities.

4. **Support for the local strategic arms supply chain**
   In France, the nuclear weapons program and the strategy of full, exclusive state control over all decisions regarding its use play a key role. This requires maintaining national technological autonomy, which translates into the need to produce all nuclear weapons components exclusively in France. As a result, the entire industry is obliged to support the local supply chain and ensure independence in key production capabilities.

5. **Private financing**
   Poland urgently needs to adopt an approach similar to France, actively engaging asset management entities in financing the domestic defense industry by creating a transparent and predictable regulatory framework in line with the guidelines of the EU Sustainable Finance Disclosure Regulation (SFDR). This is not merely an option, but a strategic imperative aiming to diversify funding sources, increase industrial resilience and adapt to the European Union's evolving defense and financial policies.

ISRAEL

FINANCIAL, STRUCTURAL AND TRADE INDEXES OF THE DEFENSE SECTOR IN 2024

DEFENSE BUDGET
33.7
BLN USD

Investment spending in the defense budget, incl. R&D and arm purchases
no data

Operating expenses
no data

The following are the major factors defining Israel's success: **qualified human resources, enormous investments in R&D (...), international cooperation, flexible structure of the industrial sector, export-friendly approach, interesting incentivizing offers for market participants**, long-term procurement system providing stability to arm manufacturers.

DEFENSE SPENDING AMOUNTS TO **6.39%** OF THE **GDP**

Share in the global arm **IMPORTS** (2020-2024)

(15th place) **1.9%**

Main suppliers and their shares:
USA (66%)
Germany (33%)
Italy (1%)

Share in the global arm **EXPORTS** (2020-2024)

3.1% (8th place)

Main buyers and their shares:
India (34%)
USA (13%)
Philippines (8.1%)

THE LARGEST ENTERPRISES IN THE COUNTRY PRODUCING ARMS AND OFFERING MILITARY-LINKED SERVICES:

Elbit Systems (92%)	**Israel Aerospace Industries Ltd.** (84%)	**Rafael Advanced Defense Systems Ltd.** (100%)

(in the brackets: % of arm sales in relation to all income by the company – i.e. the degree to which the enterprise operates for the military sector and what share of its income is generated by products of other than military applications.)

SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database, SIPRI Military Arms Transfer Database, DefenseNews Top 100 Defense Companies (2024).

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2.3. ISRAEL

2.3.1. CHARACTERISTICS OF THE ISRAELI DEFENSE INDUSTRY SECTOR

Israel is an example of a country that has achieved success in the field of national security despite its lack of natural resources, hostile environment, and small size. Israel has built a defense sector that is highly competitive and active on the international stage. It is also innovative, a real powerhouse when it comes to defense technologies, and holds a strong position in the export market. However, it should be noted that Israel, like no other country in the world[17], has enjoyed enormous financial support from the United States since its inception, which has also contributed to the development of its defense industry.

Since the 1990s, the Israeli defense industry has undergone an innovation and exports driven transformation to achieve the high levels of technological advancement it currently displays. Key elements of this phase of development were centered around research and development (R&D), and introduction of innovative technological solutions, such as the Iron Dome air defense system and advanced unmanned aerial vehicles (UAVs).

The key factors behind Israel's success include, above all, availability of highly skilled **human capital**, huge **investment in research and development** – the highest in the world per capita, **international cooperation**, **a** flexible **industrial structure, a pro-export approach, incentives for companies in the defense industry, and a system of long-term contracts** that provides stability to arm producers.

2.3.2. HUMAN CAPITAL

The Israel Defense Forces (**IDF**) play a vital role in training the personnel and developing a pool of skilled engineers and technicians for the defense industry. Close ties between the military and the industry facilitate swift development and implementation of new technologies. Military service in the IDF is seen as a key stage for the formation of future entrepreneurs and industry leaders - the IDF is referred to as the "University of the Israeli Army" because it also shapes the culture of innovation and entrepreneurship.

During their military service, young Israelis acquire valuable technical skills and build extensive networks of contacts, which they later put to use in civilian life. Many Israeli start-ups are based on technologies originally developed for the military. Former soldiers often commercialize solutions they worked on during their service, and thanks to their detailed knowledge of the military environment, they can test and implement new products more quickly. Experienced military personnel do not waste their experience and potential - upon completion of the military service, they are actively encouraged to create innovative solutions that can support the army and benefit the State.

Elite IDF units, such as Unit 8200 and Talpiot, play a crucial role in assuring the high quality training provided to the personnel. Unit 8200 specializes in electronic intelligence and cybersecurity, and is considered a real "forge of talents" for the Israeli technology industry as multiple founders of start-ups and NASDAQ-listed companies were its members. Talpiot, on the other hand, is an elite IDF training unit established in 1979. Its objective is to provide for young Israelis who are exceptionally talented in the fields of science and technology with the view to harness their potential to create and develop innovative defense solutions[18].

17 *How does US foreign aid work and where does it go?*, August 1, 2024, https://usafacts.org/articles/which-countries-receive-the-most-aid-from-the-us/.

18 M. Broude, S. Deger, S. Sen, *Defense, innovation, and development: the case of Israel*, Journal of Innovation, Economics, and Management 2013/2, no. 12, pp. 37–57, https://shs.cairn.info/revue-journal-of-innovation-economics-2013-2-page-37?lang=en.

2.3.3. INVESTMENTS INTO RESEARCH AND DEVELOPMENT (R&D)

Israel is the world leader in research and development spending (in 2022, 6.1% of GDP was spent on R&D), which translates into a direct impact on innovation in the defense sector[19].

The Israeli Ministry of Defense actively supports start-ups, especially those developing dual-use technologies. The "Innofense" program, created in 2019, helps with the financing and connects start-ups with investors[20] .

Israel's main achievements in the field of innovative solutions for the defense industry include: some of the world's most advanced and airtight air defense systems (Iron Dome, David's Sling, Arrow2/3), anti-drone technologies, and laser systems (Iron Beam – complementing Iron Dome). In addition, in December 2024, a new unit for artificial intelligence and autonomy was established in Israel under its Ministry of Defense, with the aim of achieving global leadership in military artificial intelligence and autonomy.

2.3.4. INTERNATIONAL COOPERATION

Close relations with the US, including participation in the Foreign Military Financing program, provide Israeli defense sector with access to advanced technologies and stable financing. This relationship benefits both sides - Israeli companies support the development of the American defense sector, while Israel gets access to the most advanced solutions and tools. Defense cooperation between Israel and the United States is extensive and covers many areas, including joint research and development projects, technology and know-how transfer, and industrial partnerships, such as *the joint venture* between Rafael and RTX. Such cooperation not only strengthens Israel's security, but also contributes greatly to the dynamic development of its defense industry.

2.3.5. FLEXIBLE INDUSTRIAL STRUCTURE

The Israeli defense industry is based on both: large State-owned companies (e.g., Rafael) and smaller, dynamically developing private enterprises. This hybrid structure allows for quick responses to changing market needs and effective implementation of innovations. Although the sector is largely controlled by the State, it also characterized by features typical of the private sector, such as strong marketing skills and high operational efficiency.

The Israeli government plays an active role in shaping public procurement policy, often directing investments to areas in need of development support. The promotional and export capabilities of Israeli industry are supported by SIBAT[21] and a dense network of military attachés placed around the world. Technological and production development is the responsibility of, among others, the Directorate of Research, Development, Weapons and Technological Infrastructure (DDR&D[22]) as well as specialized units such as the Directorate of Tanks and Armored Vehicles.

19 Leading countries by research and development (R&D) expenditure as share of gross domestic product (GDP) worldwide in 2022, June 26, 2025, https://www.statista.com/statistics/732269/worldwide-research-and-development-share-of-gdp-top-countries/#:~:text=Leading%20countries%20by%20R&D%20spending%20as%20share%20of%20GDP%20globally%202022&text=In 2022, Israel invested six, and development, the highest worldwide.

20 Innofense, https://ddrd-mafat.mod.gov.il/en/innofense.

21 SIBAT is a key unit within the Israeli Ministry of Defense, responsible for international cooperation in the field of defense. SIBAT acts as a bridge between the Israeli defense sector and foreign security agencies and armed forces, and global industry. Thanks to its unique position, SIBAT has up-to-date knowledge of the defense concepts and operational needs of the Israel Defense Forces, which allows it to effectively promote Israeli defense technologies internationally.

22 The Directorate of Defense Research & Development is a unit within the Israeli Ministry of Defense responsible for research and development of defense technologies.

2.3.6. EXPORT ORIENTATION

Due to limitations of the domestic market, Israel has become one of the world's largest arms exporters (8th place in 2020–2024). This position drives competitiveness and stimulates innovation among Israeli companies. Israel's defense industry actively seeks cooperation with international companies, which leads to the establishment of joint ventures, technology transfer, and access to broader markets. This cooperation strengthens both technological capabilities and boosts the market reach.

2.3.7. STABILITY OF THE DEFENSE INDUSTRY AND SUPPORT FOR LOCAL COMPANIES

Israel has a regulated public procurement system in the defense sector, which is based on multi-year planning and contract execution. The system is managed by the Ministry of Defense (MoD), which is responsible for the entire process, from budget planning to order fulfillment. Multi-year contracts ensure financial stability for the defense industry participants and enable the implementation of large modernization projects. The procurement policy consists of three elements: multi-year planning, framework agreements (for a period of 3-5 years), and support for the local industry. The public procurement system in Israel promotes Israeli companies by focusing on the development of certain regions of Israel.

2.3.8. SUMMARY

The example of Israel shows that the success of the defense industry requires a combination of innovation, strategic international cooperation, and structural flexibility. This model can be an inspiration for other countries seeking to develop their own defense industries.

CONCLUSIONS FOR POLAND

Based on the Israeli model of defense industry development, the following recommendations for Poland can be proposed, focusing on strengthening innovation, supporting the private sector, and building human capital:

1. **Development of the human capital by integrating the military and the technology sectors**
   Poland could create programs modeled on Israeli units such as 8200 or Tal-piot, operating within the armed forces, which would focus on training young talent in fields related to modern technologies, such as artificial intelligence, cyber defense, and data analysis. Graduates of such initiatives could join the defense industry and set up innovative technology start-ups. Poland could also create a program for military veterans who retire at a young age—their potential and knowledge could be harnessed by creating teams to develop new products for the military.

2. **Support for start-ups and small private defense companies, R&D spending**
   Israel actively supports the development of start-ups through programs such as Innofense, which offer financing, mentoring, and cooperation with large defense companies. Poland could follow a similar path by creating an integrated ecosystem that supports innovation in the defense industry. A key element could be the establishment of a dedicated investment fund that would support start-ups through preferential loans, grants for research and development, and facilitated market access. Particular emphasis should be placed on dual-use technologies that can be used in both the civilian and military sectors. Israel has succeeded in building a dynamic innovation ecosystem through close cooperation between the government and the private sector—Poland could learn from this experience.

3. **Development of the international cooperation**
   The establishment of *joint ventures*, the transfer of technology and know-how by foreign entities to Poland, and the possibility of exporting Polish military equipment are just some of the benefits of developed international cooperation in the defense industry sector.

4. **Deeper cooperation between the State-owned and private companies**
   Poland should strengthen synergies between the State-owned companies operating in the defense sector and private technology and industrial companies, creating a model of cooperation based on Israeli experience. It is crucial to develop open supply chains in which large State-owned entities would act as system integrators, while innovation and specialized solutions would be provided by smaller private companies. Such a structure would increase the flexibility of the defense industry, accelerate the implementation of new technologies, and enable fuller utilization of the potential of the domestic SME sector.

SOUTH KOREA

FINANCIAL, STRUCTURAL AND TRADE INDEXES OF THE DEFENSE SECTOR IN 2024

DEFENSE BUDGET
43.9
BLN USD

Investment spending
in the defense budget,
incl. R&D and arm purchases
13 bln USD (29,71%)

Operating expenses
30,8 bln USD
(70,29%)

South Korea has seen an impressive transformation of its defense sector, becoming one of the largest arm producers and exporters in the world.

DEFENSE SPENDING AMOUNTS TO **2.35%** OF THE **GDP**

Share in the global arm
IMPORTS
(2020-2024)
(12th place) **2.6%**

Main suppliers and their shares:
USA (86%)
Germany (9.7%)
UK (2.6%)

Share in the global arm
EXPORTS
(2020-2024)
2.2% (10th place)

Main buyers and their shares:
Poland (46%)
Philippines (14%)
India (7%)

THE LARGEST ENTERPRISES IN THE COUNTRY PRODUCING ARMS AND OFFERING MILITARY-LINKED SERVICES:

Hanwha (16%)	**LIG Nex1** (100%)	**Hyundai Motor Company** (44%)

(in the brackets: % of arm sales in relation to all income by the company – i.e. the degree to which the enterprise operates for the military sector and what share of its income is generated by products of other than military applications.)

SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database, SIPRI Military Arms Transfer Database, DefenseNews Top 100 Defense Companies (2024).

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INFOGRAFIKA: PIOTR PERZYNA

2.4. SOUTH KOREA

2.4.1 CHARACTERISTICS OF THE SOUTH KOREAN DEFENSE INDUSTRY SECTOR

South Korean defense industry has undergone an impressive transformation, allowing the country to become one of the world's largest manufacturers and exporters of weapons. The main branches of this industry include:

- land systems (K2 Black Panther tanks and K9 Thunder self-propelled howitzers);
- aviation (T-50 Golden Eagle training aircraft and KF-X fighter jets);
- maritime systems (South Korea is developing warships and submarines thanks to its position as a world leader in shipbuilding);
- military electronics – advanced radar, communications, and electronic warfare systems, which are an important part of South Korean exports.

The key factors behind South Korean defense industry's success include: **competitive product pricing, an extensive industrial base in other sectors** and its skillful application for the development of technologically advanced weapons, **flexible licensing agreements**, **pro-export approach, and long-term planning**.

2.4.2. PRICE COMPETITIVENESS OF SOUTH KOREAN PRODUCTS

South Korean weapons have gained international recognition thanks to their exceptional price competitiveness. Products offered by this country are cheaper than their US or European counterparts, which makes them particularly attractive to countries with limited defense budgets. Experts describe Korean defense products as "cheaper, better, and faster" compared to those offered by other manufacturers[23]. A prime example is the South Korean Cheon-gong interceptor missile manufactured by LIG Nex1, which offers similar capabilities to the American PAC-3 missile used in the Patriot missile defense system, but which costs only one third of the price (the PAC-3 costs around $4 million per unit)[24] . This price advantage is due to several factors: high production efficiency achieved thanks to an advanced, in-country industrial base in areas such as electronics, automotive, and shipbuilding; lower labor costs, e.g., when compared to Western Europe or the US; economies of scale resulting from large domestic orders and flexible production lines that can be easily switched from domestic production to the fulfillment of export contracts[25]. Taking advantage of the growing demand for South Korean artillery, tanks, and fighter jets, the South Korean government aims to make the country the world's fourth-largest arms exporter by 2027, among other things by consistently supporting the development of the defense sector.

2.4.3. FLEXIBLE LICENSE AGREEMENTS

One of South Korea's key advantages On the global arms market is its flexible approach to licensing agreements and technology transfer. Unlike the US, which applies restrictive rules to production of its weapons abroad, South Korea is much more open to granting licenses for such endeavors[26]. Korean companies offer

23 Lim Hui Jie, *As global defense spending surges, South Korean arms makers look like a clear winner*, December 3, 2024, https://www.cnbc.com/2024/12/04/as-global-defense-spending-surges-south-korean-arms-makers-look-like-a-clear-winner-.html.

24 Lim Hui Jie, *As global defense...*

25 G. Arthur, *How South Korea's defense industry transformed itself into a global player,* November 6, 2023, https://breakingdefense.com/2023/11/how-south-koreas-defense-industry-transformed-itself-into-a-global-player/.

26 A. Lin, *South Korea's Competitive Advantages as a Global Military Supplier,* May 16, 2024, https://thediplomat.com/2024/05/south-koreas-competitive-advantages-as-a-global-military-supplier/.

comprehensive support to buyers of their materiel, including maintenance, on-site technical experts, access to financing, transfer *of* know-how, and spare parts delivery. South Korean companies actively adapt to the changing needs of their buyers and provide comprehensive after-sales support.

2.4.4. STRONG INDUSTRIAL BASE

South Korea has effectively leveraged its world-class industrial base in areas such as shipbuilding, electronics, automotive, and home appliances production industries to develop technologically advanced weaponry. Chaebols, or large industrial conglomerates such as Samsung, Hyundai, and LG, have played a crucial role in the process by providing access to advanced civilian technologies that were adapted for use in the military production.

2.4.5. LONG-TERM PLANNING

Multi-year contracts are an important element of South Korea's defense planning, enabling the implementation of complex armament programs that extend beyond a single fiscal year. This approach provides financing stability to military equipment manufacturers and facilitates long-term planning for the development of the defense industry. The multi-year procurement mechanism is a key element of the strategy aimed at strengthening defense technologies and competitiveness of the Korean defense industry. The strategy is implemented by the Defense Acquisition Program Administration (DAPA), a central agency operating under the South Korean Ministry of National Defense. DAPA has the exclusive authority to plan and budget the defense development and procurement programs for the Armed Forces of the Republic of Korea, as well as to develop and implement Korean Defense Specifications (KDS)[27]. The main objective of the agency is to strengthen the country's defense technology capabilities and increase the competitiveness of the Korean defense industry on the international market.

South Korea's long-term defense strategies account for all unfavorable demographic trends, which will limit the availability of human resources for the armed forces in the future. In response, the country is focusing on the development of autonomous systems and artificial intelligence to ensure partial automation of military operations. It is worth noting that similar demographic trends are visible in Poland, which makes the Korean experience particularly attractive.

2.4.6. SUMMARY

South Korea is an example of a country that has effectively used its industrial resources and government support to build a competitive defense sector of global significance.

27 About DAPA, https://web.archive.org/web/20221018021739/; http://www.dapa.go.kr/dapa_en/sub.do?menuId=412.

CONCLUSIONS FOR POLAND

Based on the example of South Korea, the following recommendations can be formulated:

1. **Development of the local industrial and technological base (innovation, investments in dual-use) and diversification of the product portfolio**
   It is crucial to develop dual-use technologies that can be applied in both the civilian and military sectors (e.g., electronics, heavy shipbuilding). South Korea has leveraged its extensive industrial base in the civilian sector (e.g., household appliances), which has allowed for a smooth transition to military production and diversification of its offer of the defense-related products.

2. **Flexible approach to technology transfer**
   Openness to industrial cooperation with foreign partners - e.g., by enabling joint production of components or entire systems - is an important factor in attracting foreign buyers. Access to technology often determines a buyer's decision to purchase any given product. The possibility of technology transfer increases attractiveness of the offer, giving customers the opportunity to produce and service locally, and even to develop their own systems based on the solutions acquired.

3. **Foreign expansion of the defense industry as a national development strategy**
   The Korean government clearly treats the defense industry as one of the sectors crucial for the economic and technological development. Provided with diplomatic and financial support, Koreans actively promote their offer on the international markets. These activities will be further strengthened and coordinated by a newly created "control tower" structure, which is to boost efforts directed at supporting the investment, research and development, as well as expansion of the foreign export channels[28].

4. **Long-term planning**
   Long-term contracts support the development of South Korea's domestic defense industry by providing predictability and enabling investment in research and development. Poland should also implement long-term production and procurement planning, taking into account both demographic changes and the continuing threat posed by Russia.

28 *President Lee touts defense industry as 'future growth engine'*, June 9, 2025, https://www.korea.net/NewsFocus/policies/view?articleId=274770.

NORWAY

FINANCIAL, STRUCTURAL AND TRADE INDEXES OF THE DEFENSE SECTOR IN 2024

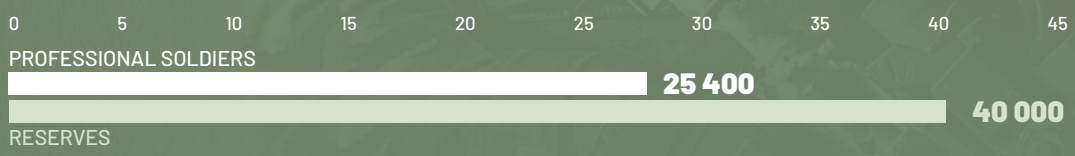
DEFENSE BUDGET
9.79
BLN USD

Investment spending
in the defense budget,
incl. R&D and arm purchases
3.15 bln USD (32.23%)

Operating expenses
6.63 bln USD
(67.77%)

The Norwegian defense industry (…) rests upon three main pillars: the defense sector as well as the space and aviation sectors. (…) Norway has established a strong industrial base that generates over 120 000 jobs for the national economy.

DEFENSE SPENDING AMOUNTS TO **1.94%** OF THE **GDP**



Share in the global arm
IMPORTS
(2020-2024)

(18th place) **1.5%**

Main suppliers and their shares:
USA (91%)
South Korea (4.2%)
Italy (2.4%)

Share in the global arm
EXPORTS
(2020-2024)

0.8% (15th place)

Main buyers and their shares:
USA (28%)
Ukraine (21%)
Romania (15%)

THE LARGEST ENTERPRISES IN THE COUNTRY PRODUCING ARMS AND OFFERING MILITARY-LINKED SERVICES:

Kongsberg Gruppen (44%)	**Nammo** (81%)

(in the brackets: % of arm sales in relation to all income by the company – i.e. the degree to which the enterprise operates for the military sector and what share of its income is generated by products of other than military applications.)

SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database, SIPRI Military Arms Transfer Database, DefenseNews Top 100 Defense Companies (2024).

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INFOGRAFIKA: PIOTR PERZYNA

2.5. NORWAY

2.5.1. CHARACTERISTICS OF THE NORWEGIAN DEFENSE INDUSTRY

Despite its relatively small size, the Norwegian defense industry stands out for its technological advancement, high product quality, and significant export potential. Its structure is based on three main pillars: the defense, space, and aviation sectors. Thanks to the synergy between these sectors and cooperation between the government, industry, and research institutes, Norway has built a strong industrial base that generates over 120,000 jobs for the national economy[29]. From the perspective of formulating recommendations for Poland, it is especially interesting to focus on the example of the Kongsberg Group's restructuring. It can be a valuable source of inspiration to drive changes within the Polish Armaments Group (PGZ).

2.5.2. KONGSBERG GRUPPEN AND LESSONS FOR OTHER COMPANIES OF THIS SIZE (E.G. PGZ)

Having been founded in 1814, the Kongsberg Group is one of the oldest and most renowned companies in the Norwegian defense industry. Initially, it manufactured firearms for the Norwegian army, but over time it has expanded its activities to include advanced military and civilian technologies. Since the 1990s, Kongsberg Gruppen has been dynamically developing its activities on international markets, focusing on innovative technological solutions. Kongsberg Group's partial privatization and listing on the Oslo Stock Exchange allowed the company to raise the capital and establish cooperation with private investors, which contributed to its further growth and modernization.

Technological successes of Kongsberg Gruppen:

2.5.2.1. NASAMS (NORWEGIAN ADVANCED SURFACE-TO-AIR MISSILE SYSTEM)

NASAMS is one of Kongsberg Defence & Aerospace's (KDA) most successful products. The system provides advanced air defense by integrating AIM-120 AMRAAM missiles with modern radars and command systems.

The success of the NASAMS project shows how strategic cooperation with Raytheon allowed Kongsberg to achieve its international standing. The strategic approach displayed by both parties was key to the success of the project: instead of competing in the field of advanced technologies, the partners focused on the complementarity of their competencies. For KDA, this meant a shift in its operating philosophy – instead of independently developing only the advanced solutions, the company focused on delivering a functional, flexible product that met its partner's needs and on building long-term trust with them. One of the main advantages of NASAMS is its modular design, which allows the system to be easily adapted to different operating conditions and needs of specific users.

29 Defense and Aerospace Technologies, January 20, 2024, https://www.trade.gov/country-commercial-guides/norway-defense-and-aerospace-technologies

2.5.2.2. PROTECTOR REMOTE WEAPON STATION (RWS)

The RWS (Remote Weapon Station) project is another example of Kongsberg's innovation in the field of remote weapon station systems. The key to success in this case was a dynamic organizational structure that enabled swift adaptation to changing market requirements. Kongsberg employees demonstrated an exceptional ability to innovate thanks to the concept of "fluid organizational assignment." This meant that teams could move freely between different organizational structures, which encouraged exchange and flow of new ideas, and a flexible approach to project development. The RWS project shows how organizational flexibility and quickness of action can translate into market success in the defense industry.

2.5.2.3. THE FULL PICTURE STRATEGY

Kongsberg Maritime has developed an innovative strategy called "The Full Picture", which has revolutionized the approach to marine technology. It involves providing comprehensive, integrated solutions for ships and offshore platforms, combining navigation, automation, and data management systems into a single coherent ecosystem.

Company's management recognized that the key to success in a rapidly growing market is the ability to integrate complex systems and adapt them to changing market needs. To rise to this challenge, Konsberg Maritime's management made a strategic decision to redefine the organization's core competencies, which opened up new perspectives for product development.

The success of "The Full Picture" project was based on:

- efficient cooperation among teams, which helped to achieve synergy between different areas of competencies;
- innovative approach where technological systems are defined by and dependent of the overall product solution;
- ability to develop new products swiftly through the optimal use of resources and technologies available within the organization;
- increased operational efficiency thanks to a uniform management system for all aspects of the vessel and significant cost reductions achieved by limiting the number of suppliers, which simplified purchasing and operational processes.

Kongsberg Gruppen is an excellent example of a company that has achieved global success through innovation, restructuring, and international cooperation. Its products, such as NASAMS and Protector RWS, are valued highly for their effectiveness, reliability, and versatility. The Norwegian model shows that due to adopting a strategic approach to the development of the defense industry, even smaller countries can become leaders in military technology.

CONCLUSIONS FOR POLAND

Inspired by the Norwegian model, several key recommendations for the development of the Polish defense industry can be formulated:

1. **Specialization in niche technologies**
   Focusing on selected market segments allows for achieving competitive advantage and more effective use of limited resources.

2. **Building strategic alliances and international relations**
   The success of NASAMS commercialization can be largely attributed to strategic alliances with American manufacturers (Hughes, Raytheon), which provided access to advanced technologies and enabled entry into the international market. Poland should actively develop similar partnerships, combining local innovation with the global reach of foreign partners.

   Bilateral partnerships are often broad and include, for example, joint public support in order to scale-up and allow for foreign expansion of defense start-ups. Poland should develop programs simililar to, p.ex., Hacking 4 Allies[30] where participants, namely companies that own new and innovative dual-use technologies, solve national security and defense problems common to the United States and Norway. Support is provided in the form of training, contact with the problem owner/end user, application of iterative problem-solving techniques, and organization of meetings with the investor community and other communities interested in acquisitions and R&D in the US.

3. **Supporting flexibility and adaptation**
   Designing systems with a modular architecture that can be adapted to specific needs and that are independent of platforms, increases the chances of success by providing possibility of integration with a variety of systems. Norway does not produce large systems such as armored vehicles, aircraft, or submarines. Instead, it focuses on technological niches where it holds an advantage to be exploited and where the country has potential for development. As a result, Norwegian industry does not have to devote resources to maintaining outdated platforms, which allows for continuous investment in innovation.

   Norwegian defense companies are relatively small compared to large international players, so direct competition with the biggest market actors is not an optimal solution. Instead, they focus on flexibility in cooperation and readiness to respond quickly to changes and new market opportunities. This approach has proven successful, contributing to the success of the Norwegian defense sector.

4. **Stability, long-term approach and consistency**
   Almost three decades passed between the moment when the concept of the NAMS system was developed and its commercialization. Such long development cycles are the norm for advanced military technologies. They require patience, strategic thinking and continuous investment, especially in areas such as software, sensors, and systems integration. When planning the development of its own products, Poland should take into account the need for long-term financing, regulatory stability, and perseverance in achieving its goals.

30 Hacking 4 Allies 2023-2024, http://nadic.us/hacking-4-allies.

UNITED STATES OF AMERICA

FINANCIAL, STRUCTURAL AND TRADE INDEXES OF THE DEFENSE SECTOR IN 2024

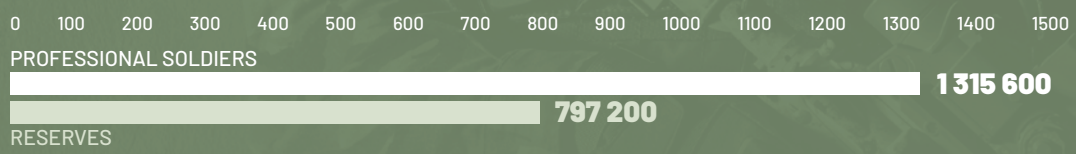
Investment spending
in the defense budget,
incl. R&D and arm purchases
304 bln USD (31.36%)

DEFENSE BUDGET
968
BLN USD

Operating expenses
664 bln USD
(68.64%)

The American defense sector is among the largest in the world – it employs over 2.2 million people and is composed of over 200 000 companies.

DEFENSE SPENDING AMOUNTS TO **3.32%** OF THE **GDP**



Share in the global arm
IMPORTS
(2020-2024)

(9th place) **3.1%**

Main suppliers and their shares:
UK (18%)
France (15%)
Israel (13%)

Share in the global arm
EXPORTS
(2020-2024)

43% (1st place)

Main buyers and their shares:
Saudi Arabia (12%)
Ukraine (9.3%)
Japan (8.8%)

OUT OF 100 OF THE WORLD'S LARGEST COMPANIES PRODUCING ARMS AND OFFERING MILITARY-LINKED SERVICES

48 COMPANIES ARE AMERICAN.

THE BIGGEST OF THEM ARE:

Lockheed Martin	RTX	Northrop Grumman	General Dynamics	Boeing
(96%)	(59%)	(90%)	(80%)	(42%)

(in the brackets: % of arm sales in relation to all income by the company – i.e. the degree to which the enterprise operates for the military sector and what share of its income is generated by products of other than military applications.)

SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database, SIPRI Military Arms Transfer Database, DefenseNews Top 100 Defense Companies (2024).

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INFOGRAFIKA: PIOTR PERZYNA

2.6. THE UNITED STATES OF AMERICA

2.6.1 CHARACTERISTICS OF THE US DEFENSE INDUSTRY

The US defense industry is the largest in the world, employing over 2.2 million people[31] and is composed of approximately 200,000 companies[32] , ranging from giants such as Lockheed Martin, Boeing, and Northrop Grumman to rapidly growing technology companies such as Palantir and Anduril. The American model is based on strong cooperation between the state and the private sector, which allows for the development of innovation and military technology. The "First Breakfast" developed by Palantir Technologies has been one of the most significant recent initiatives. Its objective is to support the defense technology ecosystem in the United States by providing tools and support for start-ups and new players in the defense sector. The name of the project refers to the "Last Supper" of 1993, when the then-Secretary of Defense, Les Aspin, announced drastic cuts to the defense budget, which resulted in the consolidation within the arms industry. The "First Breakfast" aims to reverse this trend and open the sector up to new companies and innovation.

The characteristic features of the American model include:

- **intensive cooperation between the public and the private sectors;**
- **fast tracks for public procurement in defense (OTA – Other Transaction Authority)** – allowing to circumvent the bureaucratic procedures and for rapid implementation of innovations;
- **investment in dual-use technologies** – enabling the use of civilian solutions in the military and vice versa;
- **shift away from the "end-to-end solutions" model in favor of the "point solutions**" model based on modular and easily integrable components;
- well-organized **system of multi-year contracts** - ensuring predictability and continuity of funding for the companies.

2.6.2 A MODEL OF CLOSE COOPERATION BETWEEN THE STATE AND THE PRIVATE SECTOR

The United States effectively facilitates cooperation between the private and public sectors through initiatives such as **the Defense Innovation Unit (DIU)** and **In-Q-Tel**, which serve as a bridge between Silicon Valley and the military.

2.6.2.1. UNIT X

Unit X (formally known as Defense Innovation Unit Experimental, DIUx) is an elite unit of the US Department of Defense, established in 2015 in Silicon Valley. Its mission is to accelerate the implementation of cutting-edge commercial technologies in the US armed forces. It acts as a bridge between the Pentagon and the private sector, technology start-ups in particular, to meet urgent military needs and maintain a technological advantage over rivals such as China. Unit X functions almost like a *venture capital* firm, with the authority

31 D. Ryskamp, *Aerospace and defense industry's demand for talent outpaces supply,* January 13, 2025, https://acarasolutions.com/blog/recruiting-trends/aerospace-and-defense-industrys-demand-for-talent-outpaces-supply/.

32 L. Thompson, *How The Defense Industry Became A Defining Feature Of The U.S. Economy,* January 18, 2023, https://www.forbes.com/sites/lorenthompson/2023/01/18/how-the-defense-industry-became-a-defining-feature-of-the-us-economy/.

to bypass traditional Pentagon procurement procedures. This allows Unit X to respond quickly to changing military needs. The Uunit tests and implements breakthrough technologies such as AI-controlled drones able to map interiors of the buildings, vertical take-off and landing aircraft, and microsatellites capable of monitoring missile launchers under difficult weather conditions. These solutions have been used, among others, during operations against ISIS and when monitoring missile launchers in North Korea and Russia. To date, Unit X has acquired - for use by the Department of Defense - technologies worth a total of over $39 billion[33]. This unit is an example of a modern approach to innovation in the defense sector, combining the dynamism and entrepreneurship of Silicon Valley with the specific needs of the US armed forces.

2.6.2.2. IN-Q-TEL FUND

In-Q-Tel (IQT) is an American *venture capital* firm founded in 1999 by the Central Intelligence Agency (CIA). Its mission is to identify, evaluate, and support the development of innovative commercial technologies that can be used for the national security of the United States and the activities of the American intelligence community. IQT connects government needs with private sector innovation, allowing for swift technology transfer from Silicon Valley and other technology hubs to US security agencies. Key strength of IQT is its ability to mobilize private capital: every dollar invested by the company attracts an average of $28 in private investment capital. This demonstrates how highly effective the IQT operating model is model is and shows investors' confidence in the projects supported by this institution[34].

2.6.3. FAST TRACK FOR PUBLIC PROCUREMENT – OTA

Other Transaction Authority (OTA) is a special public procurement mechanism used by the US Department of Defense (DoD) and other federal agencies. It provides for faster, more flexible, and innovative technology acquisition. It allows contracts be awarded to non-traditional contractors, such as start-ups, small businesses, research institutions, and universities, which often do not work with the government due to the complexity of regulations surrounding traditional contracts that are normally based on the Federal Acquisition Regulation (FAR)[35].

Key features of the OTA mechanism:

- flexibility – OTA allows for the negotiation of contract terms without having to comply with the strict regulations laid down in FAR;
- processing speed – the process, from submission of a proposal to contract closure, takes several weeks on average;
- cooperation with non-traditional contractors – OTAs provides for the possibility to acquire technology from companies operating outside of the traditional defense sector, such as start-ups and companies developing dual-use technologies; can be applied to all phases of the project development process: from prototyping to production – the OTA mechanism is used for research and development projects, prototyping, and the production of military systems. Once the prototype phase is complete, it is possible to move directly to production without having to announce a new tender.

33 Inside Unit X, July 5, 2024, https://www.gatescambridge.org/about/news/inside-unit-x/.

34 In-Q-Tel: *Imitating Intelligence & Innovation*, December 23, 2024, https://savantinspace.substack.com/p/in-q-tel-imitating-intelligence-and.

35 OTA Contract Essentials: Your Guide to Defense Acquisition, https://www.defenseacq.com/ota-contract-essentials-your-guide-to-defense-acquisition/.

2.6.4. INVESTING IN DUAL-USE TECHNOLOGIES

The United States take a multidimensional approach to investing in dual-use technologies. The US recognizes them as critical to maintaining technological advantage and combines public sector involvement with private capital's engagement. The investment strategy is based on three pillars: a) integration of commercial and military resources; b) dual procedure; c) supporting the innovation ecosystem. Israel can serve as a model in the field of exploiting the potential of dual-use technologies, where the conversion rate of technologies from civilian to military applications exceeds 60% as of today, hinting at an enormous growth potential for other regions[36].

Some examples of recent dual-use technologies must be highlighted here:

- **autonomous drones** – originally developed for military applications, they are now widely used in agriculture, infrastructure monitoring, and rescue operations[37];
- **LiDAR technology** – originally developed for battlefield mapping and landmine detection, it is now used in archaeology, agriculture, urban planning, and autonomous vehicles[38];
- **optical communication systems** – Eikolos develops optical communication applications that enable interaction between humans and machines. The first use is to allow the possibility to detect whether drones are friendly or hostile, but the technology has potential in human communication through AR glasses and can be applied to improve road safety[39];
- Advanced **battery technologies** - Companies such as Addionics are developing 3D Current Collector technologies that can be used in both electric vehicles and defense applications, from reconnaissance drones to advanced weapon systems[40];
- **quantum technologies**—quantum computing, initially the domain of academic research and government laboratories, is now used in military cryptography and in the optimization of business processes in the financial and logistics sectors[41].

The American approach to dual-use technologies shows how strategic cooperation between the public and private sectors can lead to breakthrough innovations that serve both defense and civilian purposes, while strengthening the national economy and security at the same time.

36 A. Onetti, *Dual Use Technologies – Going Beyond the Divide, 2024 Report*, October 24, 2024, https://mindthebridge.com/dual-use-technologies-going-beyond-the-divide-2024-report/.

37 B. Mamo, *Unlocking Market Opportunities with Dual-Use Technologies,* February 24, 2025, https://addionics.com/blog/unlocking-market-opportunities-with-dual-use-technologies/.

38 *Dual-use technologies – How military inventions are transforming our lives,* https://foundation.alioth.group/en/dual-use-technologies-how-military-inventions-are-transforming-our-lives/.

39 J.L. Schenker, *The Rise Of Dual-Use Technologies,* https://theinnovator.news/the-rise-of-dual-use-technologies/.

40 B. Mamo, *Unlocking Market...*

41 *The Rise in Dual-Use Technologies: A Paradigm Shift*, October 23, 2023, https://starburst.aero/news/the-rise-in-dual-use-technologies/.

2.6.5. MOVING AWAY FROM *END-TO-END SOLUTIONS* IN FAVOR OF *POINT SOLUTIONS*

In recent years, the American approach to public procurement in the defense sector has been changing, moving away from the model of ordering comprehensive solutions from large weapon producers (end-to-end solutions) in favor of a more flexible and competitive model of *point solutions*, implemented by smaller suppliers, including technology start-ups. The objective behind this shift is to boost innovation, reduce costs and increase efficiency in the delivery of modern military technologies.

The benefits of this new approach include:

1. **Cooperation with non-traditional suppliers**
   Openness to start-ups and small technology companies allows to access groundbreaking solutions developed outside of the traditional defense industry.

2. **Faster technology implementation**
   Point solutions can be implemented much faster than complex systems that take years to develop.

3. **Cost reduction**
   Point orders from smaller suppliers are often more cost-effective than large contracts with traditional contractors. This model cuts the costs associated with extensive infrastructure and end-to-end project management.

4. **Stimulating competition and innovation**
   Increasing the number of potential suppliers boosts market competition, leading to faster development of new technologies and stronger pressure to optimize costs.

2.6.6. MULTI-YEAR PURCHASING SYSTEM FOR PRODUCERS - PREDICTABILITY AND STABILITY

Long-term orders in the defense sector are a key element supporting consistent industrial development, investment in research, and maintenance of production capacity. In the United States, this issue has been regulated by law and the system operates on the basis of two main mechanisms: MYP and BBC.

MYP (Multiyear Procurement) is a multiyear procurement mechanism regulated by the US Code, which allows the Department of Defense (DoD) to conclude contracts for a period of 2 to 5 years, instead of sticking to contracts limited to 12 months of duration. BBC (Block Buy Contracting) is a more flexible mechanism than MYP, allowing for multi-year, bulk contracts delivered in batches with fewer formal restrictions (contracts can be longer than 5 years, unlike under the MYP procedure).

BBC can be particularly useful in the early stages of a program, when the stability and maturity of the project have not been fully proven yet, e.g., when the required number of units to be purchased has not been produced yet or, in the case of a shipbuilding program, at least one ship has not been yet built.

Example: The Virginia-class submarine program, where the Navy uses Block Buy Contracting for subsequent batches of vessels, resulting in savings of 15% per vessel[42]

42 R. O'Rourke, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, July 8, 2025, https://www.congress.gov/crs-product/R41909.

CONCLUSIONS FOR POLAND

Based on the American model, we suggest the following solutions. Their implementation would be of an undeniable benefit to the Polish arms industry and, consequently, to national security:

1. **Integration of the private and public sectors**
   The Unit X and IQT models show that cooperation with Silicon Valley and start-ups can accelerate innovation in the defense sector.

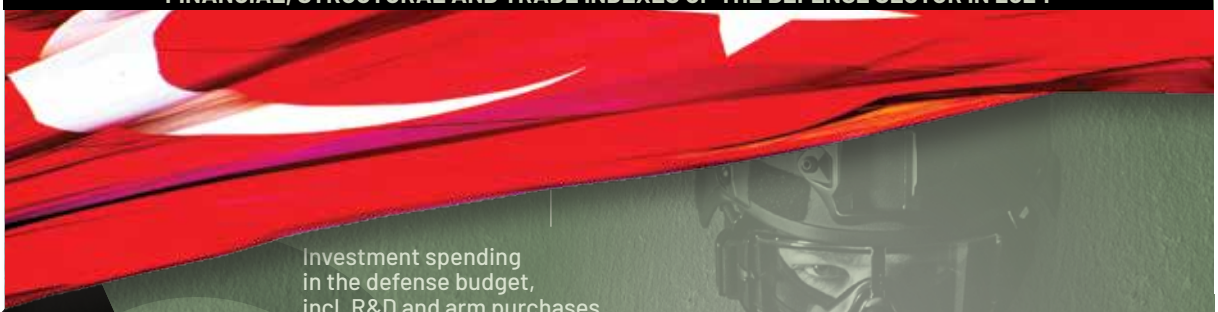
2. **Flexible contracting and simplification of the procurement process**
   The introduction of mechanisms like OTA allows for faster implementation of new technologies.

3. **Investing in dual-use technologies**
   The development of dual-use technologies increases cost efficiency and reduces dependence on a single customer.

4. **Spot orders from smaller suppliers**
   These allow to achieve greater flexibility and cost efficiency, which is particularly important in the case of limited defense budgets.

TURKIYE

FINANCIAL, STRUCTURAL AND TRADE INDEXES OF THE DEFENSE SECTOR IN 2024



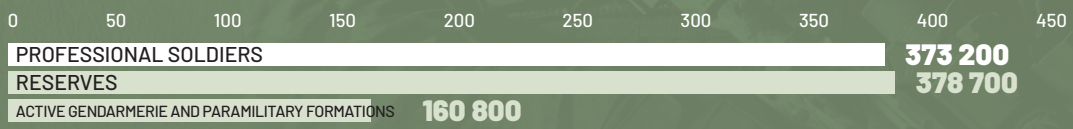
DEFENSE BUDGET
14.3
BLN USD

Investment spending in the defense budget, incl. R&D and arm purchases
3.4 bln USD (23,81%)

Operating expenses
10.9 bln USD
(76.19%)

The Turkish defense sector (…) employs over 81 000 people and is composed of approx. 2000 companies (…). In 2024 the value of exports hit the record of 7.1 bln USD and the annual turnover reached 26 bln USD.

DEFENSE SPENDING AMOUNTS TO **1.06%** OF THE **GDP**



Share in the global arm **IMPORTS** (2020-2024)

(22nd place) **1.1%**

Main suppliers and their shares:
Spain (34%)
Italy (24%)
Germany (19%)

Share in the global arm **EXPORTS** (2020-2024)

1.7% (11th place)

Main buyers and their shares:
UAE (18%)
Pakistan (10%)
Qatar (9.9%)

THE LARGEST ENTERPRISES IN THE COUNTRY PRODUCING ARMS AND OFFERING MILITARY-LINKED SERVICES:

Aselsan A.S. (94%)	Turkish Aerospace Industries (82%)	Roketsan (100%)	Makine ve Kimya Endustrisi (100%)	Askeri Fabrika ve Tersane Isletme A.S. (100%)

(in the brackets: % of arm sales in relation to all income by the company – i.e. the degree to which the enterprise operates for the military sector and what share of its income is generated by products of other than military applications.)

SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database, SIPRI Military Arms Transfer Database, DefenseNews Top 100 Defense Companies (2024).

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INFOGRAFIKA: PIOTR PERZYNA

2.7. TURKIYE

2.7.1 CHARACTERISTICS OF THE TURKISH DEFENSE INDUSTRY

The Turkish defense industry has seen a dynamic transformation in recent decades, becoming one of the most developed and innovative in the world. It currently employs over **81,000 people** and comprises approximately **2,000 companies**, including both large entities and numerous small and medium-sized enterprises. In 2024, value of exports hit a record **USD 7.1 billion**, and annual turnover reached **USD 26 billion**.[43][44]

In the context of Turkiye, it's important to highlight its technological and manufacturing independence, centralized model of strategic sectoral policy planning, diversification of the national industrial and technological base as well as active pro-export policy.

2.7.2. TURKEY'S TECHNOLOGICAL AND PRODUCTION INDEPENDENCE AND HIGH EXPORT ACTIVITY

Under Recep Erdogan's rule (since 2003), emphasis has been placed on technological independence and increasing local production. The "National Technology Initiative" policy, which supported the development of advanced military systems such as the Bayraktar TB2 drones and the Altay tank, was implemented. The Turkish defense sector specializes in the following areas: unmanned aerial vehicles (UAVs), missile systems, armored vehicles, military electronics, and aviation.[45]

Currently, over **70% of the Turkish defense production needs is met domestically**, and by 2025 this proportion is expected to exceed **80%**[46]. Investments in research and development, which amount to approximately **USD 3 billion** per year[47], support the development of advanced technologies and allow to avoid long-term dependence on foreign suppliers where- and whenever possible. The development of the arms industry responds to increased domestic demand, which stems from the traditionally strong role of the armed forces in the local political system and Turkiye's growth into the position of the regional power. These factors translate into increased military needs as well as interest expressed by other countries. In the case of some countries, such as Azerbaijan, mutual contracts support strengthening of political ties.

Simultaneously, Turkiye strikes deep technological partnerships with foreign entities whenever it identifies opportunities for long-term technology transfer and the chance to develop its own production capacity. Turkish model of cooperation with external partners (especially large corporations such as Leonardo) is characterized by the country's focus on developing its own potential. This policy is designed to benefit the domestic armed forces, but also to benefit potential foreign customers, with the sales of the T129 helicopter (based on Italian technology) to the Philippines being an excellent example.

43 https://www.invest.gov.tr/en/library/publications/lists/investpublications/defense-aerospace-industry.pdf.
44 https://www.defensenews.com/global/europe/2025/02/04/turkeys-defense-exports-hit-record-high-of-71-billion-in-2024/.
45 https://defence-blog.com/turkiye-sets-new-defense-export-record/.
46 https://www.middleeastmonitor.com/20241228-turkish-defense-industry-reaches-70-domestic-production-capacity/.
47 https://www.dailysabah.com/opinion/op-ed/a-global-brand-turkish-defense-industry.

2.7.3. CENTRALIZED MODEL OF SECTOR POLICY AND DIVERSIFICATION OF THE NATIONAL INDUSTRIAL AND TECHNOLOGICAL BASE

Strong position of the central State institution responsible for sectoral policy – the Defense Industry Presidency (SSB), makes execution of the long-term strategy for the development of the defense sector significantly easier. SSB employs over 550 people and has a budget of approximately USD 30 million. Since 2018 the agency has had dual subordination – it operates under the Ministry of National Defense but is directly supervised by the Office of the President of Turkiye.

The institution has broad competencies covering the creation of conditions favorable to the development of the national industrial and technological base, supervision of a significant number of Turkiye's largest enterprises, ongoing modernization efforts in partnership with the Turkish armed forces, and technology acquisition from external markets.

SSB's partial separation from the competence structure of the Ministry of National Defense is a direct result of specific relations between the civilian and the military in Turkiye, but it allows for better alignment of the sectoral policy not only with the security objectives, but also with the economic development goals, foreign policy, and innovation.

Setting aside the State's control over most of the largest arms producers, it is important to note how diversified the Turkish domestic market is and how the State-owned industry operates as the "domain" companies. Well-developed companies such as Aselsan and Roketsan, despite having the same dominant shareholder, have greater freedom of operation as business entities. At the same time, the government treats private entities such as Otokar and Ares Shipyard on an equal footing with State-owned enterprises.

CONCLUSIONS FOR POLAND

1. **Increasing self-sufficiency through the development of domestic projects**
   The Turkish approach proves that investing in domestic projects, such as drones or armored vehicles, can bring greater benefits to both national security and the economy.

2. **A centralized, appropriately empowered institution responsible for coordinating sectoral policy**
   An institution, firmly rooted in the existing system and authorized to actively shape the market and meet the needs of both security and economic development, allows Turkey to pursue a long-term sectoral policy. Its operations are an important factor in furthering the development of a technologically advanced industry with complex supply chains, and a relatively limited number of customers.

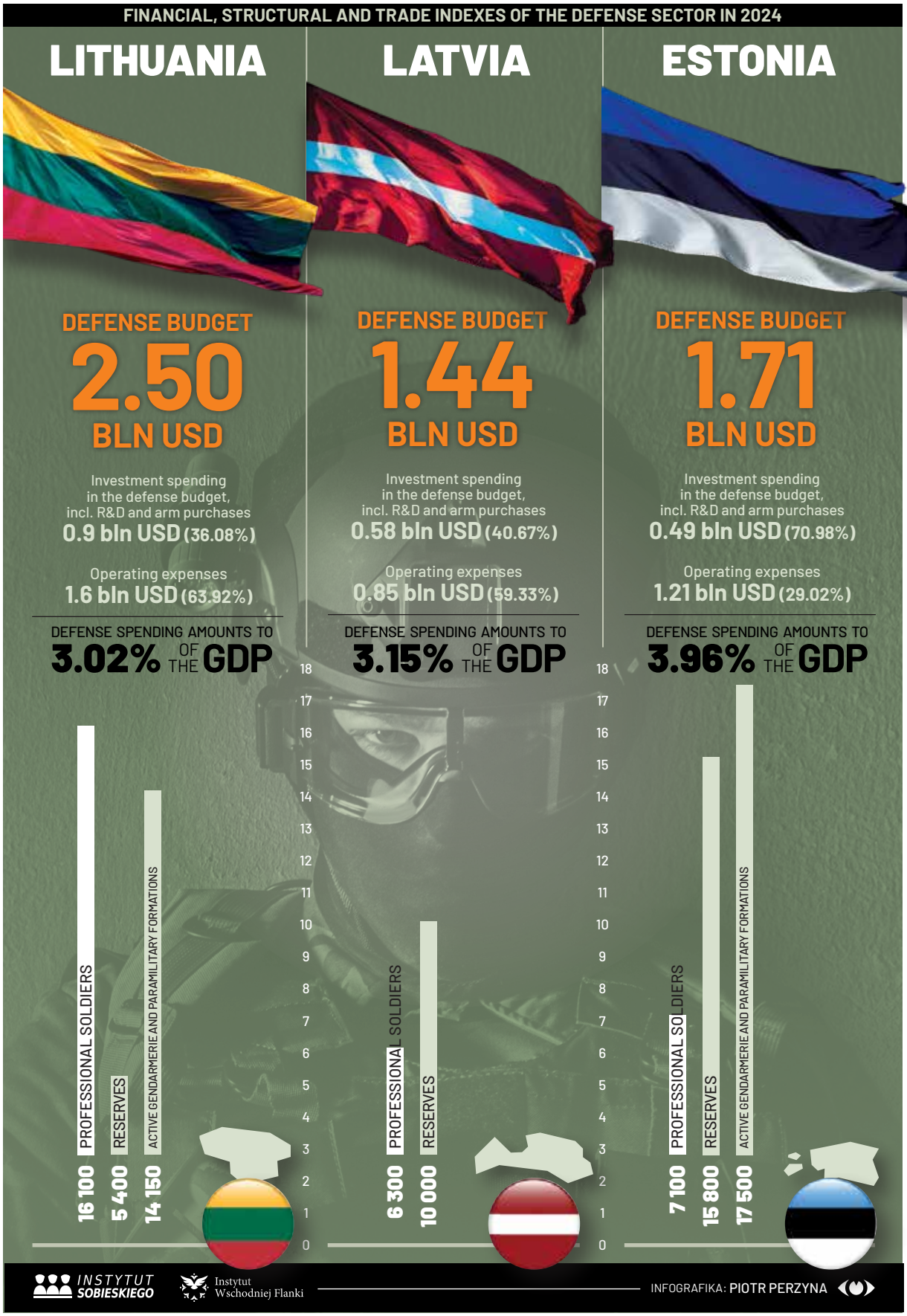
3. **Diversification of the State's industrial and technological base through the creation of a "domain"**
   Turkiye has decided to restructure and concentrate its State-owned industrial and technological base within "domain" companies, rather than consolidating it into one large group. Such solution provides the companies with greater freedom of operation while maintaining significant government influence, e.g., on planning.

4. **De facto equality between the State-owned and private enterprises**
   Encouraging private companies to invest in the defense sector through tax breaks or research grants can increase innovation and competitiveness.

5. **Diversification of export markets and a pro-export strategy**
   Like Turkiye, other countries should seek customers beyond their traditional allies. Turkiye exports its products to over 185 countries, which makes them one of the world's largest arms exporters. Bayraktar drones have become a symbol of Turkiye's export success thanks to their operational use on the battlefield amid rapidly growing demand for unmanned aerial systems.[48]

6. **Offset system**
   Require foreign suppliers to invest into the local industry with clearly defined strategic objectives for technology transfer and a priority for export opportunities.

48 https://defence-blog.com/turkiye-sets-new-defense-export-record/



SOURCE: The Military Balance 2025, IISS, SIPRI Military Expenditure Database

2.8. BALTIC STATES (LITHUANIA, LATVIA, AND ESTONIA)

2.8.1. CHARACTERISTICS OF THE DEFENSE INDUSTRY SECTOR IN THE BALTIC STATES, WITH FOCUS ON ESTONIA

The Baltic States – Estonia, Latvia, and Lithuania – do not have a traditional defense industry producing large military materiel such as tanks, aircraft, or submarines. Their defense sector is mainly based on dual-use technologies, which are developed within the civilian sector and adapted to military and security needs in the broad sense of the term (e.g., for use by border guards, intelligence or the police)[49]. It is impressive that such small countries (especially Estonia) have been able to develop a *defense tech* sector from scratch, despite limited demographic and financial resources.

2.8.1.1. ESTONIA – LEADER IN INNOVATION

Estonia stands out in the region thanks to its advanced innovation and strong government support for technologies related to cybersecurity, robotics, and autonomous systems. Although the Estonian defense industry is still in its infancy, it provides an excellent example of dynamic growth for the arms sector in a small country. Its turnover exceeds €200 million per year, with as much as 42% coming from exports[50]. All companies in Estonia are privately owned, which promotes flexibility and efficiency of their operations[51]

One of the most recognizable examples of success is Milrem Robotics, a manufacturer of autonomous land vehicles such as THeMIS and Type-X RCV, used by NATO and the Ukrainian Armed Forces. Estonia is also a leader in cybersecurity – Tallinn is home to the NATO Cooperative Cyber Defense Center of Excellence, which supports the development of data protection technologies.

2.8.1.2. LITHUANIA – DEVELOPMENT OF THE LASER AND NANOSATELLITE INDUSTRY

Lithuania has become a leader in the laser industry, whose solutions are used in both the civil and military sectors. At the same time, advanced nanosatellite technologies are being developed – Lithuanian companies are successfully building up their expertise in this area, as evidenced by the acquisition of one of them by the Norwegian arms giant Kongsberg. Lithuania also attracts significant foreign investment in the defense sector, such as cooperation with the German company Rheinmetall, who has established a factory repairing military materiel in the country.

2.8.1.3. LATVIA – A LEADER IN COMMUNICATIONS AND HEALTHCARE TECHNOLOGIES

Latvia specializes in modern communication technologies, particularly in the area of 5G and health solutions tailored to the needs of the armed forces. The country is also developing command, control, and communications (C3I) systems and technologies to support intelligence and operational activities, focusing on applications of strategic importance to national security.

2.8.1.4. COMMON FEATURES – TECHNOLOGICAL ADVANCEMENT, DEFENSE TECHNOLOGY DEVELOPMENT, AND THE THREE COUNTRIES' ABILITY TO COOPERATE

The defense industry sector has several common features across the Baltic States. Companies from this region often specialize in the production of components or subsystems for larger foreign defense contractors. A significant part of their production is exported to NATO countries and the European Union. These companies focus on technological niches, distinguishing themselves through innovation in respective areas.

49 *Researcher: There is no classical defense industry in the Baltics*, August 19, 2024, https://news.err.ee/1609428802/researcher-there-is-no-classical-defense-industry-in-the-baltics.

50 Defense Research and Development, https://riigikaitseareng.ee/en/defence-research-and-development/.

51 *Hub of agile, adaptive and advanced defense*, May 2024, https://tradewithestonia.com/wp-content/uploads/2024/09/598939-fact-sheet-for-estonian-defence-sector.pdf.

Development of dual-use technologies, which enable effective use of innovation in various industrial sectors, is also an important component of the success. Another common denominator for the Baltic States' strategies is the support of innovative start-ups and tech companies, which - despite limited resources - allows them to play an important role in ensuring security both at the national and regional levels.

2.8.2. JOINT DEFENSE PROCUREMENT

The public procurement system for the defense sector in the Baltic States (Estonia, Latvia, and Lithuania) is relatively young and is based on regional cooperation and joint projects. Due to limited defense budgets and similar geopolitical threats, these countries often decide to **place joint orders** in order to reduce costs, increase interoperability, and improve logistical efficiency.

CONCLUSIONS FOR POLAND

Inspiration from the experiences of the Baltic States:

1. **Investments in dual-use technologies**
   The example of Estonia shows that the development of dual-use technologies allows for market diversification and boosts the defense sector's resilience to changes in the military budgets.

2. **Specialization in a specific field**
   The Baltic States have adopted a strategy of focusing on selected niches - Lithuania specializes in laser and space technologies, Estonia in robotics and cybersecurity, and Latvia in communications and command systems. This allows them to avoid competition, ensure complementarity of their competencies, and effectively join international supply chains. Poland can benefit from adopting a similar approach by focusing on specific technological specializations and developing products compatible with the systems of the foreign partners.

3. **Flexibility of the private sector**
   The experience of the Baltic States shows that relying on private companies to develop the defense sector increases flexibility, shortens response times to market needs and accelerates implementation of innovations.

4. **Cooperation with other countries, "sharing" work and production**
   Joint projects, dividing the production and specializations among partners with similar strategic interests - as demonstrated by the example of cooperation between the Baltic States - allow for the optimal use of limited resources, increased interoperability and better cost-effectiveness of defense investments.

5. **Efficient integration of personnel reserves and industry under the logic of "total defense"**
   The concept of "total defense" covers not only the army, but also industry. Private companies are included into the crisis planning and the defense system of the State. Poland should develop a model for industrial-military cooperation for times of crisis or war, e.g., by creating wartime production plans and industrial reserves.

2.9. SUMMARY

Regardless of the system of government – whether it be Turkiye, where Recep Tayyip Erdogan has been in power since 2003 or France, where the president changes every five years – common denominator for the successful establishment of a strong defense industry is for the country to have a consistent policy in this area. In places where long-term strategies with clearly defined objectives have been implemented over the course of many years, the arms sector is developing dynamically, providing jobs, supporting economic growth, and contributing to the technological advancement of the armed forces.

The key factors determining the success of the defense industry in the 21st century are: innovation, intensive investment in research and development (R&D), public-private partnerships, development of dual-use technologies, systemic support for exports and industrial production (e.g., through establishment of an institution responsible for coordinating and supervising this sector), joint ventures beneficial for technology acquisition, international alliances, personnel training, focus on production niches - e.g., modular systems compatible with various platforms, specialization in a specific field of defense technology, and rapid response to market needs.

Due to its geopolitical location, Poland finds itself in a unique situation. On the one hand, it faces threats from Russia and Belarus, and on the other, as a NATO frontline state, it has the opportunity to test modern solutions in real conflict conditions, deliver equipment to war zones, and obtain valuable feedback on innovations that are most sought after. Poland should seize this moment and, through an ambitious, long-term industrial strategy, become a powerhouse in the field of defense technologies, building its position as the strongest country on the NATO's Eastern Flank and in Central and Eastern Europe.

3. WHY IS POLAND HAVING DIFFICULTY TAPPING INTO ITS INDUSTRIAL POTENTIAL?

Jakub Palowski

3.1. INTRODUCTION

Poland finds itself in a unique security situation, as it is the only NATO member state bordering Ukraine, which is defending itself against Russian aggression, Russia and Belarus, which form a union state, and the Baltic States (Lithuania, Latvia, Estonia) , which, due to their location, limited population and military potential, are considered particularly vulnerable to aggression by the Russian Federation. In this context, Poland stands out as by far the strongest NATO country in Central and Eastern Europe in terms of military potential. Other countries in the region, such as the Czech Republic, Slovakia, the Baltic States, and even Romania, which is somewhat further away, have significantly lower defense capabilities when it comes to the size of their armed forces, equipment and overall readiness. **This means that the Polish Armed Forces and the entire Polish State have a special responsibility not ony for their own security but for the security of the entire region.** In other words, Poland should provide most of the capabilities for use in a defensive operation, even when it is supported by allied forces within NATO. In practice, this means that Poland must prepare most of the operational capabilities needed for a possible defensive operation, even if it is supported by NATO's allied forces. The land forces and ground-based air defense components are of particular importance here. It is difficult to transport them quickly in a crisis situation and, at the same time, they - alongside the unmanned systems and modern technologies – belong to areas where European NATO countries (and, to some extent, the US) have identified the greatest capability gaps. It is important to underline that building one's own defense capabilities is the foundation of national security, but it is also in line with obligations by the Allies under Article 3 of the Washington Treaty: "In order more effectively to achieve the objectives of this Treaty, the Parties, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack."[52]

3.2. POLISH PURCHASES OF ARMS IN 2024

Even before the Russian Federation's full-scale invasion of Ukraine in February 2022, the Russian Ministry of Foreign Affairs issued a memorandum demanding changes to the security architecture in Europe. Among other things, the document contained a demand that NATO troops not be deployed in the countries that had joined the North Atlantic Alliance after May 27, 1997, and thus – also not in Poland[53]. This fact

52 North Atlantic Treaty, https://hns-polska.wp.mil.pl/u/Traktat_Ponocnoatlantycki.pdf.

53 M. Menkiszak, *Russian blackmail against the West*, December 20, 2021, https://www.osw.waw.pl/pl/publikacje/analizy/2021-12-20/rosyjski-szantaz-wobec-zachodu.

proves that despite our membership in the North Atlantic Alliance, we are under particular threat from the Russian Federation. Following Russia's full-scale aggression against Ukraine, the Polish authorities took steps aimed at urgent strengthening of the operational capabilities of the Polish Armed Forces. The Act of 11 March 2022 on the defense of the Homeland[54], which implemented a number of solutions to modernize and expand Poland's defense capabilities, was instrumental here. Among the most important provisions of the Act was an increase in defense spending up to 3% of GDP starting from the year 2023 (instead of the previously planned 2.5% of GDP to be achieved by 2030), the creation of the Armed Forces Support Fund, and the introduction of new forms of military service, such as the Voluntary Basic Military Service and active reserve. These solutions were largely included in the classified Strengthening of the Polish Armed Forces for 2023–2025 Package adopted by the Council of Ministers on the basis of Article 794 of the aforementioned act. This led to a steep acceleration in contracting the materiel purchases for the Polish Armed Forces. At the end of 2024, the Armament Agency was implementing multi-year contracts with a total value of PLN 540 billion[55], which meant expenditure on technical modernization up until 2035 was higher than outlined in the Technical Modernization Plan of the Polish Armed Forces for 2021–2035 adopted in 2019.[56]

Poland is also the leader in defense spending among NATO countries. The share of defense spending in 2024 is estimated at 4.12%, which is the highest in the Alliance[57]. At the same time, however, only 37% of the funds allocated to technical modernization were contracted with the Polish weapons manufacturers under agreements concluded by the Armament Agency. An even smaller share – only about 5%[58] – has gone to private entities outside the PGZ Group. It must be kept in mind that a significant part of the largest contracts concluded with PGZ pertains to materiel under licenses by foreign partners (e.g., the "Miecznik" or "Narew" programs), which means that foreign companies hold a a significant share of the final value of the orders. The proportions are slightly different in the case of contracts concluded by the Armed Forces Support Inspectorate (Inspektorat Wsparcia Sił Zbrojnych), which is responsible, among other things, for the purchases of materials and repairs. In 2024 alone, orders worth approximately PLN 2 billion were placed with the PGZ Group, and PLN 1.3 billion with other entities, including private ones. However, the Inspectorate has a much smaller budget than the Armament Agency, which is responsible for new purchases (in 2024 alone, it concluded contracts for a total amount of PLN 57 billion, PLN 25 billion of which went to the Polish industry – PLN 19 billion to PGZ and PLN 6 billion to private companies). This data clearly shows that, despite huge defense spending, the share of domestic arms industry's participation in the public procurement processes remains **unsatisfactory and requires profound systemic changes**.

There is no doubt that as much of the defense spending as possible should be going to pay for the production of the the Polish arms industry. Domestic production of military equipment supports economic development and job creation, and above all increases national security by developing the country's own technological and operational capacities. This translates into the country's ability to swiftly repair, modernize, and, if necessary, resume production immediately in emergency situations.

54 Act of March 11, 2022, on the Defense of the Homeland, Journal of Laws 2022, item 655, https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20220000655/U/D20220655Lj.pdf.

55 Response of the Ministry of National Defense to MP Mariusz Błaszczak's interpellation No. 7004 on funds allocated to the Polish arms industry, January 14, 2025, https://sejm.gov.pl/INT10.nsf/klucz/ATTDDSJKD/%24FILE/i07004-o1.pdf.

56 *PLN 524 billion for modernization of the Polish Army by 2035*, Ministry of National Defense, October 10, 2019, https://www.gov.pl/web/obrona-narodowa/524-miliardy-zlotych-na-modernizacje-wojska-polskiego-do-2035-roku.

57 Defense Expenditure of NATO Countries (2014–2024), NATO press release, June 12, 2024, https://www.nato.int/nato_static_fl2014/assets/pdf/2024/6/pdf/240617-def-exp-2024-en.pdf.

58 Ministry of National Defence response to MP Mariusz Błaszczak's interpellation No. 7004 on funds allocated to the Polish arms industry, January 14, 2025.

Development of the domestic arms industry is also a step towards a greater strategic autonomy for Poland and independence from foreign suppliers. Moreover, the stronger and more innovative the defense industry in the country is, the greater are the chances to export its technology and equipment. This can have a positive impact not only on the trade balance, but also on political relations and Poland's position on the international stage.

For years, this has been a common objective of almost all Ministry of Defense leaderships and subsequent governments. So how come that even today only such a small percentage of all orders can be delivered by the Polish companies?

3.2.1. "SHOCKING"INCREASE IN POLAND'S DEFENSE SPENDING

Current participation of the Polish industry in the Polish defense orders is the result of many factors. For the sake of clarity it should be noted that the lion's share of contracts under execution by the Armament Agency at present was concluded upon **Russia's full-scale aggression against Ukraine in 2022.** Before this date, generally speaking, orders of such magnitude as we see today had not been planned. The Polish defense industry was not prepared for such a sharp increase in orders, even in those segments where it is proven to deliver efficient and effective solutions, including solutions verified in combat conditions. A good example is the Krab self-propelled gun-howitzer. In order to be able to transfer 54 units of this weaponry from the resources of the Polish Armed Forces to Ukraine and to meet Kiev's order for another identical batch (with a delivery date by the end of 2024), it was necessary to place a parallel order in the Republic of Korea for K9 howitzers with similar parameters, otherwise there would have been a permanent deficit in the equipment of the Polish Rocket Forces and Artillery. Previously planned deliveries of Krab howitzers to the Polish Army have been postponed until after 2024. Even new deliveries that are planned to happen after that date - despite their increased scale - will not cover all the needs resulting from the accelerated development of the Polish Armed Forces happening after the outbreak of full-scale war in Ukraine. It should be noted here that analytical work carried out by the Ministry of National Defense as part of the 2016–2017 Strategic Defense Review concluded that the number of Krab howitzers and the pace of their production should be significantly increased[59] , but until 2022, there had been no financial resources allocated for this purpose, nor had the Rocket Forces and Artillery been provided with the chance to expand their organizational structures, infrastructure, etc. adequately in order to integrate the new materiel. As a result, by the time of the Russian invasion of Ukraine, the accelerated production of Krab howitzers had not materialized.

The Ministry of National Defense and the Polish Armed Forces are faced with similar circumstances in other areas as well. For example, when it comes to the armored forces, contracts worth no more than PLN 6 billion were concluded between 2011 and 2020 for the supply and modernization of tanks[60] , while for the period of 2021–2025 (more precisely, for the years 2022 and 2023 only) total value of the contracts to supply tanks and support vehicles (incl. packages also covering, for example, ammunition) amounted to over USD 9.5 billion[61], which translates to over **PLN 36 billion at the current exchange rate**. On August 1, 2025, another contract - worth over $6.5 billion, or approximately PLN 24 billion at the current exchange rate - was concluded for the delivery of K2 and K2PL tanks[62] , technology transfer, and accompanying vehicles. Therefore, the sum of money spent after 2021 on tanks alone **is six times higher than in previous years**

59 R. Lesiecki, *Szatkowski: There will be about 500 Krabs*, November 17, 2017, https://defence24.pl/szatkowski-krabow-bedzie-ok-500.

60 This includes PLN 3.29 billion for the modernization of Leopard 2 tanks up to the Leopard 2PL standard (2015, including annexes concluded during the above-mentioned period, currently worth PLN 4.2 billion gross), PLN 1.749 billion for the refurbishment of T-72 tanks with modifications (2019), EUR 180 million (approx. PLN 772 million at today's exchange rate) for the delivery of 105 Leopard 2A5 and Leopard 2A4 tanks together with accompanying vehicles (2013).

61 The April 2022 contract for the delivery of 250 new M1A2 SEPv3 Abrams tanks with accompanying vehicles, the August 2022 contract for the delivery of 180 K2 tanks, and the January 2023 contract for delivery.

62 Armament Agency, Signing of Executive Agreement No. 2 for the K2 armament system, https://www.wojsko-polskie.pl/au/articles/aktualnosci/podpisanie-umowy-wykonawczej-nr-2-na-system-uzbrojenia-k2/

if you look only at the agreements from 2022-2023. If you also account for the most recent contract, then it is ten times higher. A similar trend is seen in many other development areas of the Polish Armed Forces, where funding has increased significantly after 2022. The scale of these increase proves that the new geopolitical situation following Russia's invasion on Ukraine has caused a profound change in the approach to national security.

The increase in defense spending after 2022 - a response to the deteriorating situation in Poland's immediate environment and the adoption of the Strengthening of the Polish Armed Forces for 2023–2025 Package, which is part of the Homeland Defense Act - was **sudden, if not "shocking".** While at the end of 2024, the Armament Agency was executing arms purchases with a total long-term value of PLN 540 billion, at the turn of November and December 2021, i.e. about three years earlier, **the value of multi-year contracts by the Armament Inspectorate was more than five times lower, amounting to PLN 94.12 billion**[63]**.** This difference supports the thesis that the current shape of the Polish defense spending and the scale of military equipment purchases were primarily the result of decisions made during the full-scale war in Ukraine, only to a limited extent stemming from earlier, long-term planning**.**

This conclusion is supported further by NATO defense expenditure statistics. According to data from the North Atlantic Alliance, Poland's nominal defense expenditure increased between 2014 and 2024 from PLN 31.874 billion to PLN 151.241 billion, i.e.**, by as much as 374% nominally.** When calculated in constant 2015 prices, it increased from PLN 32.376 billion to PLN 101.236 billion, i.e**.** by **over 212%** in real terms**.** However, if we take a closer look at the dynamics of this growth, nominal expenditure increased from PLN 31.874 billion to PLN 52.110 billion (by less than 64%) between 2014 and 2020, while in the four years that followed (2021–2024) it increased **from PLN 58.304 billion to PLN 151.241 billion, i.e. by 159%**. In real 2015 prices, this represents an increase from PLN 32.376 billion to PLN 47.049 billion (slightly over 45.2%) in the years 2014–2020, and as much as a 102% increase (from PLN 49.925 billion to PLN 101.236 billion) between 2021 and 2024. In other words, the growth rate of Polish defense spending was significantly higher only in the most recent period, which deprived it of benefits coming with earlier planning and the build-up of production capacity. Moreover, **the steep increase applies not only to orders placed domestically, but also abroad.** According to the SIPRI ranking, arms imports to Poland increased by as much as 508% between 2020 and 2024 compared to 2015–2019[64], making Poland the 11th largest importer of arms in the world. In 2015–2019 – following Russia's annexation of Crimea and increased defense spending – it occupied the 40th place in the same ranking[65] . The Armed Forces Support Fund, which provides assistance in contracting purchases from allied and partnered countries based on loans granted or guaranteed by them, has become a significant stimulus for arms imports to Poland. However, this does not exclude the involvement of Polish industry, even as the main contractor. A good example is the Narew air defense program, whose value in terms of launchers and missiles purchases alone exceeds PLN 50 billion. The main contractor for this project is Polska Grupa Zbrojeniowa, and contract delivery is largely financed by loans granted by the British government. **Altogether, the Polish industry, which did not have extensive production capacities before 2022, found itself in a difficult position and is now facing a challenge of meeting the demand on a scale that had not been anticipated.**

63 J. Ciślak, *New plans, structures, and few deliveries. Modernization of the Polish Armed Forces in 2021 [analysis]*, December 29, 2021, https://defence24.pl/sily-zbrojne/podsumowanie-realizacji-plan-modernizacji-technicznej-w-2021-roku.

64 M. George, K. Djokic, Z. Hussain, P.D. Wezeman, S.T. Wezeman, *Trends in international arms transfers*, 2024, https://www.sipri.org/sites/default/files/2025-03/fs_2503_at_2024_0.pdf, DOI: 10.55163/XXSZ9056.

65 P.D. Wezeman, A. Fleurant, A. Kuimova, D. Lopes da Silva, N. Tian, S.T. Wezeman, *Trends in international arms transfers*, 2019, https://www.sipri.org/sites/default/files/2020-03/fs_2003_at_2019.pdf.

3.3. CHALLENGES TO THE TECHNICAL MODERNIZATION OF THE POLISH ARMED FORCES AND STRUCTURAL IMBALANCES IN THE DEFENSE INDUSTRY

Although the current state of the Polish arms industry results - to an extent – from the fact that large-scale investments in the country's defense stared only upon Russia's invasion of Ukraine in 2022, the roots of this situation lie much deeper. For a long time, the Polish system of military equipment and armament procurement has been (and still is) plagued by **structural problems and imbalances** that significantly hinder the planned modernization of the Polish Armed Forces that is to be based on the domestic industrial base and paralleled with the expansion of that base. These problems concern financing on the one hand, and **the institutional and regulatory environment** on the other**.** Therefore, considering that the current capacity of the domestic defense industry and its development prospects are largely the result of long-term historical circumstances, it may be worth to analyze what factors - apart from the late coming sharp increase in the defense spending from 2021/2022, has led to this situation.

3.3.1. THE DIFFICULT TRANSFORMATION OF THE POLISH INDUSTRY

Poland inherited a developed defense industry from the communist era, but in the course of the political transformation and the "post-Cold War twenty year period," the country found itself in a difficult position. On the one hand, in the 1990s, the freshly reborn State did not have the resources to invest in military equipment and armaments on a scale that would allow it neither to maintain nor develop. On the other hand, political changes meant that partnerships and links the Polish industry previously had were severed, and some of the markets it had operated on - like Iraq and other Middle Eastern countries - became out of reach.

In the 1990s, Polish private defense companies also began to emerge, focusing on specific areas such as command, communications, and fire control systems[66]. These were considered a priority because changes in this area were necessary for the Polish Army to have at least a basic ability to cooperate with the North Atlantic Alliance. It was in these segments that the most successful technology transfers from foreign partners to the Polish industry took place, which today translates into a significant degree of industrial independence in key areas such as friend-or-foe identification (IFF)[67] and NATO-standard radio stations[68]. However, when it comes to domestic production capacities, technology transfer and the extensive modernization of combat vehicles and missile systems**, most of the projects launched in the 1990s were not completed.** Cancelled projects included the Loara program (anti-aircraft system), the modernization of the BWP-1 infantry fighting vehicle, and the Huzar helicopter. A notable exception is the Grom Portable Anti-Aircraft Missile System, created as part of the Strategic Government Program and later developed into the Piorun version. Another program, launched in the 1990s, concerning the Krab howitzer, waited to be able to execute serial deliveries to the Polish Army until 2016–2017, upon the change of the chassis to a Korean one in 2014. In the 1990s, a batch of T-72 tanks was also modernized to meet the PT-91 Twardy standard, with some of them being built from scratch. However, for financial reasons, the configuration of the tanks was more modest than expected by the Polish Army. Despite the launch of a number of development programs in that decade, other factors, namely limited funding available to the Ministry of National Defense and the necessity to maintain a complex industrial structure, did not allow for the implementation of the developed equipment on a larger scale.

66 E.g. WB Electronics and Teldat, established in 1997.

67 M. Dura, *The IFF system was and should be produced in Poland,* October 31, 2016, https://defence24.pl/system-iff-byl-i-powinien-byc-produkowany-w-polsce.

68 *20 years of cooperation between Radmor and Thales. Cooperation in the European ESSOR project*, March 12, 2016, https://defence24.pl/20-lat-wspolpracy-radmor-i-thales-kooperacja-w-europejskim-projekcie-essor.

Arms purchases abroad suffered a similar fate - in the 1990s, no major purchases of equipment were made and no modernization programs took effect, be them domestic or performed abroad. As a result, **the need to modernize the Polish Armed Forces grew even more urgent than a decade before.** The Polish defense industry was in a relatively poor condition as well, especially due to a drop in domestic orders and limited presence on export markets as mentioned above. Both the Polish Armed Forces and the defense industry saw opportunities primarily in the technical modernization of the army necessary to meet Poland's NATO commitments upon joining the North Atlantic Alliance. **Poland's accession to NATO and the fulfillment of its alliance commitments,** including the defense spending amounting to a minimum of 2% of GDP, were **a matter of wide consensus among all political forces in Poland.**

3.3.2. AFTER POLAND'S ACCESSION TO NATO AND THE EU – HOPES AND CRISIS

Increased pace of technological modernization of the Polish Armed Forces became possible only after Poland's accession to NATO and change to the structure of the country's defense spending, which encompassed legal stipulation for the defense spending to be calculated as a percentage of GDP. The changes also included restructuring the Armed Forces and limiting the number of soldiers to a maximum of 150,000 in times of peace[69]. This led to the launch of a number of modernization programs, often in conjunction with offset programs, which was intended to act as a lever for the development of the Polish defense industry. The largest projects covered the purchase of the F-16 multi-role fighter jets, Rosomak wheeled armored transporters, and Spike-LR anti-tank guided missiles. However, the scope and size of these programs did not meet all the needs defined by the Polish Armed Forces for these areas.

For example, although Poland's needs had been estimated at a minimum of 100 to 160 modern multi-role aircraft since the 1990s, it was not until 2003 that 48 fighter jets were finally purchased, with significant support from a US government loan. More importantly, until 2010, the program had been financed by means coming from outside of the budget of the Ministry of National Defense, and more than half of its costs was repaid as late as 2015, i.e. under completely different macroeconomic and political conditions, a decade after Poland's accession to the European Union and the country's emergence from the economic slowdown associated with the eurozone crisis of 2008–2013[70]. It was precisely due to these one-off payments for the 2003 contract that in 2015 Poland achieved a historically high level of defense spending as a share of GDP (over 2.2%), which then fell below 2.02% and did not rise until 2020. This shows that – **putting aside the current, dynamic pace of implementation - modernization of the Polish Armed Forces has, until recently, been a truly protracted process.**

The same was true for Rosomak armored personnel carriers and Spike-LR anti-tank guided missiles. It was not until 2023 that the first transporters integrated with anti-tank missile launchers were delivered to the Polish Armed Forces, even though such integration had been the objective of the program from its outset, and the first long-term contracts, together with offset programs, for the delivery of Spike-LR anti-tank guided missiles and Rosomak transporters, were signed back in 2003, i.e. 20 years earlier.

69 Act of May 25, 2001 on the restructuring, technical modernization, and financing of the Armed Forces of the Republic of Poland, Journal of Laws 2001 No. 76, item 804.

70 *The Ministry of National Defense did not use PLN 10 billion. Most of the payments for the F-16s in 2015,* 11.09.2014, https://defence24.pl/sily-zbrojne/mon-nie-wykorzystal-10-miliardow-zlotych-wiekszosc-splat-za-f-16-w-2015-roku.

It should also be noted that many programs planned at the beginning of the 21st century **were never executed**, among other things, due to continued limited financing of the Polish Armed Forces, as well as the need to cover the costs of stabilization missions in Iraq and Afghanistan[71]. For example, the program to modernize Mi-24PL helicopters up to the "Pluszcz" standard, which was to be implemented within the Visegrad Group, failed. As a result, it was not until after Russia's full-scale aggression against Ukraine in 2022 that the first helicopters equipped with guided anti-tank weapons were contracted, although their acquisition had been planned (in the form of developing new platforms or modernizing existing ones) since the 1990s. **Cancellation of these programs contributed not only to the degradation of the Polish Armed Forces' capabilities, but also to the deteriorating condition of the domestic defense industry, which was to play a significant role in their execution.** On the other hand, high hopes were vested in the offset programs, which did contribute to the modernization of the industry and enabled partial production and servicing of a number of weapon systems in the country. However, it did not lead to the rapid boost to the industry's capacity that had been assumed in the 1990s. In particular, the capacity to run full, independent production of weapons covered by offset programs was never built. Moreover, some of the offset-related investments in the early 2000s were not directly related to military production. It should be added here that implementation of offset commitments was subject to control by the Supreme Audit Office – in 2009 with regard to the F-16 fighter jet[72], and in 2011 with regard to the Rosomak armored transport vehicle[73]. In both cases, the Supreme Audit Office concluded with positive assessments, however the notes were the lowest in this category, pointing to the occurrence of irregularities.

Another important period in the recent history of the Polish defense industry was 2008–2009. In the wake of the global financial crisis triggered by the collapse of Lehman Brothers and the crisis in the eurozone, significant cuts were made to the budget of the Ministry of National Defense. Funds that were nominally at the disposal of the Ministry of National Defense were blocked and returned to the Ministry of Finance. This reduced the pool of funds allocated to the technical modernization of the Polish Armed Forces. At that time, the Loara[74] anti-aircraft system program, already stripped of its missile component, was finally canceled, with excessive costs quoted as the main reason. It was also decided to abandon – or rather, as it turned out later, suspend - the purchase of German Leopard 2 tanks, quoting lack of participation by the Polish industry[75]. However, at the same time no orders were placed with the Polish industry for the modernization of existing tanks. In 2009, the program to modernize infantry fighting vehicles, which was to be carried out by the Polish plants, was also abandoned. At the same time, a decision was made for the Polish Armed Forces to professionalize, which involved structural reductions and, as a consequence, the liquidation of the 1st Mechanized Division in 2011. Structural cuts also led to a reduction in orders for military equipment repairs. All these factors meant that a large number of defense industry companies found themselves in a very difficult situation.

Despite the reduction in defense spending after 2010, the Office of the President, the Ministry of National Defense, and the National Security Bureau continued to carry out planning and reorganization work on both:

71 Over PLN 6 billion was spent on the mission in Afghanistan alone between 2007 and 2014. For comparison: the first contract, from 2003, for the delivery of Rosomak transporters, covering approximately 600 vehicles, most of them equipped with an armored turret, cost PLN 5 billion, and the second, from 2013, covering only the basic version of the vehicles, cost PLN 1.65 billion, see Report: *Poland spent PLN 6 billion on the mission in Afghanistan,* March 31, 2014, https://defence24.pl/sily-zbrojne/raport-polska-wydala-6-mld-zlotych-na-misje-w-afganistanie; *More Rosomak vehicles for the Polish army,* October 24, 2013, https://www.polska-zbrojna.pl/home/articleshow/10092.

72 NIK, *Information on the results of the audit of the implementation of offset obligations under the contract for the purchase of F-16 aircraft,* Warsaw, July 2009, https://www.nik.gov.pl/plik/id,75,vp,75.pdf.

73 NIK, *Implementation of offset obligations related to the delivery of wheeled armored personnel carriers to the Polish Armed Forces,* August 21, 2012, https://www.nik.gov.pl/plik/id,4251,vp,5410.pdf.

74 Response of the Minister of National Defense to question no. 5176 on the suspension of the Loara program, September 21, 2009, https://orka2.sejm.gov.pl/iz6.nsf/main/01fbaf28.

75 Klich on the head of defense, purchases, and reorganization of the army, December 26, 2008, https://www.gazetaprawna.pl/wiadomosci/artykuly/102356,klich-min-o-szefie-obrony-zakupach-i-reorganizacji-armii.html.

the State defense system and the arms procurement system. In 2011, the Armament Inspectorate was established to consolidate several units of the Ministry of National Defense: the Department of Armed Forces Supply, the Armament Market Analysis Office, the Regional Marine Technology Branch, and the Shipbuilding and Modernization Branch. It also took over the tasks of the Armament Policy Department pertaining to the development and implementation work as well as supervision of technical documentation, and the Budget Department in the areas covered by the Central Expenditure Division[76]. Earlier, in 2006, the Armed Forces Support Inspectorate was established with the view to consolidate all military logistics. It reached full operational readiness in 2008. In December 2012, an ambitious Technical Modernization Plan for the Polish Armed Forces for 2013–2022 was adopted. Its value amounted to PLN 130 billion, with approximately PLN 90 billion allocated to key operational programs[77]. The objective behind its implementation was to provide the Polish Armed Forces with opportunities for a rapid increase in their capacity, particularly in the areas of air defense, mobility, image and satellite reconnaissance (including the use of unmanned aerial vehicles), communications and command, as well as in the area of strike capabilities and the development of the Navy. Between 2010 and 2012, the Presidential National Security Bureau conducted a Strategic National Security Review (SPBN). Review resulted in the formulation of the so-called Komorowski doctrine, which assumed an increased role and importance of the country's territorial defense capabilities over its participation in foreign missions, which had previously been considered a priority. The highest priority was given to setting up a layered air and missile defense system[78]. However, the execution of these ambitious plans was halted at its outset, since 2013 saw a serious reduction in the military budget, including funds allocated to capital expenditure[79]. In 2013, a decision was also made to establish the Polish Armaments Group (PGZ SA), which was to consolidate the State-owned defense industry companies.

Since 2010, a number of agreements related to the performance of the development work in the domestic industry (partly also in private companies) has been concluded. These projects included the Piorun portable anti-aircraft system, the Sajna, PET-PCL, and Warta radar stations, the Passive Location System, and the ZSSW-30 Remote Controlled Turret Module for the Rosomak Wheeled Armored Vehicle. Private entities participated in most of these projects as consortia members. The Piorun system was developed by a consortium involving CRW Telesystem-Mesko Sp. z o.o., cooperating with Mesko S.A. as the project leader, and the Military University of Technology. WB Group participated in the construction of the ZSSW-30 turret with HSW as the consortium leader. Moreover, AM Technologies was member of the consortium building the Passive Location System, cooperating with PIT-RADWAR as the consortium leader, and the Warsaw University of Technology. In 2013, a contract for the construction of the first Kormoran II minehunter was signed. The private company "Remontowa" Shiprepair Yard took on the role of the leader in the program[80].

3.3.3. CONSOLIDATION WITH DIFFICULTIES

In many respects, the year 2014 was a breakthrough year for both the technical modernization of the Polish Armed Forces and the Polish defense industry. The change in the security environment following Russia's annexation of Crimea and hybrid aggression against eastern Ukraine led to unfreezing the funds in the Ministry of Defense budget, and the statutory spending limit was increased from 1.95% to 2% of GDP[81].

76 Armament Inspectorate, History, https://archiwum2021-iu.wp.mil.pl/pl/pages/historia-2018-03-16-x/index.html.

77 A. Duda (Gen.), Assessment of the implementation of the Technical Modernization Plan for 2013–2022. Success or failure?, https://sea.org.pl/ocena-stanu-realizacji-planu-modernizacji-technicznej-na-lata-2013-2022-sukces-czy-porazka/.

78 S. Koziej, *President Komorowski's Doctrine,* https://polska-zbrojna.pl/home/articleshow/7800?t=Doktryna-prezydenta-.

79 *Committees approve budget cuts,* August 30, 2013, https://tvn24.pl/biznes/najnowsze/komisje-pozytywnie-o-cieciach-w-budzecie-ra350764-ls4435338.

80 M. Dura, *Kormoran II minehunter combat system launched. Ship to be built without delays,* April 9, 2015, https://defence24.pl/przemysl/uruchomiono-system-walki-niszczyciela-min-kormoran-ii-okret-bedzie-zbudowany-bez-opoznien.

81 J. Tańska, *President signs law on 2% of GDP for defense,* July 23, 2015, https://www.polska-zbrojna.pl/home/articleshow/16663.

The first stage of the consolidation of the Polish Armaments Group (PGZ), which involved inclusion of the former Military Repair and Production Enterprises (Wojskowe Przedsiębiorstwa Remontowo-Produkcyjne) in the PGZ, was also finalized[82]. An amendment to the offset act was also adopted. It aligned the national regulations with the European Union requirements, severely restricting application of the offset mechanism. Under the new regulations, offset could only be applied to situations where it could be justified by critical national security interests, with the purpose limited to strengthening industrial and defense capabilities only, rather than boosting the general economic development[83]. A year later, the process of consolidating the State defense industry around PGZ was completed, incorporating the plants that had formed the former Bumar Group.

In 2014–2015, several large modernization programs directed at the Polish industry were at an advanced stage of execution by the Armament Inspectorate. Medium-range air defense systems were acquired under the Wisła program (addressed at the US government and Raytheon), multi-purpose helicopters on a common platform were purchased (the offer from Airbus Helicopters was selected). Both purchases provided for cooperation with foreign contractors and an offset package. In addition, domestic procurement proceedings were also conducted. These pertained to, among others, the Rosomak BMS combat management system[84] and several classes of unmanned aerial systems (Wizjer, Orlik[85] , Gryf[86]). Significantly, these proceedings constituted an attempt **to direct more orders from the Ministry of National Defense to the private industry**, including companies not associated with arms production. They were carried out with the use of mechanism of protection of the Fundamental National Security Interest (PIBP), which allowed to run them outside of the Public Procurement Law[87] regime. Upon conclusion of the PIBP assessment, it was assumed that only domestic entities, both State-owned and private, would be allowed to participate. However, after the 2015 parliamentary elections and a change in the leadership of the Ministry of National Defense, it was decided to cancel the previously initiated proceedings for unmanned aerial vehicles and a battlefield management system[88] and to open them only to State-owned entities, with private industry allowed to participate only as subcontractors. It must be highlighted here that the standard public procurement regulations, especially before the 2021 amendment, were widely considered inadequate for the implementation of military contracts and meeting the objective of expanding production capacity. Application of open criteria gives advantage to entities that already have their products and production capacity ready, which affects the price. In line with the European Union regulations, every public procurement procedure must be open not only to Polish companies, but also to entities from the European Union and the European Economic Area. As a result, Polish companies from the defense sector, most of which are still expanding their production capacity, found themselves at a competitive disadvantage compared to companies from Western Europe. These are in a better financial situation, have greater export experience and an extensive production base. These advantages allowed them to significantly limit the losses resulting from the low number of domestic orders during years of budget cuts, including during the financial crisis.

82 Court confirms PGZ capital increase, September 9, 2014, https://defence24.pl/sily-zbrojne/sad-potwierdza-podwyzszenie-kapitalu-pgz.

83 Offset as an instrument for protecting national security interests, July 30, 2014, https://www.sejm.gov.pl/sejm7.nsf/komunikat.xsp?documentId=A983355415EBE44DC1257D17003F419E&symbol=KOMUNIKATY_KOMUNIKAT.

84 Four consortia interested in the mega-tender for BMS, including Comarch and Asseco, September 30, 2015, https://www.bankier.pl/wiadomosc/Cztery-konsorcja-zainteresowane-megaprztargiem-na-BMS-wsrod-nich-Comarch-i-Asseco-3416514.html.

85 K. Wilewski, *Polish drones for the army*, July 27, 2015, https://www.polska-zbrojna.pl/home/articleshow/16635?t=Polskie-drony-dla-armii.

86 Ibid., *Gryfy jednak z Polski [Griffins from Poland]*, August 21, 2015, https://www.polska-zbrojna.pl/home/articleshow/16909.

87 Pursuant to Article 346 of the Treaty on the Functioning of the European Union, "each Member State may take such measures as it considers necessary for the protection of the essential interests of its security which are connected with the production of or trade in arms, munitions, or war material; such measures shall not adversely affect the conditions of competition in the internal market in respect to products which are not are intended exclusively for military purposes." In practice, this means that standard competition rules can be disregarded when procuring military equipment.

88 The Ministry of National Defense canceled the tenders for "Orliki" and "Wizjery." "Gryf" and "Zefir" after PMT update, July 19, 2016, https://defence24.pl/sily-zbrojne/mon-uniewaznil-przetargi-na-orliki-i-wizjery-gryf-i-zefir-po-aktualizacji-pmt.

The leadership of the Ministry of National Defense, which took office after October 2015, declared strong support for the Polish defense industry. One of the ministry's priorities at the time was to create the Territorial Defense Force, which entailed purchases and delivery of basic equipment for the new type of forces: small arms, vehicles, optoelectronic systems, instrumentation, etc. However, the vast majority of orders were directed to PGZ companies, with application of procedures providing for protection of the Fundamental National Security Interest. This course of action was perfectly justifiable in situations where the State-owned companies had previously acted as main contractors in the development projects and had the expertise to manufacture the equipment in question (e.g., Huta Stalowa Wola in the case of Rak self-propelled mortars and Krab howitzers, PIT-RADWAR for radar stations, and Fabryka Broni "Łucznik" – Radom for the Grot carbine). However, doubts were raised about application of this approach to the procurement policy in the field of electronic systems, where private industry had stronger capabilities, often offering dual-use civilian and military solutions. Moreover, the leadership of the Ministry of National Defense at the time - despite the fact that under the Technical Modernization Plan programs, Polish private entities were to be excluded as potential suppliers of the unmanned systems - decided to purchase them for the Territorial Defense Forces from private entities nonetheless. In 2017–2018, contracts were concluded for the delivery of FlyEye Unmanned Aerial Systems and Warmate loitering munitions for the Territorial Defense Forces, and in 2017, the State Development Fund invested in their supplier, WB Electronics[89]. The policy on the participation of private entities in the largest modernization programs adopted by the United Right's government had its strong and weak points but was not entirely consistent internally. The MoND's leadership under the United Right's government was also critical of the selection of the Airbus Helicopters bid in the tender for multi-role helicopters on a common platform (it was ultimately canceled in 2016 due to the failure of offset negotiations). The Minister of National Defense decided to purchase helicopters from the Polish companies owned by foreign entities (PZL-Świdnik – Leonardo and PZL-Mielec – Lockheed Martin/Sikorsky). This contributed to the strengthening of both of these plants and their domestic supply chains, and in the case of PZL-Mielec, also to the conclusion of large export contracts for helicopter deliveries[90].

Although some modernization programs were successfully launched in the following years, **problems in the functioning of the materiel procurement system for the Polish Armed Forces became increasingly apparent.** Before the establishment of the Technical Modernization Council at the Ministry of National Defense and the Armament Agency, the system was fragmented and highly inefficient. This situation contributed to further delays, even for relatively simple modernization programs. For example, the tender for 4x4 off-road vehicles in the "Mustang" program was canceled several times since 2015[91], while the contract for the delivery of vehicles was not concluded until 2020[92] under a different formula. Moreover, the contract for a battlefield simulation system was not signed until 2021[93], although the original tender was announced in 2015[94]. The pressure to sign contracts in the last months of the year, exerted in order to avoid the return of unused funds, was also frequent, even at the cost of less advantageous conditions. There existed no mechanism to keep the unspent funds as non-expiring funds for the discretion of the Ministry of National Defense (e.g., in a State special-purpose fund), which would have allowed to spend them during continuation

89 J. Sabak, Polish Development Fund invests in WB Electronics. Shares worth PLN 128 million, November 9, 2017, https://defence24.pl/polski-fundusz-rozwoju-inwestuje-w-wb-electronics-akcje-za-128-mln-zl.

90 Since 2019, when the first contract for the delivery of S-70i Black Hawk helicopters to the Polish Special Forces was signed, the Philippines has purchased a total of 48 such helicopters. For more information: M. Marszałkowski, *The Philippines receives more Black Hawks from Poland*, December 15, 2024, https://defence24.pl/przemysl/filipiny-dostaly-kolejne-black-hawki-z-polski.

91 J. Sabak, *Is the army looking for 600 "small" Mustangs?*, June 25, 2019, https://defence24.pl/przemysl/wojsko-poszukuje-600-malych-mustangow.

92 M. Multarzyński, *Mustang: Fords instead of Nissans*, July 1, 2020, https://defence24.pl/sily-zbrojne/fordy-zamiast-nissanow.

93 MSPO 2021: Digital training for the Land Forces. Contract signed, September 7, 2021, http://defence24.pl/sily-zbrojne/mspo-2021-cyfrowe-szkolenie-dla-wojsk-ladowych-podpisano-kontrakt

94 Simulators for the Land Forces from scratch. After four years, August 26, 2019, https://defence24.pl/przemysl/symulatory-dla-wojsk-ladowych-od-nowa-przetarg-uniewazniony.

of a given program over the following years. As with the public procurement law, the principles governing public finances (the principle of annuality[95]) enter into conflict with the realities of planning for the technical modernization, which requires long-term financing, while also being conditional on the stage of technological development, changing needs, etc.

As a result, the process of technical modernization, while formally recognized as a priority, was systematically delayed. This was the case of the Narew short-range air defense system's acquisition, delivery of helicopters armed with anti-tank weapons, or modernization of the Navy. The Ministry of Defense conducted analytical work on increasing Poland's defense potential and greater industry involvement but its results were, at best, only partially implemented. Under the Strategic Defense Review for 2016–2017 and according to the part that is publicly available, i.e. the Concept of Defense for the Republic of Poland, it was recommended to radically increase the capabilities of the Polish Army, including in the areas of artillery, armored weapons, combat aviation, and attack helicopters. Also the recommended volumes of purchases or production of equipment by far exceeded the original assumptions. Nonetheless, these assumptions were, in most cases, not implemented or, at best, implemented only partially[96] up until Russia's full-scale invasion of Ukraine. One of the reasons for this situation was the fact that in 2017, an amendment to the Act on the restructuring, technical modernization, and financing of the Polish Armed Forces was adopted, providing for an increase in defense spending up to 2.5% of GDP. This cap, however, was not to be reached until 2030[97]. In practice, this meant insufficient pressure to implement modernization programs quickly, in accordance with the schedules resulting from the needs of the Polish Armed Forces, as most equipment deliveries and expenditures were planned for later years. Both the Technical Modernization Plan for 2013–2022, adopted in 2012 by the Ministry of National Defense under the Civic Platform and Polish People's Party coalition government, as well as the Technical Modernization Plan for 2021–2035 assumed that **most of the arms purchases would be made later in the planning period**[98]**,** which made the implementation of these plans vulnerable to economic fluctuations and changing political priorities.

When it comes to foreign arms purchases until 2020, three contracts were of crucial significance. In 2018, the first contract for the delivery of Patriot/IBCS systems under the Wisła program was signed, followed a year later by a contract for the first HIMARS rocket artillery squadron. In January 2020, a contract for the purchase of American F-35A fighter jets was concluded.

In the case of the Wisła program, equipment was procured along with an offset that provided solid grounds for the implementation of subsequent air defense programs (which are still in the analytical phase, despite growing operational needs). The purchase of HIMARS, on the other hand, was carried out on a limited scale, smaller than assumed in the Technical Modernization Plan. Moreover, it was decided it would be implemented at this stage without industrial cooperation, even though the Strategic Defense Review recommended not only the continuation but also a significant expansion of this industrial cooperation program. The rationale

95 P. Russel, *"Budgetary principles,"* in: Budgetary lexicon, https://www.sejm.gov.pl/sejm7.nsf/BASLeksykon.xsp?id=32AE9B34A56C5CD4C1257A75003B6309&litera=Z.

96 In addition to the aforementioned Krab howitzers, there were also plans to increase the number of Homar rocket launchers, built with the participation of the Polish industry, and attack helicopters. The introduction of a non-amphibious infantry fighting vehicle was also considered, as was the mass introduction of anti-tank weapons. Apart from the purchase of 5th generation fighters (but without the simultaneous, proposed increase in the number of 4.5 generation aircraft similar to the F-16) and the modification of T-72 tanks (limited in scope compared to the original assumptions), none of these projects made it to the equipment contracting stage before 2021.

97 R. Lesiecki, *We have the Komorowski–Macierewicz bill.* Defense spending is set to increase [commentary], September 15, 2017, https://defence24.pl/mamy-ustawe-komorowskiego-macierewicza-wydatki-obronne-maja-byc-wyzsze-komentarz.

98 See: *PMT 2035: finances will determine the generational leap* [commentary], October 11, 2019, https://defence24.pl/polityka-obronna/pmt-2035-o-skoku-generacyjnym-zdecyduja-finanse-komentarz; M. Dura, *Will the economic situation thwart plans to modernize the army?,* September 29, 2014, https://defence24.pl/geopolityka/koniunktura-gospodarcza-zniweczy-plany-modernizacji-armii.

behind this decision was, among other things, financial: the estimated costs were overrun several fold[99], while the program itself had been redefined earlier. In 2019, however, the decision to purchase American F-35A fighter jets was made (the agreement was signed in January 2020). This resulted from the Ministry of Defense's decision to accelerate materiel replacements after accidents involving post-Soviet MiG-29 fighter jets[100]. However, the number of aircrafts ordered did not allow for the complete materiel replacement in the combat aviation of the Polish Air Forces. And in this case, the equipment procurement procedures in force at that moment proved insufficient for program implementation – all this despite the fact that the necessity to replace post-Soviet aircraft had been understood and known for a long time. The purchase of the F-35A was carried out without offset and industrial cooperation.

For a long time, the execution of modernization programs was slow and selective. Also the system for planning and implementing development-related work raised many concerns, which was reflected, among other things, in a report by the Supreme Audit Office[101]. It should be noted that between 2010 and 2014, Polish industry was commissioned to carry out a significant amount of research and development work, particularly via the National Center for Research and Development. However, financing for these projects was planned at a time when the ministry's budget was severely restricted. Limited resources translated into allocation of very small sums to the implementation of specific tasks. For example, only PLN 75 million[102] was assigned to the New Borsuk Fighting Vehicle program - it is many times less than sums spent on similar projects in other NATO countries. It was not until 2022 that the project received significant financial support. Such **low funding for development projects** meant that building a larger number of prototypes or performance of variant work (e.g., competitively with several contractors, up to a certain stage) were not possible. Similar ills affected a number of other projects, such as the project to construct radar stations for the air defense system. Some projects received funding of less than PLN 100 million, while others - slightly more than this amount, which was the value of at most one radar built in during scaled mass production[103]. **All of the above, combined with a highly bureaucratic process of approvals required to release subsequent tranches of the funding as well as definition of the requirements, led to an extremely protracted process of weapons development.** At the same time, the adopted R&D work schedules did not take into account the risks associated with the development of new technologies, assuming only a few years for the development of new types of conventional weapons. All the while, as the practice of NATO countries shows, such work, carried out during times of peace and with adequate funding, takes 8–10 or even more than a dozen of years.

It should be noted that most of the R&D work planning took place between 2011 and 2013, when the budget of the Polish Armed Forces was significantly restricted. Thus, the development work dragged, even though it was related to equipment that the Polish Armed Forces urgently needed. For example, the BWP Borsuk mentioned before is to replace the BWP-1 vehicles, which have been in the service of the Polish Army in a virtually unchanged form since 1973. Provided that the last BWP-1 vehicles were delivered in 1988, then according to the standard 30-year "life cycle" of the equipment, the last ones should have been withdrawn (replaced) by 2018. However, by that time, no new tracked combat vehicle of this class, integrated with anti-tank weapons, had been introduced into the Polish Armed Forces, and the first executive agreement for

99 *Statements made during Sejm sessions*, Session No. 77 on January 31, 2019 (2nd day of deliberations), https://www.sejm.gov.pl/sejm8.nsf/wypowiedz.xsp?posiedzenie=77&dzien=2&wyp=031.

100 *Ministry of National Defense speeds up purchase of new fighter jets*, November 28, 2018, https://www.gov.pl/web/obrona-narodowa/mon-przyspiesza-z-zakupem-nowych-mysliwcow.

101 *Far from the expectations of the Polish Armed Forces*, May 29, 2020, https://www.nik.gov.pl/najnowsze-informacje-o-wynikach-kontroli/daleko-od-oczekiwan-sil-zbrojnych-rp.html.

102 J. Reszczyński, *Borsuk: the largest arms industry project in half a century [analysis]*, February 28, 2023, http://defence24.pl/sily-zbrojne/borsuk-najwiekszy-projekt-zbrojeniowki-od-pol-wieku-analiza.

103 Projects co-financed by the National Center for Research and Development, https://www.pitradwar.com/oferta/515,projekty-wspolfinansowane-z-narodowego-centrum-badan-i-rozwoju.

the delivery of new Borsuk BWP vehicles was concluded in 2025. This was the case in many other areas and one of the reasons for accelerated purchases after the outbreak of the full-scale war in Ukraine.

Nonetheless, somewhat overshadowed by large-scale armament (and development) programs, many smaller procurement procedures were carried out. These concerned, for example, uniforms, maintenance works, repairs and material resources, and were implemented by units operating under the Armed Forces Support Inspectorate. **Such tasks are subject to the rigors of the public procurement law to a greater extent.** Even if the principle of competitiveness is beneficial, procedures conducted under the Public Procurement Law **often can not cover longer, multi-year periods,** and contractors are required to deliver the ordered goods, such as uniform components, within a very short time frame, usually within just a few months of the contract conclusion date. This makes the demand for production capacity expansion in the industry relatively difficult to predict, and entities operating on a commercial basis and relying more heavily on market financing are in a more difficult position. Representatives of the defense industry also draw attention to the licensing process and investment preparation as other important elements of the system. Obtaining a special trade license, required for most military equipment and armament procurement procedures, is a time-consuming process. Moreover, the requirement to perform environmental impact assessments in order to execute the investment also prolongs the process and increases costs. Works on simplifying and speeding up these procedures were initiated only more than two years after the outbreak of the full-scale war in Ukraine, and the relevant law was signed by President Andrzej Duda on August 5, 2025.[104].

The management of the State-owned defense industry left a lot of room for improvement as well. Although the consolidation of the Polish Armaments Group was formally completed in 2015, its concepts, strategy, management boards, and ownership supervision had been changed repeatedly. At the end of 2015, the oversight responsibilities over the Polish Armaments Group were transferred from the Ministry of the Treasury to the Ministry of National Defense. At the end of 2019, they were transferred again to the Ministry of State Assets. Between 2015 and 2018 alone, the position of PGZ president[105] was held by five people. Lack of consistency and high turnover rates in managerial positions meant that competition continued (and continues) to exist within the Group, and its resources are not used in the most effective way.

Another structural problem facing Polish industry is the fragmentation of oversight functions. The Ministry of Development and Technology is responsible for developing the strategy for the defense industry, while procurement is handled by the Ministry of National Defense, and the largest State-owned companies are overseen by the Ministry of State Assets. It is also no secret that PGZ companies have often been reluctant to cooperate with private entities within the supply chains. This was partly due to concerns that if the Ministry of National Defense's demand for equipment is met quickly, then they will be faced with no demand for the weapons and military equipment they offer. Such attitude stands in contradiction with the drive to modernize the Polish Armed Forces, even if the modernization - since 1989 and until the outbreak of the full-scale war **– had been slower than expected**. Large part of the military equipment reached the end of its original service life before 2022, often becoming technically and morally obsolete as early as the 1990s.

Another structural problem becomes evident during planning for technical modernization (and industrial capacity expansion) **on the part of both, the industry and the military:** it is the treatment of modernization (upgrades) of existing equipment and the acquisition of new equipment as mutually exclusive rather than complementary solutions. This stems from concerns that modernizing the equipment will consume

104 Office of the President of the Republic of Poland, Laws signed in August 2025, https://www.prezydent.pl/kancelaria/archiwum/andrzej-duda/prawo/ustawy-podpisane/ustawy-podpisane-w-sierpniu-2025-r,104523

105 M. Miłosz, *Five presidents in three years? This is how life is at the Polish Armaments Group,* October 2, 2018, https://forsal.pl/artykuly/1284344,pieciu-prezesow-w-trzy-lata-tak-sie-zyje-w-polskiej-grupie-zbrojeniowej.html.

financial resources available for the production (purchase) of new equipment. On the one hand, this reduces the capabilities of the Polish Armed Forces (due to the deepening technological gap), and on the other, it leads to the loss of industrial capabilities as they cannot be used before the contracts for the production of new equipment are finalized[106].

The structural problems of the defense industry are also evident in Polish defense industry's export statistics. Although Poland spent almost four times more on defense in 2015–2019, i.e., before the war-related acceleration of defense spending, than the Czech Republic[107], the Czech Republic was Then ranked among the top 25 global arms exporters, while Poland was not included in the ranking. What is more, according to NATO data, Poland allocated 25.72% of its budget to new equipment, while the Czech Republic allocated only 11.2%. Thus, Poland's investment expenditure was about eight times higher than that of the Czech Republic. Despite this, the Polish defense industry was unable to effectively translate advantages drawn from domestic orders into export success. It was unable to export more than the Czech Republic, even though it received significantly more domestic orders in terms of value. Even if the structure of the Czech spending was slightly more favorable for domestic contractors, **the disproportion in the size of budgets and volumes of funds allocated to modernization indicates that the Polish industry received significantly more money than the Czech industry.**

3.4 REFORMS AND BIG PURCHASES IN THE LIGHT OF WAR

The attempts to remedy the situation did not begin until 2020, in parallel with the increase in defense spending to well over 2% of GDP (see subsection 3.2.1). At that time, the National Security Strategy of the Republic of Poland was adopted. It provided for creation of favorable conditions for "the Polish defense industry to meet the long-term needs of the Armed Forces of the Republic of Poland, **regardless of the form of ownership this industry operates under** and including by implementation of the results of research and development[108]." Thus, emphasis was put on the need for greater involvement of the Polish private defense industry in the technical modernization of the Armed Forces at the strategic level. In the course of the same year, the Ministry of National Defense revealed its plan to establish the Armament Agency (AU) as an institution to be the "center of gravity" for 'the technical modernization process[109]. Originally, the process was to be handled by means of introducing legislative changes. Ultimately, however, with the decision of the Minister of National Defense[110], a new institution, as well as the Technical Modernization Council to support it, were established. Due to concentration of relevant powers in the hands of the Armament Agency (AU) and the Ministry of National Defense, establishment of the Armament Agency has formed basis for a radical and unprecedented acceleration of the pace of military equipment and armament procurement, which we are currently witnessing.

106 J. Palowski, *Costly savings, or why Rosomak is expensive [OPINION]*, February 5, 2025, https://defence24.pl/przemysl/kosztowne-oszczednosci-czyli-dlaczego-rosomak-jest-drogi-opinia.

107 USD 57.980 billion and USD 14.652 billion, respectively, in 2022 prices, according to the SIPRI Milex Database 2023.

108 Point 3.14, *National Security Strategy of the Republic of Poland*, 2020, National Security Bureau, https://www.bbn.gov.pl/ftp/dokumenty/Strategia_Bezpieczenstwa_Narodowego_RP_2020.pdf

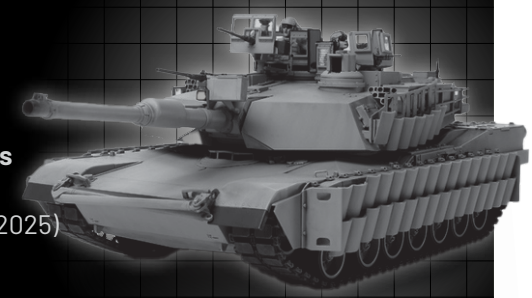
109 *Armament Agency: determination needed to see reform through to the end [commentary]*, September 25, 2020, https://defence24.pl/polityka-obronna/agencja-uzbrojenia-potrzebna-determinacja-by-reforme-doprowadzic-do-konca-komentarz.

110 Ministry of National Defense implements procurement reform. Armament Agency established [analysis], September 6, 2021, https://defence24.pl/sily-zbrojne/powstaje-agencja-uzbrojenia.

MILITARY MATERIEL PROCUREMENT CONTRACTS

SELECTED CATEGORIES FOR THE YEARS:

	2011-2020	2021-2025
TANKS	**119** (Purchase of the second-hand **Leopards 2A5** and **A4**, contracted in 2013	**726** **250 M1A2 SEP v3 Abrams** **360 K2 and K2PL** (contracted in 2022 and 2025) **116 M1A1 Abrams** (contracted in 2023)
MECHANIZED INFANTRY COMBAT VEHICLES (WHEELED AND TRACKED)	**0**	**329** **208** (all incl.) **KTO Rosomak, field version, under 3 contracts of 2020 and 2024** (incl. 70 on the basis of KTO purchased in 2013) **111 BWP Borsuk** (contracted in 2025)
ARMORED PERSONNEL CARRIERS IN THEIR BASIC VERSIONS (EXCL. SPECIALIZED VERSIONS)	**307** Basic version of **KTO Rosomak**	**0**
100MM+ TUBE ARTILLERY	**244** **122 Rak mortar carriers** **122 Krab self-propelled howitzers** (contract of 2016 and implementation contract)	**508** **364 K9A1/K9PL howitzers** in line with the contracts of 2022-2023 **144 Krab howitzers** in line with the contracts of 2022 and 2024



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INFOGRAFIKA: PIOTR PERZYNA

MILITARY MATERIEL PROCUREMENT CONTRACTS
SELECTED CATEGORIES FOR THE YEARS:

	2011-2020	2021-2025
ROCKET ARTILLERY AND COASTAL MISSILE UNITS	**20** 20 **HIMARS** rocket launchers (contracted in 2019), **1 Coastal Missile Unit** (contracted in 2014)	**290** **Homar-K** launchers (contracts of 2022 and 2024), **4 Coastal Missile Unit** (contracted in 2023)
PORTABLE AIR DEFENSE SYSTEMS OF THE MANPADS CLASS	**420** launching mechanisms **1300** **Piorun missiles** (contacted in 2016), a few hundred **Grom missiles** additionally	**600** launching mechanisms and **3500** **Piorun missiles** (contracted in 2022)
ANTI-AIRCRAFT AND ANTI-MISSILE AIR DEFENSE SYSTEMS OF SHORT AND MID-RANGE	**8** **IBCS-Patriot systems** (contracted in 2018)	**60** **12 IBCS-Patriot systems, 46 Narew systems, 22 Pilica+ systems** (contracts of 2023, some contracted in 2022 and later)

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MILITARY MATERIEL PROCUREMENT CONTRACTS
SELECTED CATEGORIES FOR THE YEARS:

2011-2020	2021-2025

FIGHTER JETS

32
32 F-35A
(contracted in 2020)

48
12 FA-50 and **36 FA-50PL,**
(contracted in 2022)

HELICOPTERS
WITH ANTI-TANK GUIDED MISSILE SYSTEMS

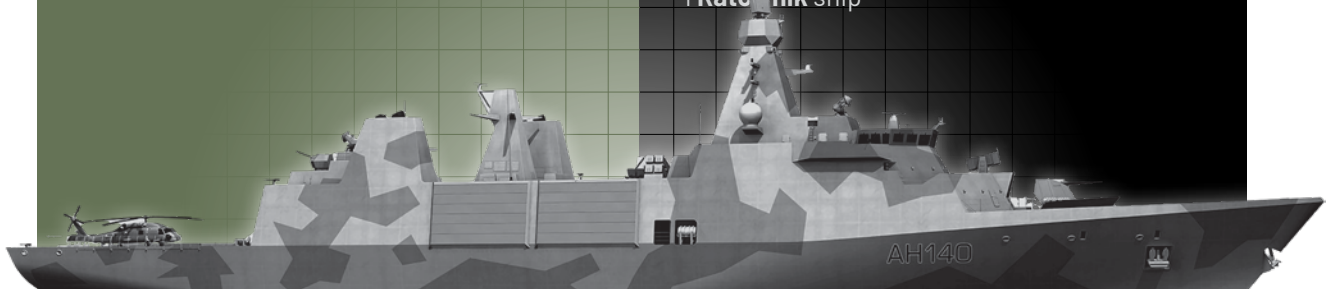
0

128
32 AW149 helicopters
in line with the contract of 2022;
96 AH-64E Apache Guardian helicopters
in line with the contract of 2024;
Additionally 8 Apache Guardian
helicopters will be leased.

NAVAL SHIPS

3+1
(**3 Kormoran II** mine destroyers in line with the contracts of 2013 and 2017, completion of the **Ślązak** patrol corvette; in 2017 Ratownik ship was also contracted but the proceedings were cancelled)

9
(3 **Miecznik** frigates, contract of 2021 with later amendments, incl. in 2023,
3 **Kormoran II** mine destroyers contracted in 2022,
3 **Delfin** SIGNIT ships,
1 **Ratownik** ship



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The list above is by no means exhaustive – after the outbreak of the full-scale war in Ukraine, a number of other agreements were concluded in various areas, ranging from airspace surveillance systems to anti-tank and small arms components. This goes to show, however, that it was not until the turn of 2021 and 2022 that the technical modernization of the Polish Armed Forces really gained momentum – all this thanks to the establishment of the Armament Agency and the introduction of structural changes in the military equipment procurement system. Unfortunately, even if some solutions - such as the law allowing to finance ammunition production capacity expansion from the budget[111], have been introduced in some areas, no comparable qualitative changes have been introduced in others where they are needed, such as the system of supervision over the arms industry[112], the system of stimulating innovation in the defense system, or the system of ordering material resources and operational support. The introduction of legal solutions to stimulate innovation and expand production capacity is often much more complicated than even the complex, military equipment procurement processes. For its success, cooperation between various ministries and legislative changes at a higher level are often required. The bill, which is currently being debated, on special rules for the preparation and implementation of strategic investments to meet national defense needs and on the establishment of protection zones for closed areas[113], is a good example. New regulations seek to radically accelerate the investment process, among other things by simplifying environmental regulations and improving the coordination of the permitting process.

It must be kept in mind that the Armament Agency is strictly in charge of the weapons procurement, while, **under the current legal framework, support for the development of industrial capacity is beyond its competency.** Nonetheless, after the outbreak of the full-scale war in Ukraine, decisions pertaining to providing financial support to State-owned industry were made under the mechanisms in force, even if with some delay. As early as March 2023, PGZ estimated its investment needs for several billion zlotys. Within twelve months of that date, PLN 1.45 billion from the Capital Investment Fund were allocated to support two PGZ plants – Huta Stalowa Wola and Bumar-Łabędy[114]. In the case of the latter, application had to be corrected in order for the funds to be released and the correction was still being processed as of 2025. Meanwhile, a program which had been in the works for over a decade and of a higher value - related to the Narew medium-range air defense program – was contracted in 2023 but launched as late as June 2024.[115]

The Ministry of National Defense has insufficient funds for further purchases, including from the Polish defense industry. Such is the result of previous neglects to the modernization process and difficulties in obtaining financing for domestic projects from the Armed Forces Support Fund[116]. European Union projects, such as low-interest loans under the SAFE instrument, may offer a chance to at least partially remedy this situation. However, the final shape of these instruments is still unknown and it is not clear to what extent it will be possible to apply them to priority development programs planned by Poland[117] will be All this means that **involvement of the Polish defense industry in the modernization process remains insufficient**. Moreover, an increasing proportion of the defense budget will also be absorbed by expenditures not

111 Act of November 27, 2024, on financing measures aimed at increasing ammunition production capacity, Journal of Laws 2024, item 1826.

112 J. Graf, *Billions from the EU for the defense sector? Oversight of the arms industry in question [opinion]*, March 24, 2025, https://defence24.pl/przemysl/miliardy-z-ue-na-sektor-obronny-nadzor-nad-zbrojeniowka-pod-znakiem-zapytania.

113 Print No. 1203, Government draft bill on special rules for the preparation and implementation of strategic and key investments in the field of national defense and public security needs and the establishment of protection zones for certain restricted areas, April 18, 2025, https://www.sejm.gov.pl/Sejm10.nsf/druk.xsp?nr=1203.

114 J. Palowski, *Where are the PLN 13 billion for the arms industry?*, April 12, 2024, https://defence24.pl/przemysl/gdzie-jest-13-mld-zlotych-dla-zbrojeniowki.

115 M. Bruszewski, Record support for the arms industry. Decision on Narew, June 25, 2024, https://defence24.pl/polityka-obronna/rekordowe-wsparcie-dla-zbrojeniowki-decyzja-ws-narwi.

116 J. Graf, *More money for modernization? Bejda on Orka, F-16, CBWP, and changes in financing [interview]*, April 15, 2025, https://defence24.pl/sily-zbrojne/wiecej-pieniedzy-na-modernizacje-bejda-o-orce-f-16-cbwp-i-zmianach-finansowania-wywiad.

117 J. Palowski, *Billions from the EU for defense. How much will Poland get [5 points]*, April 1, 2025, https://defence24.pl/polityka-obronna/miliardy-z-ue-na-obronnosc-ile-dostanie-polska-5-punktow.

strictly related to the modernization process, but rather to the day-to-day functioning of the Polish Armed Forces, including salaries, infrastructure development, and materiel maintenance. This spending will be much higher than planned, even in 2021. The plans at that time assumed that the Polish Armed Forces, after expanding their structure in accordance with the Development Program for 2035, would count a maximum of 137,000 professional soldiers, while the total number of soldiers would not exceed 200,000. Meanwhile, at the end of 2024, there were already 208,000 active soldiers[118], a significant number of them in the Basic Military Service receiving salaries similar to those of the professional privates. The assumed number of 139,000 professional soldiers was already exceeded in the middle of last year[119], although in October 2021 there were just over 113,000 of them.

The Ministry of National Defense, the Polish Armed Forces, and the defense industry also face the challenge of **the evolving nature of the combat environment.** For example, since the second half of 2023, there has been a rapid increase in the use of unmanned systems in Ukraine, which has necessitated the widespread introduction of active protection systems against their use. This entails additional costs and the need to modify combat platforms. In response to these trends, a decision to establish the Unmanned Weapons Systems Forces was made and the Ministry of National Defense declared the need to increase the number of unmanned systems in the Polish Armed Forces to several hundred thousand, coupled with the domestic production capacity reaching millions of units. However, no systemic solutions enabling such production have been introduced as of yet. Some 200 entities have applied for the participation in the National Deterrence and Defense Program "Eastern Shield", which constitutes an attempt to seek innovative solutions, including in the field of the unmanned systems[120]. The Act on the Implementation of Strategic Investments, signed by President Andrzej Duda on August 5, 2025, provides for the possibility to exempt purchases of the unmanned aerial and anti-UAS systems for from the rigors of public procurement law under certain conditions[121] [122]. However, the effectiveness of their practical implementation as well as creation of a financing model that would allow for rapid development of such systems, including those that are already in service are still just open questions. Answers to questions about the future structure and needs of the Polish Armed Forces, and thus the demand for industrial products, should be provided in the future Armed Forces Development Program for 2025–2039 and the Technical Modernization Plan for that period that is its result. However, work on this document has not been completed yet.

118 *How many soldiers are there in the Polish army? Deputy Prime Minister on the state of the army and defense spending*, December 16, 2024, https://www.pap.pl/aktualnosci/ile-liczy-polskie-wojsko-wicepremier-o-stanie-armii-i-wydatkach-na-obronnosc

119 J. Ciślak, *Polish army growing in numbers. New data [DEFENCE24 news]*, July 10, 2024, https://defence24.pl/sily-zbrojne/polska-armia-coraz-liczniejsza-nowe-dane-news-defence24.

120 Nearly 200 proposals to support the "Eastern Shield" program, https://tarczawschod.wp.mil.pl/articles/aktualnosci/blisko-200-propozycji-wsparcia-programu-tarcza-wschod/.

121 Print No. 1203, draft law on special rules for the preparation and implementation of strategic and key investments in the field of national defense and public security needs, and the establishment of protection zones for certain closed areas, April 18, 2025, https://orka.sejm.gov.pl/Druki10ka.nsf/0/ABCCD185FDC35891C1258C7600475869/%24File/1203.pdf.

122 Office of the President of the Republic of Poland, Laws signed in August 2025, https://www.prezydent.pl/kancelaria/archiwum/andrzej-duda/prawo/ustawy-podpisane/ustawy-podpisane-w-sierpniu-2025-r,104523.

3.5 SUMMARY

The Polish defense industry is currently in a unique situation. Since 2022, as a result of Russia's full-scale aggression on Ukraine, the demand for weapons and military equipment has begun to rise sharply. Meanwhile, the efforts to restructure and strengthen the defense sector made since the 1990s have failed to produce the expected results, both due to insufficient funding, especially during periods of deep budget cuts, and due to mistakes and discoordination of actions undertaken by the State. The process of technical modernization of the Polish Armed Forces, carried out with varying degrees of intensity in different periods, has been in fact far too slow to meet all needs, while State's support of the industry development and expansion was neither adequate nor consistent. It was not until 2022 that the process of technical modernization of the Polish Armed Forces accelerated to an extent unseen in years prior, but the model to provide for an adequate participation of the Polish industry, especially private entities, in this process has still not been developed. All the while, it is the private sector – with its flexibility, ability to develop quickly, reduce costs, and provide development stimuli for the entire economy through defense spending – that is crucial for the building of the modern industrial capabilities.

At present, comprehensive set of actions is required to strengthen the entire defense sector. It is crucial to adapt the procurement and purchasing planning system to take into account the specific nature of the private sector. Multi-year contracts should be applied more often, not only for the procurement of combat platforms, but also for provision of operational support and delivery of basic equipment, such as uniforms. The private sector must be treated equally with the public sector, in accordance with the National Security Strategy of the Republic of Poland, which declares equal treatment "regardless of the form of ownership." **Dialogue and cooperation** between the State and private sectors should also be stimulated with the view to develop resilient and effective supply chains. It is also necessary to provide systemic support **for rapid decision-making**, both in terms of approving strategic investments, their licensing, as well as financial support, which should also be available to private entities. Changes must be made in t**he system of financing research and development** so that it can be performed in a more competitive and rapid manner. Finally, Poland must actively participate in stimulation instruments targeting the defense industry on the European Union level, as these represent an important opportunity to build a national industrial base. All this requires systemic changes and improved coordination of the public administration.

4. RECOMMENDATIONS FOR SYSTEMIC CHANGES IN POLAND

Piotr Woyke
Krzysztof Michalski

4.1. FUNDAMENTAL CONCLUSIONS

1. In view of the dynamic changes in the geopolitical environment and the growing importance of security as the foundation for stable development, long-term increases in defense and security spending should become a permanent feature of Poland's national strategy. If Poland wants to protect the foundations of its prosperity and economic development in the long run, strengthen its international position, and effectively deter potential aggressors, it must permanently increase and consistently develop the capabilities of both the Polish Armed Forces and the entire State security apparatus.

2. Investments into security, made with long-term objectives in mind, can bring significant benefits that go beyond the sphere of defense. Development of dual-use technologies, such as artificial intelligence, satellite technologies, cybersecurity, and advanced communication systems, can become a driving force for innovation across the entire economy. It also strengthens the potential for knowledge and skills transfer between the military and civilian sectors, creating a spillover effect—the spread of innovation and new technologies to other industries.

3. Strategic investments into defense capabilities not only boost the country's resilience to threats, but also stimulate the development of modern sectors of the economy, support technological sovereignty, and contribute to Poland's competitiveness on a global scale.

4. In industrial terms, this translates into the need to build a strong defense industry that will not only meet its State's defense needs, but also enjoy commercial success. The examples of the developed countries analyzed in the first part of the report show that with appropriately coordinated State intervention, implementation of this model is possible in a competitive, market economy.

5. The examples provided prove that the defense industry remains a unique sector – it is characterized by a relatively small number of customers, requires multidimensional State support (not only in the military area, but also in the areas of investment, research and development, and marketing), all the while being the source of advanced innovation in every aspect of its operations.

6. At the same time, regardless of the proposed changes at the EU level, Poland should retain as much autonomy as possible when it comes to its defense policy and decisions related to the defense industry. Achieving the desired – from the perspective of the national security - level of development of the Polish defense industry will not be possible without appropriately designed protective measures for domestic entities.

7. The announced level of defense spending at 5% of GDP starting from the year 2025, as well as an increase in spending on internal security should be permanently and deeply embedded into the national budget structure. These expenditures should be treated primarily as an investment in security, even if some of them may also boost the Polish economy by providing tax revenues, creation of high-paying jobs, development of innovation, and strengthening Poland's international position.

8. An analysis of countries regarded as high achievers in terms of the defense industry development, coupled with an assessment of the situation in Poland show the need to introduce coordinated systemic changes that will ensure:

a. in military terms:
   - the maximum possible localization – in this case *Polonization* - of the key operational capabilities of the Polish Armed Forces, including acquisition and development of the combat resources in Poland;
   - the maximum possible localization of equipment maintenance and maintenance-related training in Poland;

b. in economic terms:
   - a real increase in the participation of the Polish arms industry (both State-owned and private) in the technical modernization of the Polish Armed Forces, including development and not just the delivery of solutions;
   - real equality between the State-owned and private companies (including systemic incentives for investment in the defense companies);
   - professionalization of the management of the State-owned defense companies;
   - creation of systemic conditions for increasing the level of Polish arms exports;
   - increase in the level of diversification of the domestic arms market, including through providing support to small and medium-sized enterprises;

c. in terms of internal policies:
   - development of the defense sector should be a strategic priority for the State, which entailsg cooperation between many ministries – of defense, development, science, and State assets;
   - only consistent, cross-departmental actions will allow for the effective national technological and industrial capacity building, development of competencies in the areas of defense production, maintenance and innovation, as well as creation of dual-use technologies that benefit the civilian economy.

d. In terms of foreign policy:
   - support for the Polish foreign and security policy – including through participation in the European and transatlantic armament programs, technology exports, and industrial cooperation with NATO and EU partners. Poland should also actively pursue its interests by shaping the EU and NATO decision-making processes that affect the defense market and access to financing.

e. in terms of research and development:
   - a sharp increase in defense research and development spending;
   - reform of the system of financing and implementing technological innovations for defense;
   - active involvement of the Ministry of Defense in the development of emerging technologies.

In order to implement the above recommendations, we suggest a general legal framework for "flagship initiatives" be established at the statutory level, providing for good legislative practices, such as securing appropriate financial resources or lower-level executive acts beforehand. The recommendations presented are based on an analysis of foreign "benchmarks" and a diagnosis of the situation in the Polish defense sector. They constitute an attempt to address the difficult and complex situation we are currently facing – geopolitically, economically, and technologically – in a constructive manner. This approach requires drawing on the best international experiences as well as adapting selected solutions to the specific nature of the Polish development model, public administration model and Poland's standing on the international stage.

For the sake of realism, it must be emphasized that an effective industrial policy requires both: a long-term and consistent policy on the part of the government, as well as the government's agency in their relations with the European Commission in the context of the State aid. It is no coincidence that Turkiye and South Korea - whose political models were or are based on many years of rule by a single party and who experienced no restrictions on subsidizing industry in its early stages of development - have achieved impressive results in this area. However, it should be highlighted that in the face of growing and diverse threats to national security, the Polish political class has been able to demonstrate far-reaching cross-party solidarity, as exemplified by the votes on the draft laws on the defense of the Homeland in 2022[123] and on civil protection and civil defense in 2024 [124].

In the industrial sector and in the area of modern defense technology development, personnel selection and ensuring maximum levels of professionalism in all State-owned defense companies remains crucial. Only by investing in competencies, engineering knowledge, and management skills will it be possible to build a real technological advantage and gradually increase the country's operational and technological autonomy. Personnel policy in the defense industry must have the support of the State administration not only in the form of appointments to management positions, but also in the form of coordinated actions aimed at training the technical and engineering staff – especially since technical education in Poland still largely takes place at public universities – or employing the experienced service members – especially those who have operational experience in field conditions. Without a shift in the approach and a change to organizational culture in this area, we have no chance to build innovative and competitive solutions in the Polish defense industry.

Successful products of the Polish defense industry, such as Borsuk, Grot, and the Leopard tank driving simulator, were created thanks to the determination and commitment of a small group of engineers, often despite the limitations of the current manufacturing and procurement system. Therefore, changes in the culture and mode of operation must take place both - in the industrial sector as well as in the Ministry of National Defense and the Polish Armed Forces. The current system is strongly averse to taking basic risks, which are inherent part of the decision-making processes at crucial moments. It also lacks transparency. Both the pace of the decision-making and processes leading up to the decision-making points, do not meet the needs of a modern State and army.

Development of the defense industry is a complex matter, fundamental to the Polish national security. Thus, it is worth to develop legislative package that will provide a strong stimulus for the development of this hitherto neglected sector. The suggested "flagship initiatives" should be implemented in parallel, as they have been designed as a complementary tool. Each of them responds to the needs and barriers encountered by various participants of the system: the government, the Polish Armed Forces, industry, and the R&D community.

123 450 votes in favor, see https://www.sejm.gov.pl/sejm9.nsf/PrzebiegProc.xsp?nr=2052.

124 448 votes in favor, see https://www.sejm.gov.pl/sejm10.nsf/PrzebiegProc.xsp?nr=664.

4.2. RECOMMENDATIONS ON "FLAGSHIP INITIATIVES"

4.2.1. THE DEFENSE INDUSTRY AS A STRATEGIC RESPONSIBILITY OF THE ENTIRE GOVERNMENT – FRAMEWORK LAW AND SYSTEMIC SUPPORT FOR THE NATIONAL INDUSTRIAL AND TECHNOLOGICAL BASE

Objective: Creation of a stable legal and institutional framework for long-term, coordinated, and interdepartmental support for the defense industry, promoting faster decision-making and greater participation of the domestic production in meeting the needs of the Polish Armed Forces.

Problems identified:

- lack of consistent coordination of the government policy on the defense industry;
- dispersion of competencies and unclear division of responsibilities;
- limited ability for quick launch of procurement and investment processes into the domestic industry;
- lack of predictability and systemic support for strategic projects;
- lack of support mechanisms for the defense industry, despite its key significance for national security and the economy.

Success criteria:

- implementation of the suggested regulations together with executive acts;
- shortened average span between identification of an operational need and placement of a domestic order to 6–9 months for strategic projects;
- use of funds assigned by the Ministry of Defense's for armament and research for orders placed with the national industrial and technological base at the level of at least 60% by 2032.

Recommended actions:

- Adoption of regulations on the functioning of the defense industry as a sector of the national economy of particular importance to national security, including, among others:

  - precise regulations on recognizing any given enterprise as an entity belonging to the Polish defense sector;

  - the Council of Ministers under obligation to regularly adopt a strategic document on the development of the national industrial and technological base; the document would define the objectives and execution methods in the military, economic, political, and research and development areas, with the use of all resources at the disposal of the Council of Ministers and the national economy (including the planned expenditure ceiling for support in the four-year budget perspective); the "Defense Industry Development Strategy" currently being prepared by the Council of Ministers is a step in the right direction, but it has not been sufficiently anchored in law;

  - a list of strategic projects meeting objectives crucial from the perspective of expanding the operational capabilities of the Polish Armed Forces, together with identification of their sources of financing, under the strategic document mentioned above;

- regularly defining and updating the list of production and research and development capabilities in the defense industry which, for vital national security reasons, should be located on the territory of the Republic of Poland and which require special security measures in accordance with the provisions of the Act of July 24, 2015, on the control of certain investments;

- introduction of an oversight mechanism in the form of quarterly reviews on the status of execution of the strategic document mentioned above conducted at the level of the National Security Committee of the Council of Ministers and an annual closing procedure by the Council of Ministers;

- identifying sources of financing for the R&D projects and their execution for projects aimed at deepening the national technological and industrial base;

- establishment of a dedicated scholarship fund for the most talented graduates of the Polish universities who declare willingness to work in the Polish defense industry;

- precise definition of competencies by specific ministries in supporting the development of the national technological and industrial base.

- The Council of Ministers should identify directions recommended for international cooperation, taking into account the possibility to strengthen ties with selected allies and partners, and the use of international cooperation and financing programs.

- Aligning the Ministry of Defense's procurement policy and government support instruments (including international cooperation projects and financing within international formats) with the the expansion or development of specific production niches in Poland, as shown in table on p. 81.

The table shows, at a general level, which niches the Polish defense industry is capable of filling and should fill in the medium- and long terms. It also indicates areas where the possibility to enter into bilateral or multilateral formats of international cooperation exists. In the case of some of the capabilities listed below, achieving a significant increase in technological sovereignty is unlikely due to Poland falling too far behind or an ongoing implementation of relevant foreign-made systems. The report deliberately adopts a product-based perspective in its analysis of production and development niches, providing for the limitations of this type of document. A more detailed analysis is recommended as the next step to account for, among other things, the efficiency of supply chains, possibilities for developing a production base for semi-finished products, and the accumulation of warehouse stocks.

- The table presented here is not exhaustive and should be updated, especially in the context of multi-domain solutions (such as command and control systems of various levels, cyber operations tools, artificial intelligence systems supporting information warfare or decision-making on the battlefield)

or solutions based on combination of numerous components (e.g., increasingly complex reconnaissance and strike systems or multi-layered air defense systems).

- Potential decisions on niche development should also be linked to a series of more specific government interventions to support the production of relevant components, secure supply chains (also in cooperation with allies), and facilitate the opening up of the defense market to civilian manufacturers. The table below provides a general indication of the desired directions for the development of the domestic sector.

- In the process of expanding existing niches or investing into start-up carving new ones, priority should be given to new domestic entities (in order to diversify the domestic arms market) with appropriate levels of market credibility. Engagement of proven actors from allied and partner countries (e.g., companies with relevant technological expertise) is possible for some niches upon completion of a multifaceted analysis that takes into account the interests of the State, the armed forces, and the national economy.

Adoption of these solutions will consistently drive industrial policy related to defense in a desired direction and provide appropriate tools for its effective implementation.

TABLE 1 **TIMEFRAME FOR THE CREATION/DEVELOPMENT OF SPECIFIC CAPACITIES IN THE NATIONAL DEFENSE INDUSTRY**

Weapon systems / military equipment / infrastructure / other	Type of capability	2025 (current status)	2031	2035
Small arms and heavy weapons (including small-caliber ammunition)	Production	Yes	Yes	Yes
	Research and development	Yes	Yes	Yes
	Maintenance	Yes	Yes	Yes
Individual soldier equipment	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes
Grenades, mines (including smart ones)	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Large-caliber ammunition (including precision)	Production	Partial and insufficient	Yes (increased capacity)	Yes
	Research and development	Partial and insufficient	Yes (development programs for new types)	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Grenade launchers	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes
Mortars	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes

Portable anti-aircraft missile systems	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes (development of development versions)	Yes
	Maintenance	Yes	Yes	Yes
Anti-tank guided missiles	Production	No	Yes (partially meeting needs)	Yes (all needs met)
	Research and development	Partial and insufficient	Yes (development programs)	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Battlefield radars	Production	No	Yes (partial)	Yes
	Research and development	Partial and insufficient	Yes (development programs)	Yes
	Maintenance	Partial and insufficient	Yes	Yes
BMS systems for specific command levels	Production	Partial and insufficient	Yes (full Polishization)	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes
Wheeled armored vehicles	Production	Yes (under foreign license)	Yes (under foreign license)	Yes (fully Polish)
	Research and development	Partial and insufficient	Yes (developing own successor project)	Yes
	Maintenance	Yes	Yes	Yes
Infantry fighting vehicles	Production	Partial and insufficient	Yes (increased production capacity)	Yes (increased production capacity)
	Research and development	Yes	Yes	Yes
	Maintenance	Yes	Yes	Yes

Heavy tanks	Production	No	No	Yes (partial / involvement in an international project to develop a new vehicle, production of cooperating platforms)
	Research and development	Partial and insufficient	Yes (localization of components and accompanying vehicles)	Yes (further polo-nization and involvement in an international project)
	Maintenance	Partial and insufficient	Yes (increased level of localization)	Yes (increase in the level of Polishization)
Barrel artillery	Production	Partial and insufficient	Yes (increase in AHS Krab production capacity)	Yes (full localization of production of new systems)
	Research and development	Partial and insufficient	Yes (development program for AHS Krab)	Yes
	Maintenance	Partial and insufficient	Yes (increase in capacity)	Yes
Unmanned ground platforms (chassis, reconnaissance, assault – including anti-tank, logistics, medical)	Production	No	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	No	Yes	Yes
Missile artillery	Production	Partial and insufficient	Yes (partial localization of system production)	Yes (full localization of new system production)
	Research and development	No	Yes (definition and R&D work on greater diversification of systems)	Yes (development of own systems with diverse potential)
	Maintenance	No	Yes (partial)	Yes (full localization)
Manned patrol, reconnaissance, and command platforms (including light off-road vehicles)	Production	Partial and insufficient	Yes (full localization of production of new platforms)	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Tactical radars and electronic warfare systems	Production	Partial and insufficient	Yes (increase in capacity)	Yes
	Research and development	Partial and insufficient	Yes (increased capacity)	Yes
	Maintenance	Yes	Yes	Yes

Radio-electronic warfare and battlefield protection systems	Production	No	Yes (partial)	Yes
	Research and development	Partial and insufficient	Yes (development programs)	Yes
	Maintenance	No	Yes	Yes
Very short-range air defense systems, including mobile ones	Production	Partial and insufficient	Yes (increased capacity)	Yes
	Research and development	Partial and insufficient	Yes (development projects, space for international cooperation)	Yes (development projects, space for international cooperation)
	Maintenance	Partial and insufficient	Yes	Yes
Land-based air defense systems	Production	No	Yes (partial, for platforms manufactured in Poland)	Yes
	Research and development	Partial and insufficient	Yes (development projects, space for international cooperation)	Yes (development projects, space for international cooperation)
	Maintenance	No	Yes	Yes
Support, ammunition, medical, and engineering vehicles	Production	Partial and insufficient	Yes (increased capacity)	
	Research and development	Partial and insufficient	Yes (development projects, space for international cooperation)	Yes (development projects, space for international cooperation)
	Maintenance	Partial and insufficient	Yes	Yes
Trucks, low-loader sets, crew chassis	Production	Partial and insufficient	Yes (increased capacity)	Yes
	Research and development	Partial and insufficient	Yes (development projects, space for international cooperation)	Yes (development projects, space for international cooperation)
	Maintenance	Partial and insufficient	Yes	Yes
Attack helicopters	Production	No	No	No
	Research and development	No	Yes (in the area of cooperative unmanned vehicles)	Yes (in the area of cooperative unmanned vehicles and modernization)
	Maintenance	No	No	Yes (partial)

Multi-purpose helicopters / SAR	Production	Yes (partial)	Yes (partial)	Yes (partial)
	Research and development	Partial and insufficient	Yes (partial)	Yes (partial)
	Maintenance	Yes (partial)	Yes (partial)	Yes (partial)
Military reconnaissance and communications satellites	Production	Yes (partial)	Yes (partial)	Yes
	Research and development	Partial and insufficient	Yes (partial)	Yes
	Service	Yes (partial)	Yes (partial)	Yes
Aviation bombs (including glide bombs)	Production	Partial and insufficient	Yes (partial)	Yes
	Research and development	No	Yes	Yes
	Maintenance	Partial and insufficient	Yes (partial)	Yes
Air-to-air missiles	Production	No	Yes (partial, space for international cooperation)	Yes (space for international cooperation)
	Research and development	No	Yes (development programs, space for international cooperation)	Yes (space for international cooperation)
	Maintenance	Yes (partial)	Yes (partial)	Yes
Surface-to-air missiles / air-to-ground	Production	No	Yes (partial, space for international cooperation)	Yes (space for international cooperation)
	Research and development	No	Yes (development programs, space for international cooperation)	Yes (space for international cooperation)
	Maintenance	Yes (partial)	Yes (partial)	Yes
Anti-ship missiles	Production	No	No	Yes (space for international cooperation)
	Research and development	No	Yes (development programs, space for international cooperation)	Yes (space for international cooperation)
	Maintenance	Yes (partial)	Yes (partial)	Yes

Maneuverable missiles	Production	No	No	Yes (partial, space for international cooperation)
	Research and development	No	Yes (development programs, space for international cooperation)	Yes (development programs, space for international cooperation)
	Maintenance	No	No	Yes
Unmanned tower modules	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Combat-level unmanned aerial vehicles	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Class I and II unmanned aerial vehicles	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Partial and insufficient	Yes	Yes
Class III unmanned aerial vehicles	Production	No	No	Yes (partial, space for international cooperation)
	Research and development	Partial and insufficient	Yes (development programs, space for international cooperation)	Yes (partial, space for international cooperation)
	Maintenance	No	No	Yes

Multi-role aircraft	Production	No	No	Yes (partial, co-operating platforms, integration with other platforms)
	Research and development	No	Yes (development projects, preparations for involvement in projects related to the next-generation aircraft generation aircraft, space for international cooperation)	Yes (involvement in next-generation aircraft program, development projects)
	Maintenance	No	Yes (partial)	Yes (partial)
Air superiority aircraft	Production	No	No	Yes (partial, co-operating platforms, integration with other platforms)
	Research and development	No	Yes (development projects, preparations for involvement in projects related to the next-generation aircraft generation aircraft, space for international cooperation)	Yes (involvement in next-generation aircraft program, development projects)
	Maintenance	No	Yes (partial)	Yes (partial)
Transport aircraft	Production	Yes (partial)	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)
	Research and development	Yes (partial)	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)
	Maintenance	Yes (partial)	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)

Trainer aircraft	Production	No	No	Yes (partial, space for international cooperation on new projects)
	Research and development	No	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)
	Maintenance	Yes (partial)	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)
Early warning aircraft	Production	No	No	No
	Research and development	No	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)
	Maintenance	No	Yes (partial, space for international cooperation on new projects)	Yes (partial, space for international cooperation on new projects)
Air tankers	Production	No	No	No
	Research and development	No	No	Yes (partial, space for international cooperation on new projects)
	Maintenance	No	Yes (partial)	Yes (partial)
Long-range air defense systems	Production	No	No	Yes (partial, subject to a positive decision on engagement)
	Research and development	No	Yes (analysis of demand and opportunities for PPO to participate in international projects)	Yes (partial, in an international project)
	Maintenance	No	No	Yes (partial, subject to a positive decision on involvement)

Medium-range air defense systems	Production	No	No	Yes (partial, in the event of positive actions towards PPO involvement in an international project)
	Research and development	No	Yes (actions to increase PPO involvement in an international project)	Yes (partial, in the event of positive actions to involve PPO in an international project)
	Maintenance	Yes (partial)	Yes (partial)	Yes (partial)
Short-range air defense systems	Production	Partial and insufficient	Yes (partial, increase in scope of work)	Yes (maximum possible increase in the level of localization)
	Research and development	Partial and insufficient	Yes (partial, expansion of the scope of activities on the part of PPO)	Yes (partial, expansion of the scope of activities on the part of PPO)
	Maintenance	Partial and insufficient	Yes (partial, expansion of the scope of activities on the part of PPO)	Yes
Anti-drone defense systems	Production	Partial and insufficient	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes
Long- and medium-range radar stations	Production	Yes (partial, insufficient)	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes
Frigates	Production	Yes (partial)	Yes (partial)	Yes (partial)
	Research and development	Partial and insufficient	Yes (partial)	Yes (partial)
	Maintenance	Yes (partial)	Yes	Yes

Submarines	Production	No	No	No
	Research and development	No	Yes (partial, scope for international cooperation in the event of a decision to further develop the fleet)	Yes (space for international cooperation in the event of a decision to further develop the fleet)
	Maintenance	No	Yes (partial)	Yes (room for international cooperation in the event of a decision to further develop the fleet)
Specialized / auxiliary / multi-purpose manned surface vessels	Production	Yes	Yes	Yes
	Research and development	Yes	Yes	Yes
	Maintenance	Yes	Yes	Yes
Unmanned surface vehicles (assault, transport, multi-purpose, reconnaissance, patrol, etc.)	Production	No	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	No	Yes	Yes
Unmanned underwater vehicles (assault, transport, multi-purpose, reconnaissance, patrol, etc.)	Production	No	Yes	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	No	Yes	Yes
Communication systems	Production	Partial and insufficient	Yes (increased capacity)	Yes
	Research and development	Partial and insufficient	Yes	Yes
	Maintenance	Yes	Yes	Yes

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4.2.2. UNIFICATION OF INVESTMENT SUPPORT SYSTEM FOR THE POLISH DEFENSE INDUSTRY – BOTH STATE-OWNED AND PRIVATE

Objective: To focus State support measures on strengthening national defense capabilities through the development of a modern, competitive, and integrated defense industry to be the pillar of national security and an important segment of the national economy.

Problems identified:

- high entry barriers associated with the increased level of investment risk specific to the defense industry;
- lack of transparent investment support mechanisms for Polish companies in the defense industry;
- the focus of the existing non-budgetary financing mechanisms (e.g., the Armed Forces Support Fund) on meeting the current equipment needs of the Polish Armed Forces without taking into account the long-term interests of the State, including development of autonomous industrial capabilities that boost security and economic development, as well as creation of economies of scale, which in the long term reduce total cost of defense purchases;
- isolation of the existing support mechanisms for defense research and development projects from their implementation and commercialization;
- lack of systemic support mechanisms for Polish defense industry entities in establishing international cooperation, including within the framework of EU and NATO programs.

Success criteria:

- a minimum of PLN 3 billion per year in funds distributed by the Defense Industry Support Fund by 2028;
- spending at least 30% of the funds under the Defense Industry Support Fund on research and development projects;
- a minimum of 10% of funds distributed under the Defense Industry Support Fund allocated to international projects (export support or creation of a consortium with a foreign partner) by 2028.

Recommended actions:

- Establishment of a Defense Industry Support Fund (FWPO) within the Polish Development Fund Group (grupa Polski Fundusz Rozwoju), which would support both security and defense objectives and the domestic industrial, technological, and export capacity building.

- Establishment of a hybrid oversight mechanism for the Fund, with the participation of representatives of the Polish Development Fund, the ministries of national defense, internal affairs, economy, and intelligence services.

- Defining, within the framework of the new Fund's strategy, support mechanisms for specific groups of enterprises relevant to their specific needs – separate for large enterprises, medium-sized and small enterprises, scale-ups and start-ups.

- Launching a support mechanism for emerging technologies under the new Fund, taking into account the increased investment risk with potential high returns. This will allow to separate risky investments (e.g., deep tech, AI, ISR, materials innovation) from traditional manufacturing, support innovative start-ups that address specific defense needs, and increase *dual-use* potential through minority investments. Another suggestion would be to provide for a possibility of quick mergers and acquisitions of companies to benefit specific military programs.

- Accelerating digital transformation of the Polish defense industry — covering both the State-owned and private companies - by creating a dedicated funding path for digital projects under the Defense Industry Support Fund, encompassing the implementation of Manufacturing 4.0 systems (robotics, automation, AI, digital quality inspection systems); building digital twin models for weapon systems and military infrastructure, developing cybersecured testing environments (e.g., digital sandboxes) for military prototypes.

- Taking advantage of the long-term increased demand for defense technologies in the region: creating a system of investment incentives for proven foreign partners and entrepreneurs interested in investing in the Polish defense sector, including tools that enable to draw from the unique experience of the Ukrainian defense industry.

- Directing existing investment support instrument, esp. tax exemptions under the Polish Investment Zone and government grants awarded by the Polish Investment and Trade Agency, towards the defense sector by introducing sectoral benefits (higher aid intensity, faster service paths), creating a dedicated path for licensed and dual-use projects, and launching specialized "dual-use desks" in the Special Economic Zoness to support location, licensing, and preparation of investment applications.

- Establishment of a comprehensive Defense Industry Support Center, operating within the development system institution (Polish Development Fund Group), which would provide companies with support at all stages of their cooperation with the defense sector – from consulting and assistance in preparing documentation, through organizing training and support in the licensing process to certification of processes in accordance with the requirements of the Ministry of National Defense. These activities should be tied to a dedicated fund or financial mechanism enabling real co-financing and recapitalization of selected activities with high potential. The operating model should be self-financing in principle with basic package of information and training available free of charge, and in-depth advisory and expert services provided on a commercial basis.

- Developing rules for co-financing foreign development projects in the field of security and defense (including NATO and EU programs) that would allow to better secure Poland's national interests;

- Concentrating investment efforts by the State under the new Fund, including the transfer of a specified portion of funds accumulated in the Capital Investment Fund to the new Fund, and phasing out ineffective investment mechanisms within Polska Grupa Zbrojeniowa S.A. (Polish Armaments Group);

- Exempting financing of the defense and security R&D projects from the provisions of the Act of April 30, 2010, on the National Center for Research and Development, and streamlining the State's investment efforts under the new Fund.

4.2.3. TRANSFORMATION OF THE ARMAMENT AGENCY: FROM A PURCHASING INSTITUTION INTO A PURCHASING AND DEVELOPMENT INSTITUTION

Objective: To transform the Armament Agency into an entity responsible not only for the procurement of armaments, but also for the strategic management of the development of national defense capabilities by means of aligning capabilities of the domestic industry, science, and technology with the needs of the Armed Forces.

Problems identified:

- limited scope of competencies by the Armament Agency with exclusive focus on procurement tasks for the Polish Armed Forces;

- lack of an institution to coordinate the development capabilities of the Polish defense industry with the equipment needs of the Polish Armed Forces.

Success criteria:

- increase in the Polish participation in contracts concluded by the Armament Agency from 37% of the value in 2025[125] to a minimum of 50% in 2028;

- increase in the share of research and development expenditure in total defense expenditure to a minimum of 5% in 2028;

- a special-purpose fund amount of at least PLN 100 million by 2028 to support defense industry exports.

125 T. Dmitruk, *No money for further technical modernization of the Polish Army? Analysis,* April 9, 2025, https://dziennikzbrojny.pl/artykuly/ art,2,4,12134,armie-swiata,wojsko-polskie,brak-pieniedzy-na-dalsza-modernizacje-techniczna-wojska-polskiego-analiza.

Operations:

- Expansion of the Armament Agency's competencies and resources to include:
  - providing input to and coordinating work on a strategic government document pertaining to the functioning of the Polish defense industry;
  - monitoring the arms market at the national, regional, allied, and global levels;
  - analysis of the production, research and development, and organizational capabilities of the Polish defense industry, creation of "industrial pathways" – i.e., mapping suppliers, customers, subcontractors, infrastructure and training needs for each major program – and estimating potential needs in this area (including investment needs) in order to localization of equipment supplies for the Polish Armed Forces;
  - managing strategic modernization programs and adapting them to changing needs and conditions (rather than merely monitoring them) from the perspective of the national capabilities (following the example of the DGA in France);
  - coordinating contacts between the Ministry of National Defense and the Polish defense industry in the area of the use of infrastructure and data owned by the Ministry of National Defense;
  - the use of extra budgetary financing sources for armament programs;
  - analyzing the possibilities to apply civilian market's technological capabilities in armament projects carried out or planned by the Ministry of National Defense;
  - identifying opportunities for the Polish defense industry to become involved in projects that meet the operational requirements of the Polish Armed Forces, taking into account the need to invest in technological and/or R&D capacity building;
  - identifying opportunities for the Polish defense industry to participate in joint projects with foreign suppliers, both in the form of offset and outside (e.g., within the framework of EU defense industry support programs);
  - supporting the Polish defense industry in promoting export activities, including the use of resources at the disposal of the Ministry of National Defense (e.g., presence at industry events, organization of demonstrations and shows involving Polish Military Contingents abroad);
  - aligning the R&D project portfolio with operational needs of the Polish Armed Forces, and – in partnership with the new Defense Industry Support Fund as well as the National Center for Research and Development, and market actors – development of the "implementation paths" for projects that respond to these needs.

- Establishment of a collegial advisory body for the Agency's management, composed of representatives of the ministries responsible for internal affairs, State assets, the economy, foreign affairs, funds and regional policy, as well as representatives of the intelligence services and the Polish Development Fund group, in order to ensure a cross-ministerial perspective on the support of the Polish defense industry;

- Establishing an obligation to prepare an annual industrial and technological interoperability plan and report to include a map of capabilities developed domestically and abroad as well as dependency risks; establishment of a regular parliamentary oversight (through relevant national defense committees) of this process.

4.2.4. DIVERSIFICATION OF THE DOMESTIC DEFENSE INDUSTRY

Objective: To build a competitive, resilient, and diversified domestic defense sector where companies, including those controlled by the State Treasury, grow not only through domestic orders, but also due to exports, innovation and market cooperation. In the defense sector, competitiveness means higher quality and better prices as well as greater flexibility, adaptability, and reduced systemic risk through diversification of the portfolio of customers and industrial partners.

Problems identified:

- Domination of a single entity – governed by the State Treasury and inefficient in terms of corporate governance in the Polish defense sector; this entity's privileged position blocks the development of other companies in the industry;
- excessive dependence of the Polish defense industry on the procurement policy of the Ministry of National Defense;
- low level of exports by the Polish defense industry relative to its potential.

Success criteria:

- professionalization and restructuring of PGZ aiming at strengthening the role of domain subgroups by 2028;
- increase in the value of contracts concluded by the Armament Agency with entities other than Polska Grupa Zbrojeniowa from 13% in 2025[126] to a minimum of 25% by 2028 and 35% by 2032.
- introduction of a package of measures aiming at greater integration industry operations (including the establishment of an industry chamber and the restructuring of joint activities) within 12 months of initiating a trilateral discussion between the government, industry, and academia on the topic.
- Achieving a 30% share of exports in the defense sector's revenue structure by 2035.

126 T. Dmitruk, *Draft budget for Polish defense in 2025,* October 12, 2024, https://dziennikzbrojny.pl/artykuly/art,2,4,12080,armie-swiata,wojsko-polskie,projekt-budzetu-na-obronnosc-polski-w-2025-roku.

Operations:

- Evolutionary professionalization and decentralization of PGZ, open to partners, by means of:
  - at the supervisory level: identification of tasks whose implementation may require maintaining a central corporate structure;
  - implementation of a human resources policy that requires relevant industry experience or national security related experience from candidates for supervisory and management boards;
  - strengthening the role of domain subgroups and delegating operations management activities to these entities to a maximum extent;
  - strongly linking potential public sector investment to specific projects included in the strategy for the defense industry mentioned before;
  - allowing proven external entities, including domestic private entities, to acquire shares in the domain subgroups or selected companies (while providing for the national security interests and the State Treasury's say in strategic decisions);
  - establishing special purpose vehicles in partnerships with Polish private entities to execute specific defense programs;
  - execution of selected major modernization programs for the Polish Armed Forces with external partners, in a joint venture formula, and providing for the subsequent export activities;
  - tying management board members' remuneration and bonuses to the completion of specific stages of strategic projects run by the company;
  - tying the remuneration and bonuses paid out to members of the management boards of the State-owned companies to the results of the supply chain's localization processes;
  - at the supervisory level: setting targets for PGZ domain subgroups tied to, among other things, commercial results and sales diversification.

- In in the proposed Defense Industry Support Fund: designing mechanisms that reward, among other things, the following:
  - cooperation between State-owned enterprises and private companies;
  - development of technologies up to European standards, while ensuring that projects with high market potential, incl. potential on the European market, are carried out separately, also with a separate technical oversight;
  - cooperation with dual-use technologies' manufacturers;
  - involvement of civil research and development centers in projects;
  - involvement of small and medium-sized enterprises and start-ups in projects.

- Implementation of a system of incentives for the defense sector (both for the State-owned and private companies) to integrate some of their activities within the industry chamber, including through:
  - organizing export support (joint presence at industry events abroad, ensuring participation in economic missions, etc.) through cooperation with a selected representative of the sector;
  - positioning the chamber as the official partner of the Ministry of National Defense and of the Polish Armed Forces in the consultation process, with an invitation to comment on technical modernization plans and legal acts concerning the sector;
  - involving a selected representative of the sector in the activities of the Council of Ministers on the international arena in the area of international security policy or industrial cooperation.

4.2.5. REFORM OF THE ARMED FORCES DEVELOPMENT PLANNING SYSTEM IN POLAND – THE DEFENSE INDUSTRY PERSPECTIVE

Objective: To adapt the Polish Armed Forces development planning system and strategic security policy planning to contemporary political, economic, social, and technological conditions. The planning cycle should be shortened, made more flexible, and take greater account of the requirements of key stakeholders, including the political leadership of the State. One of the key stakeholders in the above-mentioned process is the defense industry, which provides the Polish Armed Forces and other uniformed services with the tools to carry out their statutory duties. Therefore, the Polish defense industry should be involved in the planning process for the development of the Polish Armed Forces in an advisory and expert capacity.

Issues to be addressed:

- Identification of specializations of the Polish defense industry that should be supported by the State policy and actions (e.g., unmanned systems, artificial intelligence, long-range strike capabilities).
- Work on strategic and planning documents by the Ministry of Defense does not take into account the role of the defense industry in Poland.
- Lack of systemic tools within the Ministry of National Defense that would allow to account for the interests of the domestic defense industry during the planning process.

Success criteria:

- shortening the adoption path for new or updated strategic and planning documents, incl. executive acts, to 3 months;
- systemic consultations with industry stakeholders (incl. the defense industryindustry) crucial to the national security included in the process outlined above.
- establishing a fully operational organisational unit within the Ministry of National Defense to be responsible for combining operational research, testing, evaluation and support for the defense industry in rapid prototyping, and its integration into the system of procurement of weapons and military equipment within six months of the decision on its establishment.

Operations:

- Inclusion of consultation formats with representatives of the defense industry (especially with a potential industry chamber) in the process of drafting strategic and planning documents. Acquisition of knowledge on the capabilities and expectations of the industry, as well as its prospects, especially in terms of technology.

- At the level of strategic and planning documents: providing indication of the planned operational capabilities of the Polish Armed Forces and other uniformed services (and responsibilities of central administration in the field of national security, e.g., management of resources for security purposes) as well as of the desired methods of execution (e.g., siting production on the territory of the Republic of Poland, decentralization of production, securing key production components).

- Increasing the transparency of the Polish Armed Forces development planning process through, among other things:
  - package adoption of key strategic and planning documents (simultaneous or done within a short approval and publication period), together with a regulated method of communicating their content or key findings (which can be presented in the case of classified documents);
  - formal and precise definition of the scope of information made available to the industry, in both the public and classified forms (for entrepreneurs with appropriate certification), including data on planned budgets and timelines for purchasing decisions;
  - transparent - and regulated at the statutory level - communication of plans for the development of specific operational capabilities of the Polish Armed Forces, together with a clear indication of areas that cannot be disclosed due to protection of the national interest of the Republic of Poland;
  - transparent - and regulated at the statutory level - annual communication on the settlement of investment expenses of the Ministry of National Defense, taking into account investments into the modernization of the Polish Armed Forces that can be disclosed.

- Establishment of an organizational unit within the Ministry of National Defense, combining competencies in the field of operational research (including in partner countries such as Ukraine), experiments with prototypes of new technological solutions, and potential modifications to military equipment already in service or being introduced into service with the Polish Armed Forces. Systemic incorporation of the newly created unit into the weapons and military equipment procurement system in the capacity of entity responsible for coordinating experiments, tests, and evaluations for the purposes of equipment procurement. Providing the aforementioned organizational unit with appropriate resources:
  - human resources (including reserve soldiers, experts from the civilian market, verified foreign contractors);
  - infrastructure (access to the training grounds and laboratory infrastructure of the Ministry of National Defense);
  - financial (separate budget within the annual planning cycle);
  - organizational (priority in data acquisition within the Ministry of National Defense, facilitation of operations in the international environment by relevant departments and organizational units of the Ministry).

4.2.6. REFORM OF THE MILITARY EQUIPMENT ACQUISITON, OPERATIONS AND WITHDRAWAL SYSTEM

Objective: To adapt the Polish Armed Forces development planning system to the political, technological, and industrial realities of the 21st century by simplifying, shortening and opening it up to cooperation with key stakeholders - in particular with the defense industry - in order to increase the effectiveness of public spending, accelerate implementation, and enhance technological and operational security of the State.

Problems to be solved:

- In the context of rapidly growing defense spending, insufficient consideration is given to the prospects for the development of the domestic defense industry, even though the sector can not only be an "advisor" but also an early integrator of technological solutions and a source of information on the feasibility of acquiring specific capabilities.

- The Ministry of Defense's planning and procurement policies do not correspond to the conditions of the modern battlefield, characterized, among other things, by increased dynamics, growing role of unmanned systems, standardization of production of selected weapon systems, and the need for greater organizational agility in general.

Success criteria:

- Implementation of an integrated, two-stage planning cycle (strategic and executive), updated on a rolling review basis every two years, accounting for changes in the geostrategic situation and technological progress within the multi-year programs in the Polish Armed Forces within six months of the start of work on the reform.

- Development and implementation of a schedule for aligning the existing multi-year programs with principles put in place as part of the reform wherever possible within 12 months of the start of work on the reform.

- Having 80% of multi-year programs within the Polish Armed Forces implemented in a new, more flexible formula by 2030.

- Launching clear databases accessible for the industry and society, containing disclosable information on modernization plans and their status within six months of initiating changes.

Operations:

- Include representatives of the ministries responsible for internal affairs, economy, science and higher education, European funds and regional policy, foreign affairs, as well as representatives of the Chancellery of the Prime Minister and the Polish Development Fund group in the Technical Modernization Council.

- Broaden competency of the Technical Modernization Council to encompass assessment of the technical modernization of the Polish Armed Forces from the perspective of : the defense industry's development (including in regional terms), development of the R&D sector, securing Poland's foreign interests, and development opportunities for individual sectors of the Polish economy.

- Gear the approach to multi-year programs in the Polish Armed Forces towards long-term investment encompassing, among other things:
  - determination of budgetary resources allocated to the implementation of the project in the long term;
  - merging the final stages of the research and development phase of the project with the implementation and operational phase (integrated management of multi-year programs);
  - making the resources of the Ministry of National Defense (infrastructure, personnel) available for the rapid testing of prototypes;
  - regulating the scope of information that can be provided to industry as part of the *feedback loop*;
  - possibility for the government to specify the desired conditions for the implementation of the product (e.g., production siting, desired degree of production decentralization).

- Establish a fast-tracking unit within the Ministry of National Defense (to replace the current procedures for swift procurement) to enable for an accelerated identification, testing, and - in cooperation with the new operational research unit - pilot implementations of solutions useful from the perspective of operational capabilities of the Polish Armed Forces.

- Based on the new operational research unit, the research and development institutions of the Ministry of National Defense, and the Polish Development Fund group, organize a support program for small enterprises and start-ups developing defense and dual-use technologies, and provide them with diversified support (financial, infrastructural, technological).

- Extend the agreements by including provisions on maintaining production capacity to provide for the creation of adequate reserves of key components and increase funding by the central administration to take this extension into account.

- Structure a clear and transparent communication on military equipment procurement processes (in the case of processes that can be disclosed) for public use around graded access to information – e.g., general priorities (for everyone), budget data and schedules (for certified companies), technical details (for strategic partners in specific projects).

- Ensure transparency of processes run as classified procurement through regular reporting to parliamentary defense committees.

- Incorporate the perspective of interoperability with NATO and the EU into strategic planning documents, providing for obligation to assess potential participation of the Polish industry in multinational projects.

ABOUT THE AUTHORS

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As Deputy Minister of National Defense, he was responsible for, among other things, the creation of the Territorial Defense Forces, while as Head of the Chancellery of the Prime Minister, in the first months of Russia's full-scale invasion of Ukraine, he coordinated humanitarian and military aid delivered by part of the Polish administration.

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ABOUT THE PUBLISHERS

SOBIESKI INSTITUTE

The Sobieski Institute is a Polish private think-tank whose mission is to "Create ideas for Poland." Having launched its activities in 2003, it was registered as a foundation in 2005. Between 2003 and 2010, the Institute published the quarterly "Międzynarodowy Przegląd Polityczny" (International Political Review). Between 2011 and 2015, it organized annual congresses "Poland – The Great Project". In 2017, it organized the National Innovation League. Since 2017, the Institute has been placing a strong emphasis on publishing studies and recommendations aimed at showing how the Polish economy should take advantage of the opportunities offered by the fourth industrial revolution, innovation, and new technologies.

The Sobieski Institute also conducts educational activities through the implementation of the "Academy of Young Experts" project, which supports young people in developing leadership competencies and soft skills. Each edition of the program focuses on a different key issue, responding to the current needs of the younger generation. At present, in its sixth edition, the project focuses on the European Union, educating knowledge and preparing participants to take part in European Personnel Selection Office (EPSO) competitions. The program opens the door to an international career in the EU institutions. It provides unique opportunities to gain practical skills and for professional development at the highest level.

One of the Sobieski Institute's latest projects is the "Sobieski Channel", which we invite you to subscribe to on YouTube. The channel was created with the aim to provide platform for inspiring conversations on topics important for Poland. It is where we meet with interesting people to jointly shape the debate.

Over the years, the Sobieski Institute has enticed broad collaboration. To date it involved:

- non-governmental organizations: Polish Automation and Robotics Forum, Fundacja Wspierania Ubezpieczeń Wzajemnych, Republican Foundation, Instytut Jagielloński, Nowa Konfederacja, Ambitna Polska, Młodzi dla Polski, Studenci dla Rzeczpospolitej, Konrad Adenauer Foundation, Central European Energy Partners, Sławomir Skrzypek Foundation, Wacław Felczak Foundation, Institute for Foreign Affairs and Trade (Külügyi és Külgazdasági Intézet), Institute for Politics and Society (Institut pro politiku a společnost), The F. A. Hayek Foundation Bratislava;

- commercial companies: Aiut, Assay Group, Rohde&Schwarz, WB Electronics, Asseco, Samsung, Lotos, Google, Procter and Gamble, PWC, Cisco, EY, Phoenix Systems, Uber, USP Zdrowie, Fortum, Orange, Energa, Zysk i Ska, Collegium Wratislaviense, 4CF;

- State/supranational institutions: Ministry of Foreign Affairs, European Commission Representation in Poland, Ministry of Climate and Environment, Future Industry Platform Foundation, Industrial Development Agency for Development and Industry, Stock Exchange, Bank Gospodarki Krajowej, Chancellery of the Prime Minister, Ministry of Digital Affairs, Law and Justice, Hungarian Embassy, Senate of the Republic of Poland, European Conservatives and Reformists Party, European Parliament Office in Poland.

A complete list of reports and publications, as well as information about the Institute's activities, can be found at www.sobieski.org.pl.

We invite you to subscribe to the Sobieski Channel on youtube.com/kanalSobieski.

Eastern Flank Institute

What is our mission?

The Eastern Flank Institute aims to provide a comprehensive analysis of security policy in Central and Eastern Europe, with particular emphasis on the experiences of the Russian invasion of Ukraine. As one of the largest military forces in Europe, Poland plays a special role and its role on the NATO's eastern flank is particularly important. Previous strategic thinking in Poland lacked a broader perspective, which would provide for the challenges faced not only by Warsaw but also by other capitals in the region that must assert their agency on the international stage.

The results of the Institute's work include:

1. aggregating data and disseminating knowledge about challenges to security and defense policies in Central and Eastern Europe;
2. formulating realistic recommendations for systemic changes (both at the strategic and operational levels) to security and defense policies, taking into account, among other things, the specific nature of the region, the experience of the Ukrainian defensive war and the opportunities arising from cooperation with allies;
3. creating a platform for dialogue between representatives of the military, civil service, experts, business and those interested in security issues.

Who are we?

The Eastern Flank Institute is a non-political think tank registered in Brussels, which integrates the activities of a network of experts representing primarily the countries of NATO's Eastern Flank and Ukraine.

The Council of the Eastern Flank Institute consists of:

- Jadwiga Emilewicz, former Deputy Prime Minister and Minister of Development of the Republic of Poland;
- Michał Dworczyk, former Head of the Chancellery of the Prime Minister and Deputy Minister of National Defense; Vice-Chair of the European Parliament's Committee on Security and Defense;
- Tomasz Szatkowski, former Deputy Minister of Defense, former Permanent Representative of the Republic of Poland to NATO;
- Bartosz Cichocki, former Deputy Minister of Foreign Affairs, former Ambassador of the Republic of Poland to Kyiv;
- Oleksandr Kubrakov, former Deputy Prime Minister and Minister of Infrastructure of Ukraine;
- Oleksiy Reznikov, former Deputy Prime Minister and Minister of Defense of Ukraine.

How do we operate?

The Institute conducts analytical activities in cooperation with renowned experts and focuses on publishing and organizing public debates in formats that allow for free exchange of ideas. The results of the Institute's analytical work will be published on the website www.wschodniaflanka.pl. We encourage experts and individuals with experience in the national security sector to contact us.

The Institute's areas of particular interest include issues related to:

- organization of the State defense system and the activities of uniformed services;
- transformation of the armed forces, including technical modernization;
- improving the resilience of the State and social structures in crisis situations;
- coordinated support for the development of the defense industry;
- protection of critical infrastructure.

Poland is entering another year of increased tensions in its international environment. Rising defense spending and growing interest in the debate on national security are becoming an integral part of our everyday life. No one questions the sense of these expenditures, but questions are increasingly being asked:
Is taxpayers' money being spent optimally?
Do multi-billion dollar purchases also strengthen Polish entrepreneurs? How many jobs are created in the defense industry?
Can the arms industry become an engine of economic growth?

Building a strong defense industry serves many purposes at once. First and foremost, it is about security—as evidenced by the war in Ukraine, which shows how important it is to have your own production capacity. It is also about economic development—through innovation, job creation, and arms exports.

Poland's defense industry should reflect our national aspirations and role on NATO's eastern flank. The long-term goal is to create a strong domestic industrial and technological base that will meet the needs of the Polish Armed Forces, generate Polish innovation, and compete effectively on global markets.

In 2025, a record 4.7% of GDP was allocated to defense. The Polish defense sector is booming – investments are growing, employment is increasing, and exports are reaching new records. Our ambition is for the Polish defense industry to join the world's leaders.

It is not just a matter of aspiration – it is a prerequisite for the security of our Homeland.

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