
Defense and Security Market Report

Poland

December 2019

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1 DEFENSE & MILITARY

1.1 20 YEARS OF NATO MEMBERSHIP

After the fall of communism in 1989 and the collapse of the Warsaw Pact, Poland needed to form new alliances to ensure the country's national security. In early 1990s, the Polish government began to move towards membership in the NATO. The first step was the "Partnership for Peace" program, under which the Polish army took part in peace missions in the Balkans as well as in many international trainings. Finally, Poland joined NATO in March 1999.

In its first years in NATO, Poland took part in multiple training exercises with the allies. In 1999, the Multinational Corps Northeast Command was formed and played an important role in strengthening multi-country cooperation, especially with its closest allies, neighboring countries.

The Polish Army also joined international missions, including in Afghanistan and Iraq. In these missions, the Army was able to refine its procedures and equipment. While the troops had their own personal gear, small arms, military vehicles, etc., their operations were supported by other allies when it came to helicopters and mine- and attack-resistant vehicles (MRAP). These operations gave the Polish army valuable combat experience, which influenced its further development. One such decision was the establishment of Special Forces in 2007 as a separate type of armed forces, which helped to take their capabilities to a new level. In 2015, Poland was the first NATO country from the Eastern flank to take the role of a Framework State, in the format of Special Forces.

Over its two decades of membership, Poland became strongly integrated with the Alliance both politically and militarily. NATO became Poland's guarantor of security and contributed to a large-scale transformation of its army through introduction of NATO standards and procedures. Thanks to shared know-how and participation in international exercises, Polish soldiers learned to interact directly with their allies.

Today, the Polish Army is a pillar of NATO on the Eastern flank and cooperates with US and NATO forces in the region on daily basis, while also participating in missions in Kosovo, the Middle East and Afghanistan.

Despite many programs, technical modernization of the Polish army has not been completed. Most units - even those assigned to NATO operations – continue to operate outdated post-Soviet equipment, not suitable for upgrade. This presents Poland's biggest challenge in NATO.

1.2 MAIN BODIES

Sovereignty over the Armed Forces is held by the President of the Republic of Poland (Andrzej Duda, as of Dec 2019), and exercised through the Minister of National Defense.

Ministry of National Defense (MND)

The ministry manages operations of armed forces in peacetime, prepares and implements national defense policies, including proposals for development and structure of the armed forces. The Minister coordinates activities of the Ministry and the Armed Forces directly and with the help of the Chief of General Staff, as well as through secretaries and undersecretaries of state.

Minister: Mr. Mariusz Blaszczak (since Jan 2018)
Headquarters: Al. Niepodległości 218, 00-911 Warszawa, Poland
Website: <https://www.gov.pl/web/national-defence>

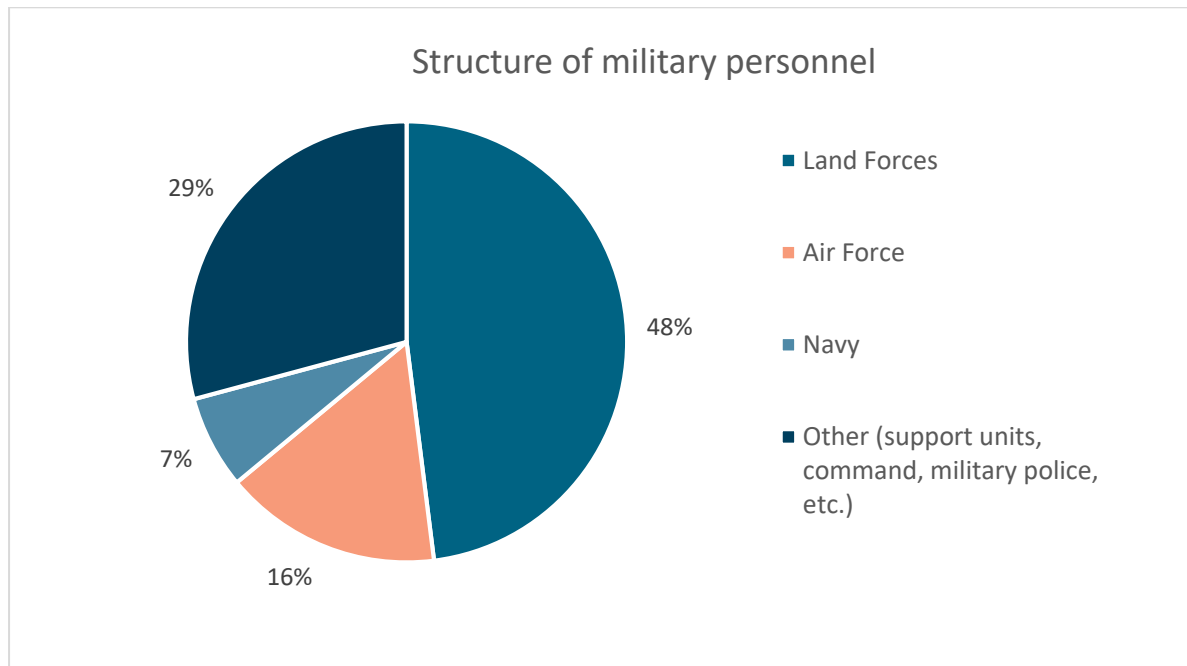
1.3 POLISH ARMED FORCES

At the end of 2018 there were 105,000 professional soldiers (an increase from 98.5 thousand at the end of 2016). The army has also about 20,000 reservists.



Source: Central Statistical Office

The largest group among professional soldiers is land forces, which constitute 48% of all soldiers. Air force accounts for 16% and the navy for 7%.



Source: Ministry of National Defense

1.3.1 AIR FORCE

Equipment used by the Polish Air Force is still of lower standard than that of many other NATO members. The Ministry of Defense plans to withdraw the oldest Soviet aircraft from service and purchase new aircraft (or at least newer used aircraft, depending on budget) in the next three years. The newest strategy assumes the purchase of 32 new units of F-35 aircraft (the procurement will be realized within 2024-2030 under the FMS program), as well as additional used F-16 fighters (no details announced by MND yet).

The Polish Air Force currently owns:

- F-16 fighters – 48 units
- MiG-29 fighters – 28 units (currently under maintenance after 3 accidents in 14 months)
- SU-22 (attack aircraft) – 18 units
- CASA C-295 (transport aircraft) – 16 units
- C-130 Hercules (transport aircraft) – 5 units
- M28 Bryza (multi-purpose small aircraft) – 24 units

- training aircraft – 2 Polish aircraft types - Iskra and Orlik – 54 units
- training aircraft – Leonardo M-346 Bielik – in 2014 Poland purchased 16 new aircraft, 8 units already supplied, further units will be delivered by 2022
- Mi-2, Mi-8, Mi-17 – multi-purpose helicopters – 29 units
- W-3 Sokół - multi-purpose helicopters – 17 units
- SW-4 Puszczuk – training helicopter – 24 units
- 2 VIP passenger aircrafts – Boeing 737 and Gulfstream G550 both purchased in 2017.



SU-22



Mi-2

Within 2006-2008, Poland purchased 48 used F-16 aircraft from the US Army. Until 2013, service and maintenance were provided by Lockheed Martin within an offset agreement between Polish and US military forces. Since 2013, the servicing, maintenance and repairs were transferred to WZL in Bydgoszcz.

1.3.2 GROUND FORCES AND SPECIAL FORCES

While the ground forces also operate some relatively modern technologies, most of its vehicles and weapons are outdated equipment from the 1970-1990's, from Poland and the Soviet Union, others (e.g. 250 Leopard 2 tanks from Germany) were already purchased as used years ago.

Specifically, the Polish ground forces own the following:

- 1,100 combat tanks (incl. 250 units of Leopard 2, 390 units of T-72, 240 units of PT-91)
- 2,500 armored fighting vehicles (including 1,300 BWP-1, 750 KTO Rosomak – based on Finnish military vehicle Patria, BWR-1 – 38 units, 150 Humvees, 240 units of BRDM-2 (Polish production based on Russian technology))
- over 300 mobile command and communication vehicles (including 9 Humvees, 19 units M113, 49 units of Rosomak WD/AWD)
- 500 self-propelled artillery

- 180 rocket launchers (including 27 9P133 Malutka-P, 18 units HMMWV for Spike-LR)
- 250 technical support vehicles
- 900 mortars (mostly produced domestically LM-60, caliber 60 mm and produced in the Czech Republic LRM 99 ANTOS, caliber 60,7 mm)
- 140 various multi-purpose helicopters.



BWR-1 - built on basis of BWP-1, currently being upgraded by new battlefield radar stations. In the coming years, the vehicle will be modernized, and eventually replaced by a new reconnaissance combat vehicle



BRDM-2 - basic reconnaissance vehicle of the Land Forces. Plans are in place for replacement with a new Light Armored Reconnaissance Transporter Kleszcz 4x4



Rosomak WD – Polish production, 7 vehicles are used by the NATO multi-national division North East in in Elblag, Poland. In 2019, the MoD ordered two more for the newly formed 18th division of land forces

Special Forces

Poland's special forces are equipped mostly with personal gear and small equipment while relying on heavy equipment operated by other divisions of the army for larger operations. As an example, they do not own any helicopters but use Mi-17 and Mi-17W belonging to the 7th Special Action Squadron, which is part of the Air Force. The Special Forces are also equipped with unmanned aerial vehicles (UAVs) of three types: Aeronautics Orbiter (made in Israel), FlyEye (made in Poland) and ScanEagle (made in USA).

Expansion of the army and the creation of Territorial Defense Forces

In 2015, the government took a number of actions to increase the size of the Polish army and expand its structure. As part of this process, so-called Territorial Defense Forces were formed. Currently, this formation has more than 21,000 soldiers, the vast majority of whom perform territorial military service. The brigades that were formed first - in the eastern part of Poland - are gradually building capabilities and are trained with professional operational troops. Ultimately, the TDF population is to exceed 50,000.

Territorial Defense Forces are intended for:

- conducting defense activities in cooperation with operational forces and supporting elements of the non-military system
- conducting independent unconventional, anti-diversion and anti-landing activities
- implementing projects in internal crisis management, combating natural disasters, protection of property, search and rescue actions
- conducting information activities.

The formation of TDF is also associated with the purchase of equipment and development of infrastructure, therefore large purchases of small arms, personal gear and vehicles are being made. Other planned equipment includes FlyEye unmanned aerial systems. Currently, TDF struggles mostly with a shortage of anti-tank weapons and 4x4 vehicles.

1.3.3 NAVAL FORCES

The Naval Forces defend the Polish sea coast which is over 500 km long (Baltic Sea shared also with Russian region Kaliningrad).

Dedicated navy units also participate in allied operations outside of Poland. Since Poland's accession to NATO, the Polish Navy has participated in over 300 international exercises conducted at sea, air and land. The organization and participation in large maneuvers and

exercises in the Baltic Sea are currently a permanent element of its international undertakings (including: "Baltops", "Open Spirit", "Passex"). In addition, navy ships took part in key NATO operations such as "Iraqi Freedom" and "Active Endeavor".

In terms of its modest equipment compared to other NATO countries, the navy may be the most neglected type of Polish Armed Forces. Its current fleet includes the following:

- ORP Pulaski and ORP Kosciuszko - Oliver Hazard Perry class missile frigates taken from US Navy in 2001 and 2003
- ORP Kaszub – corvette
- ORP Slazak – patrol ship launched in 2015
- 3 small missile ships – ORP Orkan, ORP Piorun, ORP Grom
- 3 submarines – ORP Orzel (under construction since 2014), ORP Bielik, ORP Sep (type 207/Kobben)
- 4 mine destroyers – 3 built and launched in 60-ties and ORP Kormoran launched in 2015, built in Polish naval shipyard Remontowa Shipbuilding S.A. in Gdansk
- 17 minesweepers
- 5 mine-transport ships
- 12 ships with various functions, including logistics, transport, radio-electronic reconnaissance, training, tankers, rescue, hydrographic
- 14 units of reconnaissance/patrol and transport aircraft
- 26 helicopters of various purposes (including 4 units Kaman SH-2G Super Seasprite for submarine combat, produced in 1990's and transferred to Poland in 2002 and 2003)
- 12 self-propelled Mobile Launch Vehicles, each with 4 NSM rocket containers



ORP Kaszub - built in Polish naval shipyard and launched in 1987, the only one corvette used by Polish Naval Forces



ORP Sep – submarine built in 1962 in Germany for Norwegian naval forces, withdrawal from service in 2002 and transferred to Poland – still in use

In November 2019, MND (Ministry of National Defense) announced negotiations with Swedish Naval Forces regarding the purchase of two used submarines of type Södermanland. Moreover, modernization of naval forces is a key point of the newest modernization strategy that will be gradually realized through the Orka program until 2030.

1.3.4 AIRSPACE DEFENSE AND SURVEILLANCE

Redzikowo Naval Support Facility

During the Lisbon summit in 2010, NATO decided to expand missile defense in Europe. A missile shield based on the U.S. Aegis Ashore system is being developed under the EPAA (European Phased Adaptive Approach) program designed to provide protection against ballistic missile attacks on NATO members.

One element of the system will be a U.S. missile base in Redzikow, Poland, the construction of which was started in 2013. It was initially to be completed in 2018, but this was postponed. It is now expected that the facility will be operational by the end of 2020.



Aegis Ashore Missile Defense System – rocket base in Redzikow, Poland – under construction, planned launch in 2020

1.4 INTERNATIONAL DEFENSE COOPERATION

1.4.1 NATO COOPERATION

Poland remains one of the main and active NATO members for the so-called Eastern flank. Importance of Central and Eastern Europe increased significantly after the Russian annexation of Crimea and subsequent aggression against Ukraine in 2014. In response to Russia's actions, NATO decided to implement additional adaptation and defense measures. The first step was taken at the summit in Wales in 2014. The Readiness Action Plan envisaged strengthening the NATO Response Force by increasing the number of soldiers to 40,000 and setting up an immediate response unit (VJTF), ready to be deployed within 5-7 days.

In addition, member states decided to increase the scope of exercises on the Eastern flank, as well as to establish continuous presence of small units, mainly for training purposes.

In 2015, first exercises on deployment of the new immediate response forces were carried out in Poland (Noble Jump 2015). A year later, at the Warsaw summit, a decision was made to establish continuous presence of NATO battalion battle groups on the Eastern flank, including in Poland. These are multinational units in continuous operations since 2017. The range of allied exercises has been increasing systematically.

At the Brussels summit in 2018, NATO adopted a comprehensive strengthening strategy, including enabling the separation of 30 battalions of land forces, 30 air squadrons and 30 ships. Command structure and contingency plans will be adapted accordingly. Poland actively contributes to the process of developing these new structures.

Polish Forces contribute to other NATO initiatives such as enhanced Forward Presence (eFP) on the eastern and southern flank and tailored Forward Presence (tFP). The country plays a special role in the eFP initiative as one of the host countries, and builds a multinational division command on its territory (in Elbląg), with the task of coordinating all eFP groups.

1.4.2 US MILITARY PRESENCE IN POLAND

The U.S. is currently Poland's most key military partner, as evidenced by the planned increase in U.S. troops. Currently, around 4,500 U.S. soldiers are stationed in Poland on rotational basis. The current government aimed to further strengthen the presence of NATO troops in Poland, with particular emphasis on the US Army. In 2016, as part of bilateral arrangements, the U.S. Army announced a plan to deploy new units in Poland (including armored brigade, logistics and command troops, aviation of land forces).

In 2017, the U.S. Army's 3rd Armored Brigade Combat Team of the 4th Infantry Division was deployed in Poland and established its headquarters in the Polish city of Żagań. The team conducts operations on rotational basis in other countries of Central and Eastern Europe. Presence of other U.S. units has also been gradually increased. In addition, a US-led NATO battalion battle group was based in Orzysz, including soldiers from the UK, Romania and Croatia. In May 2017, a part of the command of the Atlantic Resolve mission was transferred from Germany to Poznan to command over 6,000 U.S. soldiers conducting bilateral training operations and multinational exercises with defense forces of countries on NATO's eastern flank. A Mission Command Element was created.

The Ministry of National Defense sought to further increase US presence in Poland. The U.S. government was presented with a proposal to deploy further US Army division with combat units for which Poland has offered co-financing up to USD 2 billion.

In line with an agreement between Polish president Andrzej Duda and U.S. president Donald Trump from June 2019, current rotational presence of U.S. troops in Poland will change into permanent and supported with a number of additional elements. Structures that will be created in Poland will allow for quick deployment of the U.S. division including additional broad support.

In 2019, the Mission Command Element in Poznan was formally transformed into a division command, which is to have the same capabilities as any other command of the US division. Moreover, Poland will prepare infrastructure for U.S. special forces, armored brigades, aviation of land forces, as well as an unloading base for the Air Force and a Combat Training Center, allowing certification of U.S. brigades.

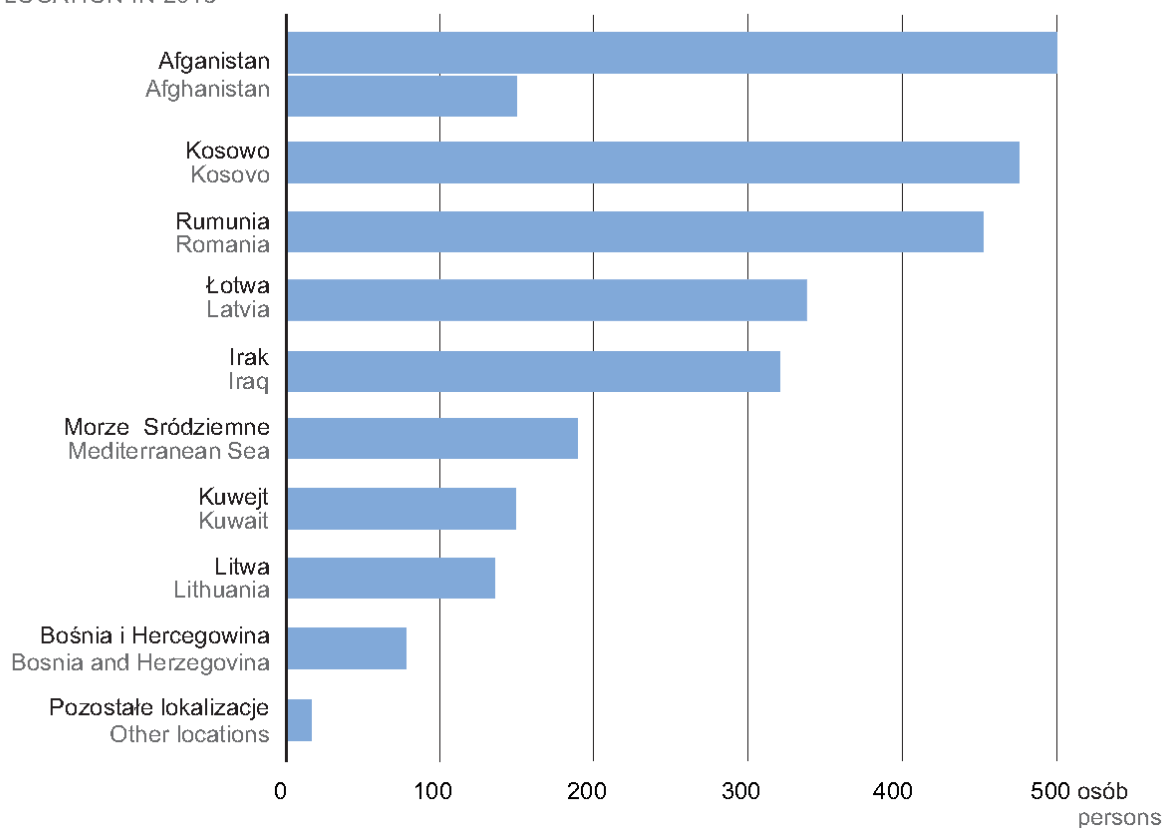
Construction of Army Prepositioned Stock equipment warehouses will be carried out in Powidz, with NATO financial support, allowing for storage of equipment of a full armored brigade. All these factors will allow for a fast increase and consolidation of U.S. military presence in Poland.

1.4.3 INTERNATIONAL MISSIONS

Poland performed its first international military mission in 1995 as part of the „Partnership for Peace” program (Albania, AFOR in 1995-1996). Then, as a NATO member, Poland actively participated in operations in Kosovo (KFOR since 1999), Bosnia and Herzegovina (IFOR in 1995-1996 and SFOR in 1996-2004), Afghanistan (since 2002; ISAF and RSM missions) and Iraq (NTM-I in 2005 to 2009). Since 2016, the number of Polish soldiers on foreign missions has been increasing. As a consequence of the provisions of the NATO summit in Warsaw, Poland directed two contingents in 2017 to Romania and Latvia (approx. 200-250 soldiers in each of

the Polish Military Contingents) as part of enhanced Forward Presence (eFP) and Tailored Forward Presence (tFP) on the Eastern flank of the Alliance.

PARTICIPATION OF THE POLISH MILITARY IN PEACEKEEPING MISSIONS AND OPERATIONS
BY LOCATION IN 2018



Source: Central Statistical Office

Afghanistan

The largest mission where Polish soldiers participated under NATO was the ISAF operation in Afghanistan. Poland joined the mission in November 2001 and was one of the largest contingents. At the mission peak in 2010-2011, 2,600 Polish soldiers and army employees were stationed in Afghanistan.

At the time, Poland's soldiers were responsible for the province of Ghazni. The troops were responsible for reconstruction of damaged infrastructure, medical assistance, training of Afghan soldiers, policemen and civilians, and humanitarian aid for the local population.

The Ghazni Province was handed over to the Afghans on May 9, 2014. The ISAF mission ended in 2014. During the mission period, over 28 thousand Polish soldiers were sent to Afghanistan, of which 43 was killed and 361 wounded.

In 2015, the Resolute Support mission began, which continues until now. Its operations are focused on training, consulting and support of the Afghan allied forces. The Polish contingent reaches up to 500 soldiers.

Iraq

Poland's second largest contingent was in Iraq, peaking at about 2,500 troops. During the war in Iraq, NATO took responsibility for training of local security forces. The mission, called NTM-I, lasted from 2004 to 2011. Poland joined in 2005. Most Polish soldiers were withdrawn from Iraq by 2008, but the army carried out training until the end of the NTM-I mandate. Over 2003–2008, 22 Polish soldiers were killed in Iraq, and about 150 were injured.

In 2017-2018, Poland also acted as the leading country (with 80 to 130 soldiers) in training Iraqi personnel in repair and operation of post-Soviet equipment as part of the NATO training and capacity building mission in Iraq (NTCB-I).

Air Force missions

As part of NATO's Baltic Air Policing mission, Polish aircraft are patrolling the airspace of Estonia, Lithuania and Latvia. The mission has been in place since 2004 when NATO was joined by these three countries which do not have their own air defense. This task was entrusted to troops from other member states shifting every four months. NATO fighters are stationed in Siauliai, Lithuania. In 2014, the mission was strengthened by including a base in Aemar, Estonia. Poland participates in the mission since 2006, and the Polish Military Contingent "Orlik" has made seven shifts to date. Initially, Poland was sending four MiG-29 aircraft during each shift. In 2017, Poland's F-16 fighters were used for the first time.

Currently, the Polish Army participates in the following international missions:

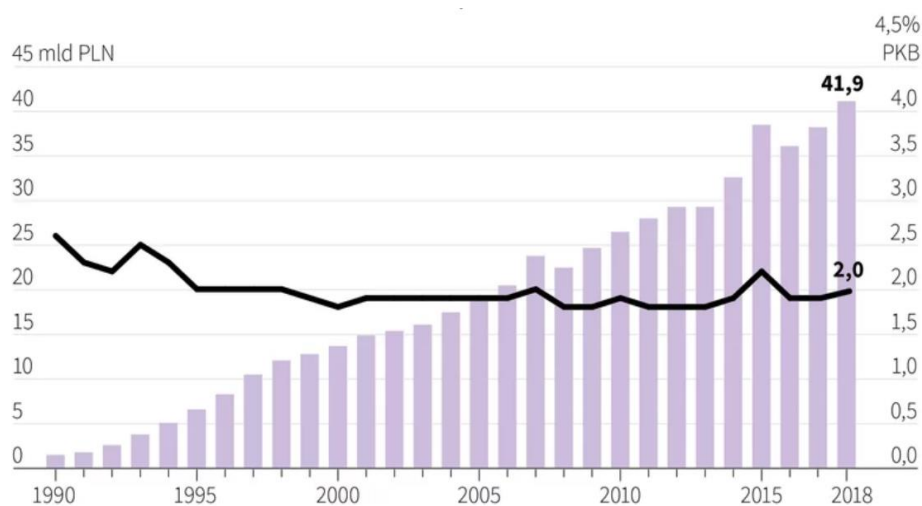
- KFOR in Kosovo (about 300 soldiers and civilians),
- Resolute Support Mission (RSM) in Afghanistan (approx. 200 to 400 soldiers),
- NATO Mission Iraq (NMI; approx. 100 soldiers, including a mobile training team, security and an engineering platoon),
- Baltic Air Policing in the Baltic States (approx. 140 soldiers under 8 PKW, including 4 F-16 fighters with pilots, as well as ground and security personnel).
- Standing NATO Maritime Group 1 - Pulaski battleship.

1.5 DEFENSE AND MILITARY MARKET

1.5.1 DEFENCE BUDGET AND SPENDING

According to a report by the Stockholm International Peace Research Institute (SIPRI), Poland's defense spending amounted to nearly USD 12 billion in 2018, i.e. 8.9% up from previous year. According to NATO estimates, Poland spent 2.05% of GDP on defense and is one of seven North Atlantic Alliance countries that exceeded the assumed 2% expenditure threshold, while the average for all NATO countries was to 1.48% (not counting the US).

Poland's expenditures on military sector (in billion PLN and as percentage of GDP)



Source: SIPRI

In 2018, Poland spent 27.5% of its military budget on armaments and military equipment. Approximately USD 12 billion was allocated to defense in the 2019 budget, of which USD 3 billion (28%) was allocated for modernization of the armed forces (procurement).

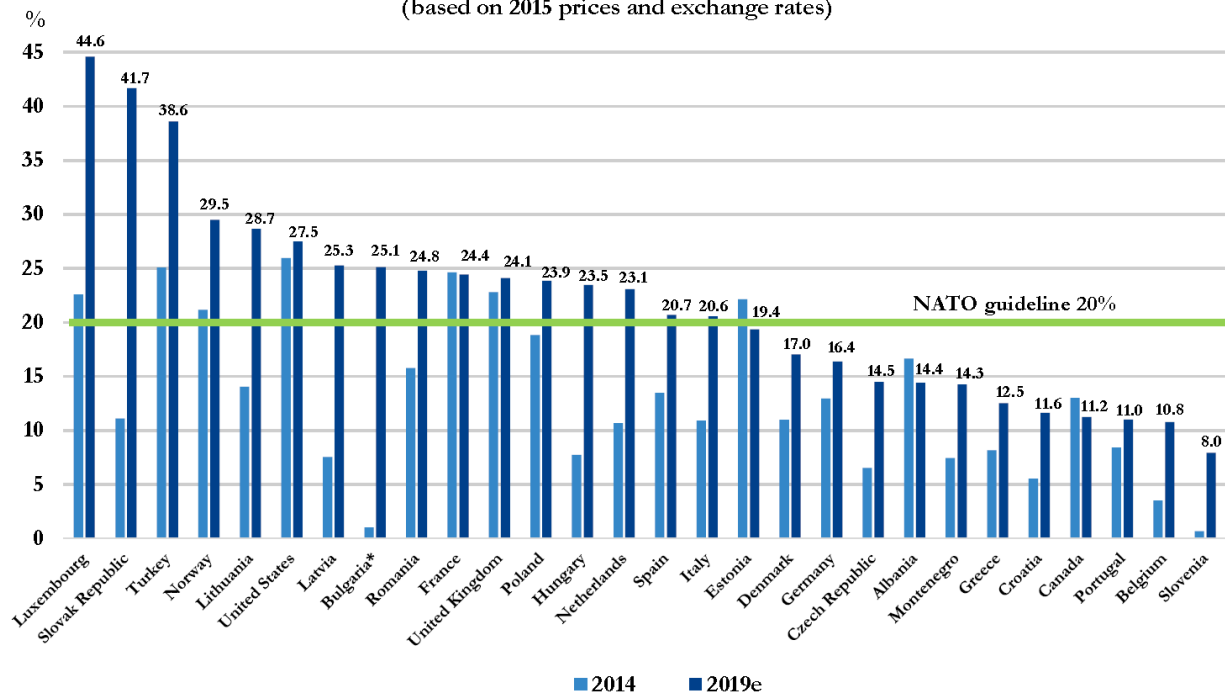
Distribution of defense expenditure by category (percentage of total defense expenditure)

	2012	2013	2014	2015	2016	2017	2018*	2019*
Equipment	15.16	13.90	18.84	33.20	21.62	22.04	27.49	23.87
Personnel	57.34	57.70	51.45	41.96	47.15	50.04	46.14	48.26
Infrastructure	4.76	5.62	5.47	4.74	4.62	4.21	3.45	5.32
Other	22.73	22.78	24.24	20.11	26.61	23.71	22.91	22.56

Source: NATO, * - estimates

Equipment expenditure as a share of defense expenditure (%)

(based on 2015 prices and exchange rates)



1.5.2 POLISH DEFENSE SECTOR

The defense sector in Poland is diverse in terms of market position and growth prospects. Profitable companies developing modern technologies operate alongside declining businesses.

The aerospace industry is the most competitive - prospects of its development are largely independent of orders from the Polish armed forces as it operates within international chains, providing components, spare parts and whole structures (e.g. fuselages/frames), often to foreign-owned mother companies (e.g. Italian AgustaWestland, US Sikorsky).

Also, military electronics recorded relatively good results, mainly thanks to R&D costs being lower than in other sectors of the defense industry, allowing Poland to offer competitive products even for international customers.

The situation of Polish industry connected to land military forces is more complicated, as it is highly dependent on orders from the Polish armed forces and unstable dynamics in export markets. It has been struggling with a lack of funds for development of new products. Currently the core of its portfolio is heavily modified technologies originally developed by the Soviet Union decades ago,

and therefore it seeks to enter into partnerships with European market players or to integrate ready components purchased abroad.

The Polish defense industry currently has little chance to gain orders for technologically advanced equipment, yet Polish companies benefited from significant military procurement in recent years. Numerous contracts for the supply of weapons have been carried out - from combat vehicles to small airplanes and helicopters, ships, artillery armament, as well as personal gear of soldiers.

An example of locally procured weaponry is the Krab self-propelled gun cannon manufactured in Huta Stalowa Wola. In March 2019, additional units of this weapon were delivered for two artillery squadrons. According to the signed contract, the Polish Army will have five divisions equipped by until 2024. Another example is Rak, self-propelled mortars, mounted on the KTO Rosomak chassis, that were also designed at the Military Production Center of Huta Stalowa Wola.

In May 2019, another batch of nine Poprad very short-range anti-aircraft sets manufactured by PIT-Radwar were delivered. These sets are mounted on the AMZ Żubr-P platform, also of Polish production, and have an advanced propulsion system of the tracking and aiming head, developed by Polish designers. The contract signed with MND includes the delivery of 77 sets by 2021.

An important element of the Polish defense system (called Vistula) are the Jelcz vehicles, which will perform the function of Oshkosh vehicles used in the US in the IBCS / Patriot system. A contract signed in 2019 with the Jelcz plant provides for the supply of 73 such vehicles by 2022.

Stocznia Remontowa Shipbuilding in Gdańsk is implementing a contract signed in 2017, which provides for the supply of six B860 tugs to the Polish Navy. Three ships were handed over in 2019, and three more will be delivered in 2020.

The PZL-Świdnik plant signed a contract this year for the supply of four AW101 helicopters for the Polish Navy. These submarines combating units will be delivered by the end of 2022.

An example of military equipment of a smaller caliber are light mortars LMP-2017, which were developed by Tarnów. Last year, a contract was signed for 780 pieces of this weapon.

At the end of 2018, Łucznik signed a contract for the supply of 20 thousand 9 mm semi-automatic pistol VIS 100 to the Territorial Defense Forces.

Exports

According to a report published by the Ministry of Foreign Affairs, the value of exports of military equipment and armaments from Poland amounted to EUR 472.2 million in 2017. According to the latest SIPRI report for 2013–17, Poland ranked 29th worldwide in terms of value of arms exports, with a share of 0.13% in global sales.

According to the Polish Chamber of Manufacturers for National Defense, private producers are doing better in international contacts than companies of the major state-owned group PGZ (Polska Grupa Zbrojeniowa). In 2017, private companies generated as much as 90.3% of exports.

The aviation sector (aircraft, including unmanned aircraft, but also aircraft engines and aircraft equipment) has dominated Polish arms exports for years, accounting for nearly 45% of foreign sales in 2017. The largest plants in this sector - PZL Mielec and PZL Świdnik - belong to foreign entities. The value of Polish exports includes not only components produced in Poland, but also the value of assembly of ready parts, where the most valuable elements are produced abroad.

Other important export categories include land vehicles and their components, specialized equipment for training and simulation of war games, armored and protective equipment, as well as smoothbore weapons with a caliber of 20 mm or larger, other weapons with a caliber greater than 12.7 mm and launchers and their components.

According to experts, other products that have good potential for export are communication and radiolocation equipment, electronic support systems and even drones used for military operations.

Main market players

Over the last decade, Poland has consolidated its defense sector by creating a large state-owned holding company **PGZ (Polska Grupa Zbrojeniowa – www.pgzs.pl)** consisting currently of over 60 companies, with combined turnover amounting to USD 1.5 billion and 17,500 employees. Key daughter companies of the PGZ group are:

Rosomak S.A.

www.rosomaksa.pl

The company specializes in manufacturing and maintenance of vehicles (fire support, spike carrier, medical evacuation, reconnaissance) and military simulators. Its flagship product is the 'Rosomak' Armoured Personnel Carrier. It was also responsible for modernization of T-72 tanks for the Polish army. The turnover amounted to USD 105 million in 2018.

Huta Stalowa Wola S.A.www.hsw.pl

Designer and producer of artillery equipment (self-propelled mortars, howitzers, rocket launchers, automatic cannons). The company also manufactures light armored command vehicles and engineering equipment. The turnover amounted to USD 257 million in 2018.

Stocznia Remontowa "NAUTA" S.A.www.nauta.pl

The company provides a wide range of shipbuilding and overhaul services. Apart from standard overhauls, it performs complex conversions and reconstructions, as well as provides outfitting for ships that serve the offshore sector. Its 2018 turnover reached USD 197 million.

MESKO S.A.www.mesko.com.pl

The company manufactures small and medium caliber ammunition, mortar ammunition, tank and artillery ammunition, as well as anti-armor and anti-aircraft missile sets and rockets. Their products are the standard equipment of the Polish Armed Forces and other uniformed forces. The turnover amounted to USD 146 million in 2018.

JELCZ Sp. z o.o.www.jelcz.com.pl

Manufacturer of armored and unarmored heavy goods vehicles and trucks. The turnover amounted to USD 88 million in 2018.

Wojskowe Zakłady Lotnicze Nr 2 S.A.www.wzl2.mil.pl

WZL2 provides overhaul and maintenance of combat strike fighters and fighter aircraft. It is the sole plant in Poland to overhaul and upgrade MiG-29 and Su-22 airplanes and maintain F-16 and C-130 Hercules aircraft. Their turnover amounted to USD 78 million in 2018.

PIT-RADWAR S.A.www.pitradwar.com

Engineering company, designer and constructor of innovative solutions in electronics, ICT, security of people and infrastructure. Their dual-use systems being developed are related to biomedical sensor projects (telemedicine, telecare), critical infrastructure protection systems and unmanned systems. The turnover amounted to USD 84 million in 2018.

Other companies of PGZ:

- **“Łucznik”–Radom Sp. z o.o.** (www.fabrykabroni.pl) - leading weapon manufacturer and supplier for domestic and foreign markets
- **Wojskowe Zakłady Lotnicze Nr 1 S.A.** (www.wzl1.mil.pl) - WZL1 handles overhaul of helicopters and aircraft engines
- **Wojskowe Zakłady Lotnicze Nr 4 S.A.** (www.wzl4.mil.pl) - overhaul company providing technical maintenance of turbine engines for military airplanes and helicopters, as well as auxiliary turbine power units.
- **PZL-KALISZ” S.A.** (www.wsk.kalisz.pl) - manufacturer of ASz-62 IR aircraft radial piston engines, producer of gears and gear-wheel transmissions for global aviation companies.
- **Wojskowe Zakłady Uzbrojenia S.A.** (www.wzu.pl) - overhaul and upgrade of medium- and long-range defensive rocket missile technology.
- **Wojskowe Zakłady Motoryzacyjne S.A.** (www.wzm.pl) - repair and upgrade of armored equipment, such as Leopard 2A4, T-72, BWP-1, 2S1 Goździk or BRDM-2.
- **Wojskowe Zakłady Inżynieryjne S.A.** (www.wzinz.com.pl) - manufacturing and overhaul of engineering equipment for Polish and foreign armies and for the civil market.
- **Wojskowe Zakłady Elektroniczne S.A.** (www.wze.com.pl) - military equipment for reconnaissance and radio electronic combat, command, communications and air defense.
- **Wojskowe Zakłady Łączności Nr 1 S.A.** (www.wzl1.com.pl) - manufacturer of communications equipment for armed forces and telecommunications.
- **Wojskowe Zakłady Łączności Nr 2 S.A.** (www.wzl2.pl) - manufacturer of communications systems. It is the only entity in Poland to run an authorized maintenance center and deliver training in the operation of the HARRIS Corporation radio station.
- **PCO S.A.** (www.pcosa.com.pl) - manufacturer of optoelectronic products, laser-based surveillance and targeting instruments, night vision and thermal imaging technologies.
- **"DEZAMET" S.A.** (www.dezamet.com.pl) - manufacturer of mechanical transmissions for military and civil customers. The company's products are used in the automotive, machine tool and agricultural industries – on domestic and foreign markets.
- **"BUMAR-MIKULCZYCE" S.A.** (www.bumar-mikulczyce.pl) - manufacturer of mechanical transmissions for military and civil customers. The company's products are used in the automotive, machine tool and agricultural industries – on domestic and foreign markets.
- **"BUMAR-ŁĄBĘDY" S.A.** (www.bumar.gliwice.pl) - manufacturer of heavy tracked vehicles for military and civil purposes.
- **Tarnów S.A.** (www.zmt.tarnow.pl) - producer of sniper rifles, machine guns, mortars, grenade launchers, anti-aircraft artillery, training equipment
- **"MASKPOL" S.A.** (www.maskpol.com.pl) – producer of safety equipment - gas masks, bulletproof vests, composite combat helmets, NBC clothing and decontamination systems.

1.5.3 AVIATION SECTOR

Poland has over 140 companies operating in the aviation sector with combined annual sales of over USD 2 billion (2018, increase by 22% y-o-y), employing a total of over 17,000 employees.

The majority are small and medium-sized enterprises (only 25 employ over 50 people)) and companies with foreign capital. Approximately 80% of the companies are located in the south-eastern part of the country in one of three clusters, so called **Aviation Valley**.

The factories specialize in manufacturing of aircraft (agricultural, training, training, disposition), helicopters, gliders and components (aluminum, composites, GRFP) and accessories. Most of the production is exported to customers abroad in countries such as the United States, Venezuela, Indonesia, Italy, Greece, Canada, Spain, Germany, South Korea., Vietnam.

Competitive advantages of Poland's aviation sector lie mainly in product quality (based on knowledge of materials processing, mechanics and electronics) and competitive labor costs. The existing network of manufacturing and service companies supported by R&D centers has good potential for further development of international cooperation and for commission orders for spare parts and finished products for the aviation sector.

Largest companies in Poland's aviation sector

Company name	Location	Employment
Pratt & Whitney Rzeszów	Rzeszów	4,050
WSK „PZL - Świdnik” / Augusta Westland	Świdnik	2,900
GE EDC Poland	Warsaw	1,800
PZL Mielec, Sikorsky a Lockheed Martin Company	Mielec	1,700
Thoni Alutec	Stalowa Wola	1,500
Pratt & Whitney Kalisz	Kalisz	1,400
PZL „Warszawa Okęcie”, Airbus Defence and Space Company	Warsaw	850
Safran Transmission Systems Poland	Sędziszów	700
MTU Aero Engines Polska	Rzeszów	700
UTC Aerospace Systems (Goodrich)	Krosno	400

1.6 MODERNIZATION AND ARMAMENT STRATEGY

The need to modernize the Polish army was apparent already in the 1990s, however, the first important decisions were made only after joining NATO in 1999 and were somewhat forced by the need to adapt to standards present in other member states. Poland then had an army based on conscripts and equipped almost exclusively with post-Soviet equipment. Technical modernization in this period was focused on command and communication systems, as well as IFF systems (identification friend of foe). They were the basis for increasing cooperation with NATO even before new equipment was procured.

In the late 1990s, the Polish Army had eight all-military divisions and 1,700 tanks, however, a significant part of them were T-55A/AM. A few other modernization programs apart from command and communication equipment included, for example, the introduction of the first versions of the Grom mobile anti-aircraft systems and PT-91 tanks.

The first realistic and comprehensive army modernization plan was implemented in 2001-2008. Among other, Poland purchased 48 modernized F-16 Block 52+ aircraft, 8 Casa/Airbus C-295M transport aircraft, 264 portable Spike-LR rocket launchers, and 120 used Leopard 2A4 tanks. However, a significant proportion of improvements planned were not implemented for political or financial reasons.

Since 2008, the Ministry of National Defense and the Polish Army were struggling with the global economic crisis, which translated into cuts in public spending. In total, between 2008 and 2013, USD 3.5 billion less was spent on defense than had been planned in the modernization plans.

After the annexation of Crimea by Russia, steps were taken to strengthen Poland's national security. In 2014, contracts were signed for the second Navy Coastal Missile Squadron and the first batch of JASSM missiles along with modernization of F-16 fighters. A decision was taken to strengthen equipment of selected units on the eastern flank. Initial actions were also made in two major modernization programs: Wisła (Patriot system) and multi-purpose helicopters (Caracal). It was also planned to speed up procurement of the Homar system (rocket launchers), unmanned aerial vehicles, and Kruk shock rotorcraft.

After the 2015 parliamentary election, the United Right government announced increased commitment to strengthening national defense. Since the beginning of 2017, Territorial Defense Forces were formed, in order to recreate territorial strength. In 2018, a new 18th Mechanized Division was also launched.

In addition, a law was adopted to increase defense expenditure gradually from 2.1% GDP in 2020 to 2.5% in 2030.

The government plans further modernization of the army associated with planned rising expenditures. In October 2019, a **Technical Modernization Plan** of the Polish Armed Forces was signed, which provides for approximately **USD 50 billion** for defense purposes **by 2026**.

Major modernization programs:

- "Harpia" - acquisition of 32 fifth-generation F-35 aircraft - negotiations with the US government (under FMS program) in progress, the first aircraft shall be delivered by Lockheed Martin in 2024. In addition, under the "Harpia" program, Poland will seek participation in the "loyal wingman", regarding development of UAV in stealth technology
- "Observer" - a comprehensive program for the development of capabilities for multi-level and integrated satellite and image reconnaissance - the purchase of satellites, micro-satellites, reconnaissance aircraft and drones linked to an image recognition center for data processing and command support
- "Wisła" - continuation of the medium-range anti-aircraft and missile delivery program
- "Narew" - a short-range air defense program
- "Kruk" - purchase of rotorcraft for Special Forces and Navy, as well as attack helicopters for land forces
- "Homar" - continuation of the program to buy rocket launchers capable of reaching targets distant up to 300 kilometers
- naval forces - purchase of two submarines and six light rocket ships (contract planned for Polish shipyards)
- combat vehicles - purchases from Polish suppliers (including Krab guns, Rak self-propelled mortars and KTO Rosomak military vehicles)
- "Pustelnik" - purchase of light anti-tank guided missiles
- "Balsa" - purchase of modern engineering robots supporting the work of sappers
- "Gladius" - acquisition of unmanned search and impact systems
- "Cyber.mil" - creating a package of national tools and software based on the latest Polish cryptographic technologies in order to effectively defend Polish cyberspace
- a program for digitizing combat platforms and command systems.

The current modernization plans assume that Poland will make the bulk of its foreign purchases **from the USA**. From the funds allocated for modernizing armaments by 2026, contracts worth a total of USD 10 billion have already been concluded. Of this amount, USD 3.5 billion was allocated to domestic arms producers, and up to USD 4.3 billion will be spent on procurement from the USA. A large part of this sum is for the purchase of Patriot anti-aircraft missile systems and the IBCS system for the Polish Wisła program. Another large investment was the purchase of one squadron of multi-guide rocket launchers of the M142 Himars system. Another contract is for the supply of four S-70i Black Hawk helicopters that will be manufactured at Polskie Zakłady Lotnicze in Mielec, part of Lockheed Martin. A part of the most important purchases from the U.S. (e.g. aircraft and components of Wisla system) will go through the FMS program.

Despite increased budgets and intensified procurement, the modernization process of the army is slow and the list of modernization negligence is long, but all this is systemic in nature. The system of military procurement is inefficient, and problems with developing strategic documents make the situation even worse. The modernization plan until 2026 should have been adopted at least two years ago. Frequently changing strategies for restructuring the domestic defense industry and staff changes in the army do not bring much improvement either.

Although the Ministry of National Defense announced a structural strengthening of the military equipment procurement system by establishing the Armaments Agency, this institution has not been launched yet and the Ministry has not provided any details as of its future authority.

2 HOMELAND SECURITY

2.1 INTERNAL SECURITY SYSTEM

2.1.1 MINISTRY OF INTERIOR AND ADMINISTRATION

The Ministry of Interior and Administration (Polish name: Ministerstwo Spraw Wewnętrznych i Administracji) is responsible for internal security of the state. Its particular tasks include:

- protection of public safety and order
- protection of the state border and border traffic control
- control of foreigners, coordination of activities related to the country's migration policy
- crisis management
- civil defense
- fire protection
- supervision of mountain and water rescue.

The Ministry supervises uniformed services such as the Police, Border Guards, State Protection Service and the State Fire Service. The Minister of Interior also coordinates special services.

Full name:	Ministry of Interior and Administration (Ministerstwo Spraw Wewnętrznych i Administracji)
Governing body:	Prime Minister
Minister:	Mr. Mariusz Kaminski
State Secretary:	Mr. Maciej Wasik
Website:	www.gov.pl/web/mswia
Headquarters address:	Stefana Batorego 5, 02-591 Warszawa, Poland

2.1.2 INTERNAL SECURITY AGENCY (ABW)

The Internal Security Agency (Polish name: Agencja Bezpieczeństwa Wewnętrznego) is a special service established to protect the constitutional order of the Republic of Poland. The main task is to protect the state and organize activities against a threat to the independence of the constitutional order, disruption of the state structures or jeopardizing the fundamental interests of the country. The duties are obtaining, analyzing and processing information about the dangers (including terrorism, counterespionage, economic and organized crime, corruption).

The structure includes 8 main departments:

- I - IT Security Department
- II - Counterintelligence Department
- II - Department of Criminal Proceedings
- IV - Department of Classified Information Protection
- V - Department of Operational and Technical Support
- VI - Department of Internal Security and Audit
- VII - Strategic Threats Department
- VIII - Information, Analysis and Forecast Department

Their work is supported by administration offices, including Logistics Office responsible for conducting procurement procedures. Annual budget of the institution amounts to USD 200-220 million, of which almost 60% is spent on salaries.

Full name:	Internal Security Agency (Polish name: Agencja Bezpieczeństwa Wewnętrznego)
Governing body:	Ministry of Interior and Administration
Chief Officer:	Mr. Piotr Pogonowski
Website:	www.abw.gov.pl
Headquarters address:	Rakowiecka 2A, 00-993 Warszawa, Poland

2.1.3 FOREIGN INTELLIGENCE AGENCY

Foreign Intelligence Agency (Polish name: Agencja Wywiadu) provides intelligence services and information to key state authorities of Poland, which need to make optimal decisions for the state and its citizens in changing international conditions.

The structure of the organization includes the following departments and offices:

- Operations Department
- Information Department
- Technical Department
- Security Bureau
- Administrative and Finance Office
- Personnel and Training Office
- Legal office
- Chief's office
- Independent Department of Crisis Management.

The unit responsible for procurement is the Administrative and Finance Office. The annual budget of the agency amounts to USD 50-55 million.

Full name: Foreign Intelligence Agency
(Polish name: Agencja Wywiadu)
Governing body: Ministry of Interior and Administration
Head of FIA: Mr. Piotr Krawczyk
Website: <https://aw.gov.pl/en>
Headquarters address: Miłobędzka 55, 02-634 Warszawa, Poland

2.1.4 POLICE FORCES

The Polish police forces have about 100,000 people, of which 58% serve in the prevention department, 34% in criminal department, and the remaining 8% in auxiliary departments.

Main units of Polish Police:

- Police Main Command
- Central Police Investigation Bureau
- Police Internal Office
- 16 Provincial Police Headquarters
- Police Schools
- Central Police Forensic Laboratory.

The annual budget of the Police amounts to USD 3 billion. The unit responsible for procurement is the Financial Office of the Police Main Command Faculty of Public Orders and Aid Funds.

In 2018, the government announced a plan of modernization of uniformed forces for 2019-2022. The budget for the police amounts to USD 600 million. However, the Minister of Interior underlined that a part of the modernization budget will be allocated to salary increases for police officers. Planned equipment purchases include systems for improving road and public safety, as well as for increasing safety of police officers. Already announced tenders include purchase of personal cameras for monitoring officers' work. The Police plans to purchase new observation and patrol helicopters and to modernize mobile access to IT systems.

Full name: Police (Polish name: Policja)
Governing body: Ministry of Interior
Chief commander: gen. Jarosław Szymczyk
Website: www.policja.pl
Headquarters address: Puławska 148/150, 02-624 Warszawa, Poland

2.1.5 BORDER GUARDS

The Border Guard is responsible for the protection of state borders on land and at sea and for control of border traffic. The Border Guard also has additional powers to counter terrorism.

The total length of Polish border exceeds 3,500 km. The Eastern border is also the external border of the European Union (535 km with Ukraine, 418 km with Belarus and 232 km with Russia), which imposes additional security measures in order to maintain internal EU safety. Moreover, the Border Guard supports 70 border crossings (including 18 air, 20 road, 14 rail and 18 sea).



The Border Guards have 15,000 officers and more than 3,000 civil employees. The annual budget of the organization amounts to USD 400 million. The unit responsible for procurement is the Office of Technology and Supply of the Main Command.

Full name:	Border Guard (Polish name: Straz Graniczna)
Governing body:	Ministry of Interior
Chief commander:	Gen. Tomasz Praga
Website:	www.strazgraniczna.pl
Headquarters address:	al. Niepodległości 100, 02-585 Warszawa, Poland

2.2 DOMESTIC AND INTERNATIONAL THREATS

For centuries, Poland was torn apart by numerous internal and external conflicts. Its specific geopolitical situation put the country in an eternal spread between East and West.

Today, Poland's international security is protected by NATO and membership in the European Union also plays an important role, stabilizing its political system and driving economic growth. Poland is also a member of the UN, OSCE, the Visegrad Group (four states in Central Europe – Poland, Czech Republic, Slovakia and Hungary), and the Council of Baltic Sea States. Each of these organizations stabilizes its international relations and forces their members to seek compromises as a way out of crises.

Poland borders non-NATO and non-European Union countries, which, under certain political and economic conditions, may prove to be a threat to its sovereignty country. The proximity and common land border with Russia, and with Belarus which is Russia's close ally, are a challenge to Poland's foreign policy, especially since the annexation of Crimea by Russia in 2014.

Major risks exist of potential political and military crises provoked to exert strategic pressure on Poland under current policy, without crossing the threshold of war. Such hostile actions may be manifested by developing military potential near Polish borders, practical demonstration of strength, or military blackmail. However, direct military threats cannot be excluded either, although they are less likely. An actual war could take place in case of a radical change in the current course of international politics, and thus would have to be preceded by a long-lasting or extremely rapid deterioration in the political and strategic situation in the world.

Other threats and challenges (non-military):

- ensuring energy security (Poland mostly relies on gas from Russia)
- maintaining necessary level of food self-sufficiency
- biosafety of food products
- maintenance of potable and industrial water resources
- improving air quality
- fight against sudden weather changes (mainly drought and floods)
- preventing demographic decline
- ensuring security in cyberspace.

2.3 CYBER DEFENSE AND SECURITY

As with other countries, cyberspace protection is currently one of the principal strategic tasks for Poland's security. To meet new challenges related to the development and wide application of ICT networks, the **Ministry of Administration and Digitization** was created in 2011. The new body received full competence in the fields of computerization and communications, as well as cyber security.

The body responsible for appropriate response in the event of an attack on ICT systems is the CSIRT GOV (Computer Security Incident Response Team, <https://csirt.gov.pl>) led by the Head of the Internal Security Agency. The institution is responsible for coordinating the process of responding to cybersecurity incidents. Its tasks include recognizing, preventing and detecting threats to continuity of public administration and ICT networks in critical infrastructure.

A similar institution was established within the MND (Ministry of National Defense) - CSIRT MND, as well as in the scientific community - CSIRT NASK.

- **CSIRT MND** (<http://csirt-mon.wp.mil.pl>) - coordinates the handling of reported incidents by entities reporting to or supervised by the MND and entrepreneurs of particular economic and defense importance for Poland
- **CSIRT NASK** - is operated by the Scientific and Academic Computer Network (www.nask.pl) and handles incidents reported by research institutes, Polish Air Navigation Services Agency or individual citizens.

Within the structures of NASK, **CERT Polska** is Computer Emergency Response Team conducting research and scientific activities, operating the national .pl domain registry and providing advanced IT network services. Active since 1996, it became a recognized and experienced entity in the field of computer security. Since its launch, the core of the team's activity has been handling security incidents and cooperation with similar units worldwide.

In 2018, operators from the CERT Poland identified 3.739 security incidents, i.e. on average over 10 incidents per day (an increase of 17.5% compared to 2017). The largest number of recorded events concerned phishing (44%), malicious software and spam. The most common scenarios concerned phishing scams on foreign websites such as Netflix or PayPal placed on Polish servers, as well as phishing scams on Polish institutions (mainly banks) located in foreign hosting. The leading motive for such attacks was to obtain personal data for access to paid services or money theft from bank accounts. Many scenario variants also concerned fake websites imitating websites with fast online payments.

Another important institution in cybersecurity is the **National Center for Cyberspace Security** (NCBC, <https://ncbc.wp.mil.pl>), responsible for key resources in cryptology and cybersecurity. It is a leading institution in providing IT security for the Ministry of National Defense and plays a key role in the process of digitalization of the Polish government. NCBC's tasks include conducting operations in cyberspace 24/7/365 - analysis, monitoring, setting new directions and techniques of activities, active response to incidents affecting network security and its users.

CYBER.MIL

Cybersecurity is an area that will be co-financed by the MND under the Technical Modernization Plan of the Polish Army until 2026. The Ministry has prepared the **CYBER.MIL** program for which Poland will allocate **USD 1 billion** in the coming years. As part of the program, the ministry will acquire domestic tools and software that will allow it to conduct effective operations in cyberspace and equip the Polish Armed Forces with latest Polish cryptographic technologies.

The program covers two strategic areas:

- comprehensive support for the formation of cyberspace defense troops
- integrating the cybersecurity environment of the Ministry of National Defense.

Cyberspace Defense Forces will be formed on the basis of a Cybernetic Operations Center, which will eventually be transformed into cyberspace defense forces. The task of forming troops was entrusted to the newly appointed Proxy for the creation of cyberspace defense troops.

2.4 CRITICAL INFRASTRUCTURE

The first National Critical Infrastructure Protection Program from 2015, supervised by the Government Security Center, lists five basic methods for critical infrastructure protection:

1. Physical protection - protection of persons and property, as well as prevention of damage and unauthorized access to a protected area.
2. Personal protection - reducing risks associated with persons who, through authorized access to critical facilities, equipment, installations and services, may cause interference with critical infrastructure. This applies to employees and other personnel temporarily present within critical infrastructure facilities such as service providers, suppliers, guests.
3. Technical protection, which includes compliance of buildings, equipment, installations and services with European and national regulations (e.g. construction standards), as well as other regulations (e.g. fire protection), to guarantee safe use of critical infrastructure and its technical security (including fences, barriers, CCTV systems, access systems, etc.).
4. ICT protection - ICT systems and networks serving critical infrastructure facilities, including protection against cyber-crime and -terrorism and effective prevention of such incidents.
5. Legal protection - preventing the risk of a hostile takeover, controlling, blocking or limiting decisions of management boards, merger or sale of elements of critical infrastructure.

2.4.1 AIRPORTS

The civil aviation transportation sector develops very dynamically. In 2018 Polish airports served over 45 million passengers, meaning a twofold increase in less than a decade.



The Polish air traffic system consists of 15 airports.



Source: pasazer.com

The **Chopin Airport in Warsaw** is the central port, serving approximately 40% of all passengers using air services in Poland. It is also the only one serving intercontinental flights. The Chopin Airport is owned and managed by the state-owned enterprise **Polskie Porty Lotnicze PPPL** (www.polish-airports.com). The company also holds majority shares in the Krakow Airport (76%) and minority shares in 10 regional airports (6 - 49 % of shares, depending on the airport). The other owners of regional airports are local municipalities.

Along with an increase in passenger traffic, airports plan to further develop their infrastructure:

- **Warsaw Chopin Airport** - by 2022 the airport will expand its runways, as well as north and south piers to expand the passenger terminal
- **Katowice Airport** – planned extension of the apron with stands for nine aircraft C code, expansion of passenger terminal B and construction of a central guardhouse, as well as construction of a central passenger terminal with related infrastructure, new watchtower of the Airport Rescue and Fire Fighting Service, fuel base, new base of the airport operation department, and expansion of the cargo terminal - in 2020-2021
- **Gdansk Airport** – in 2020 planned construction of a new pier, as an extension of T2 terminal, its area will increase from 53,000 sqm to 69,000 sqm, increasing the number of security control lines and baggage carousels

A major change in the Polish airport map will be the launch of a planned Central Communication Port (CCP) which is to serve as an air hub in the region of Central and Eastern Europe. The Central Communication Port will integrate air, rail and road transport in the region. It will be located 37 km west of Warsaw, in an area of approx. 3,000 hectares. In the first stage it will be able to handle up to 45 million passengers per year. In addition, an Airport City will be built in the CCP area, which will include conference and office facilities. Government sources estimate that the investment should enable the creation of over 150,000 new jobs. The CCP will be 100% state-owned. The government plans to launch CCP in 2027.

Number of passengers served by largest Polish airports in 2018

Airport name	No of passengers	Change y-o-y (%)
Warsaw Chopin	17,737,000	12.8%
Krakow Balice	6,759,000	16.0%
Gdansk Walesa	4,966,000	79.0%
Katowice Pyrzowice	4,825,000	24.5%
Wroclaw Strachowice	3,293,000	17.4%
Warsaw Modlin	3,080,000	5.1%
Poznan Lawica	2,465,000	33.8%
Rzeszow Jasionka	769,000	11.2%
Szczecin Goleniow	598,000	3.5%
Lublin	545,000	5.8%
Bydgoszcz	398,000	25.0%

Source: tvn24bis.pl

2.4.2 SEAPORTS

There are 3 large seaports in Poland, all of them focused on cargo shipments and with majority ownership by the state:

- **Gdańsk** (www.portgdansk.pl) – state-controlled (95% shares), shipped 49.1 million tons in 2018 (increase by 22% y-o-y)
- **Szczecin-Swinoujście** (www.port.szczecin.pl) – state-controlled (55%, other shareholders are local municipalities), shipped 28.6 million tons in 2018 (+13% y-o-y)
- **Gdynia** (www.port.gdynia.pl) – state-controlled (99% shares), shipped 23.5 million tons in 2017 (+11% y-o-y).



Polish seaports develop dynamically: total volume of shipments amounted to 101 million tons in 2018, a record high in Polish history, up from 87 million tons in 2017.

The Ministry of Maritime Economy and Inland Navigation which is the governing body of seaports intends to further develop their capacity. Close to USD 8 billion has been pre-allocated for infrastructure extension and equipment modernization by 2030.

Major plans include:

- construction of Central Seaport in Gdańsk
- construction of external port and ferry terminal in Gdynia
- deepening of the Szczecin-Świnoujście fairway up to 12.5 m
- building of a shipping channel through the Vistula Spit.

2.4.3 POWER SYSTEM

The total installed capacity in the Polish power system exceeds 38,000 MW, and consists of power plants and combined heat and power plants (CHP), including industrial CHP.

There are 10 large power plants, mostly coal-fired (about 70% of produced power was sourced from coal, however, its share decreases slowly).

Depending on their location, they are owned and operated by one of four state-dependent, vertically integrated power system operators: PGE (www.gkpge.pl), Enea (www.enea.pl), Energa (www.energa.pl), Tauron (www.tauron.pl). Beside power plants, system operators also own coal mines, as well as local power distribution grids.



Largest Polish power plants and their installed capacity

The owner of the power transmission network is state-dependent company PSE (www.pse.pl), which operates high voltage infrastructure consisting of 267 lines with a total length of 14,695 km, including:

- 1 line, 750 kV, 114 km long
- 102 400 kV lines with a total length of 6,826 km
- 164 220 kV lines with a total length of 7,755 km
- 106 highest voltage stations (LV)
- 450 kV DC Poland - Sweden undersea connection with a total length of 254 km (of which 127 km belongs to PSE).

Poland has no nuclear power plants; however, the government intends to build one in the future. Nuclear energy is mentioned in government strategies as an important energy source for Poland after 2033. The discussion has been led over past decade, when many drafts and scenarios were announced, however, no particular agreement has been made until now. The current government assures the public about advanced talks with power sector players and expects to reveal details already in 2020.

2.4.4 CRUDE OIL PIPELINES



Crude oil infrastructure in Poland

Crude oil is transported to Poland mainly via the Druzhba pipeline. The company PERN Przyjaźń SA (<https://pern.pl>) handles the pipeline network for transporting crude oil and liquid fuels, and also provides oil storage. Their storage bases are in Adamowo (Polish-Belarusian border), Plock (Central Poland) and Gdansk (Northern Poland) and have a total capacity of 3.5 mln cubic meters.

The infrastructure of PERN "Przyjaźń" SA for crude oil transport consists of three main sections:

- **Eastern section** of the Druzhba pipeline connects the Reservoir Base in Adamów at the border with Belarus with the storage base in Plock. This section reaches a capacity of 50 million tonnes of crude oil per year
- **Western section** of the Druzhba pipeline connects the storage base in Plock with the oil base located in Schwedt. This section supplies two German refineries: PCK Raffinerie GmbH in Schwedt and Total Raffinerie Mitteldeutschland GmbH in Spergau. The Western Section of the Druzhba pipeline reaches 27 million tonnes of crude oil per year

- **Pomeranian pipeline** connects the storage base in Płock with the base in Gdańsk. This is where Russian crude oil flows for the refinery in Gdańsk belonging to Grupa Lotos SA and for export via Naftoport. The Pomeranian pipeline can transport raw material in two directions. Its capacity is about 30 million metric tons of crude oil per year.

The other way of importing crude oil is by sea. The largest operator for shipments of crude oil imported or exported by sea is Naftoport Oil Terminal (www.naftoport.pl). Their infrastructure includes five shipment stations with a potential exceeding 40 million metric tons of liquid fuels per year. In 2018, Naftoport shipped 14.92 million tons of crude oil and liquid fuels.

Imported and extracted oil is processed in refineries belonging to two leading state-dependent entities:

- **PKN „Orlen” SA** (www.orklen.pl)
Largest Polish oil & gas company, with turnover exceeding USD 30 billion in 2018. It manages six refineries, of which three are located in Poland: Płock, Trzebinia and Jedlicze (Poland), Litvinov and Kralupy (Czech Republic), and Mažeikiai (Lithuania). Their total processing capacity amounts to 35.2 million tons per year.
- **Lotos SA** (www.lotos.pl)
Second largest Polish oil & gas company with turnover over USD 8 billion in 2018. Owner of Gdansk refinery with a processing capacity exceeding 11 million tons per year.

2.5 PHYSICAL SECURITY MARKET

According to Deloitte, the value of the Polish market of security equipment and services reached USD 2.5 billion in 2017, with a forecast to grow to 3 billion by 2021 (5-6% y-o-y). Growth in the next years will be mostly driven by the segment of physical security, which accounts for 80% of the market, while cash handling and security surveillance services constitute the remaining 20%.

The market of equipment and integration services is fragmented with a large number of players offering local or nationwide services, while the sector of physical and professional security is significantly more concentrated – with 4 largest security agencies serving about 70-80% of the market. These four largest security agencies are listed below:

Seris Konsalnet

www.konsalnet.pl

Largest Polish physical security agency. The company has 18,00 employees and a fleet of over 700 cars. They provide physical protection for over 3,500 facilities, monitoring services for 64,000 buildings and 13,000 vehicles. Their clients include banks, retail chains, public utilities, strategic facilities and industrial companies, as well as military units. Its turnover amounted to USD 127 million in 2018.

Solid Security

www.solidsecurity.pl

Second largest Polish security agency providing services to business and individual clients. They offer physical security, cash handling, monitoring, design and assembly of electronic security systems, fire protection, access control, intrusion protection systems. The turnover amounted to USD 110 million in 2018.

Impel

www.impel.pl

Large capital group providing wide range of B2B outsourcing services. Their offer includes physical security, CCTV surveillance, property and mass-events protection, cash handling, facility management, financial and HR/payroll, catering and industrial cleaning. They are listed on the Warsaw Stock Exchange. The turnover amounted to USD 170 million in 2018.

Ekotrade

www.ekotrade.com.pl

Large security agency with a focus on protection of persons and property, also providing cash handling, public events protection, monitoring with intervention patrols, fire monitoring, design and assembly of electronic security systems, as well as GPS satellite location services. They employment exceeds 8,500, with 200 intervention teams and convoy groups.

Many importers and distributors look for new technologies and innovative solutions that could be introduced to the Polish market. Among recent trends with high dynamics are **integrated surveillance systems** and **intelligent monitoring solutions**. Surveillance systems are increasingly popular, especially among municipalities aiming to build smart city systems using modern digital infrastructure for more efficient and effective management of municipal services and traffic. It is estimated that video monitoring has been already installed in 80% of Polish cities.

Some examples:

- **Warsaw** - the monitoring system of the Polish capital has nearly 14,000 cameras, almost half of which are installed in city buses. The municipality formed a special department of over 100 staff providing surveillance services and analysis.
- **Katowice** - its monitoring and analysis system was launched in 2016. It is the first intelligent monitoring solution in Poland, which detects and alerts dispatchers to a dozen of specific events - e.g. collision of vehicles, gathering crowd or lying man. The system was equipped with 194 cameras, located in the center and largest districts, and at 10 points on main road arteries in the city. The cameras scan license plates of passing vehicles, helping police in prosecuting car thieves and perpetrators of accidents. The system is constantly further developed, and monitoring extended to other districts of the city.
- **Łódź** - over the past four years, the authorities have invested around USD 4 million in monitoring. This allowed for nearly 450 cameras, including license-plate scanning devices at intersections. In 2019, the city started the next, fifth stage of the system's expansion. The project involves additional 153 cameras installed in over 40 locations.

Video monitoring is also massively used by **railway operators**. Most rail-road crossings are already equipped with cameras. There are currently around 3,000 monitored railway crossings. They are part of a safety improvement program implemented by Polish Railways. The company intends to continue the program and install cameras in a majority of level crossings.

At earlier stages of market development, Polish clients were very price sensitive. However, experts have been observing rising demand for quality solutions that provide better picture resolution and include additional functionalities. Along with rising technical capabilities and growing demand for video monitoring systems, sale of auxiliary equipment is also developing dynamically. Advanced server solutions, data recognition and management systems, as well as surveillance software enabling precise picture analysis all enjoy high dynamics on the security market in Poland.

3 PUBLIC PROCUREMENT SYSTEM

In accordance with the Public Procurement Law of 2004, all public entities, including army units and the Ministry of National Defense, are obliged to public procurement for orders exceeding EUR 30,000 (USD 33,333). For each tender a document with terms of reference (ToR, Polish: SIWZ) has to be prepared, where technical specification, as well as all criteria and conditions of tender participation (including selection criteria) are clearly stated. Usually, the template of contract to be signed is also attached. All orders shall be officially announced in the Public Procurement Bulletin published online by the Public Procurement Office (www.uzp.gov.pl).

The organizer of a public tender is obliged to provide fair treatment to all bidders. The procuring party must allow time for questions from potential bidders and provide explanations which shall be available publicly to all (other) interested parties. Many army units operate a dedicated team for handling public tenders, usually subordinated directly to the chief officer.

The final selection of a winner is also publicly announced together with the final bid value. Possible selection criteria: price, delivery time and costs, additional services and training offered to military staff, conditions of technical maintenance, warranty period.

For high-value projects, the procuring body may require a security deposit not exceeding 3% of expected contract value. In some large projects, the winning bidder may be asked to provide a performance bond prior to contract signature (usually 5-20% of total price indicated in the offer).

Confidentiality clause for strategic governmental purchases

The Law introduces exceptions for government procurement when public or national safety is considered. This is often used especially in military procurement. In such case the army unit keeps the tender confidential and is not obliged to publicly announce its subject, bidders, the winner, or contract value. The law also allows for procurement without a tender in specific cases.

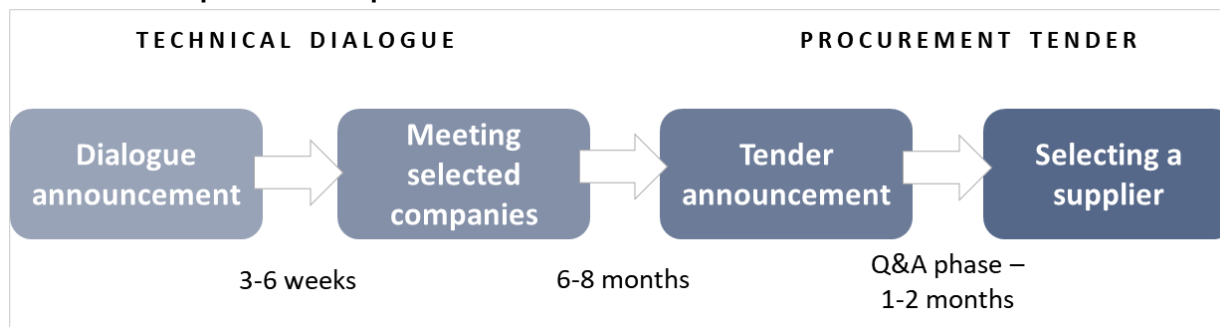
Technical dialogues

According to the Law, when considering the purchase of new technical systems or solutions, the institution responsible for the purchase is entitled to conduct a procedure of “technical dialogue” which would precede the actual tender. This is to collect information about existing solutions (including technologies, applications, costs, maintenance issues, necessary staff training, etc.) in order to prepare technical specification for the actual tender.

Technical dialogues are a kind of open invitation announced online for companies interested in the subject and ready to provide information. The buyer has the right to select companies for

individual meetings (not all interested companies will be automatically accepted). Based on findings from the meetings, the buyer prepares the specification (SIWZ) and opens the tender.

The scheme of procurement procedure



The length of procurement cycle depends on many factors, including complexity of the subject and the institution realizing the project. For procurement projects where technical dialogue is involved, the length can vary from 8 to 10 months, or even over a year (assuming that the procedure is not stopped or put on hold due to e.g. external factors or changing political situation in the country, which is in fact quite common, especially in the defense sector).

Process for U.S. companies seeking to bid on Polish government tenders

U.S. companies have equal rights to participate in technical dialogues, as well as in tenders. In case of the defense sector, however, MoD representatives often emphasize in many official statements that Polish defense contractors (especially those associated with PGZ) will have priority as suppliers for the Polish army. A review of actual tender results over the past few years suggests that the current government is especially keen on using domestic suppliers in comparison to previous governments.

One of possible obstacles for foreign companies may be a language barrier, as all documents and procedures are in Polish language, and the submitted bids must be in Polish as well.

Military procurement

The Polish army currently does not have an integrated process or unit coordinating and realizing all military procurement. The system is fragmented and ineffective, with at least a dozen institutions responsible for formulating requirements - often contradictory - and procurement process being lengthy. Moreover, the Armaments Inspectorate, which performs most large and strategic purchases, has insufficient resources, including human resources.

The government intends to improve and streamline procedures in order to allow for faster and more efficient modernization of the Polish Army. In November 2019, the Minister of National Defense announced a plan on the creation of Armaments Agency, an institution to deal with comprehensive implementation and realization of military procurement. The final concept of the agency has not been established, as the ministry is still considering various options.

The Polish government realizes some strategic purchases from U.S. contractors under the FMS program. So far, Patriot rocket launchers for the Wisla system and F-16 fighters were procured through the U.S. government. Currently, the purchase of F-35 aircraft is being negotiated under FMS. The Polish government declares interest in participating in the FMS program in the future, however, there are no further agreements announced.

Central units involved in procurement of military equipment:

Armaments Inspectorate

<http://iu.wp.mil.pl>

The inspectorate is subordinated to MND and conducts analytical, strategic and implementation tasks in procurement of armaments and equipment for the Armed Forces. It is responsible for preparation of feasibility studies, as well as preliminary tactical and technical assumptions and market analyses. It organizes and conducts technical dialogues and tenders. In some cases, it is a party to the contract, responsible for overseeing deliveries. The Inspectorate cooperates with NATO bodies, including the Support Agency (NSPA), as well as with other international agencies and units. The Inspectorate coordinates equipment repairs for Polish forces, delivered by companies belonging to the PGZ group.

Chief Officer: Col. Dariusz Pluta
Address: Królewska 1/7, 00-909 Warszawa, Poland
Telephone: +48 261 879 555

Inspectorate for Implementation of Innovative Defense Technologies

<http://i3to.wp.mil.pl>

This entity is responsible for identifying and monitoring development of innovative technologies, counselling to the Polish army, coordination and supervision of implementation projects with new military solutions, as well as active participation in modernization of the Polish army. The Inspectorate is directly subordinated to MND.

Chief Officer: Mr. Paweł Olejnik (since November 2019, Mr. Olejnik is the minister's representative for establishing the Armaments Agency)
Address: Krajewskiego 3/5, 00-909 Warszawa
Telephone: + 48 261 877 500
Email: i3to@mon.gov.pl

4 ROUTE TO MARKET

4.1 ENTERING THE POLISH MARKET

Thanks to economic growth and progressing modernization of its armed forces, Poland offers good opportunities for US defense companies seeking to enter new markets.

Biggest opportunities exist for new technologies and innovative solutions where there is a lack of domestic competitors.

The Polish army needs to further adjust its systems to NATO standards, and this process will continue in the next decade.

Potential is also significant in the sector of personal security and surveillance systems, where demand is created not only by uniformed forces, but also by municipal authorities, owners of critical infrastructure and private companies.

U.S. companies have equal rights to sell to Poland and to take part in public tenders. As member of the European Union, Poland applies the same legal rules on imports as other EU countries.

The Polish government has been using the FMS program for its strategic defense procurement.

U.S. companies have multiple options to entering the Polish market:

- direct export – through public tenders and direct sale to Polish army or other buyers
- setting up a representative office or subsidiary (more information: https://www.paih.gov.pl/polish_law/forms_of_doing_business)
- establishing a local partner/distributor, already active in the defense/security sector

With regard to local environment, technical standards and legal procedures, as well as a language barrier and time difference, working with local companies as business partners is typically the recommended route to market for most US firms. Advantages of local partners include:

- **Knowledge of local language**
All procedures of technical dialogues and actual tenders are conducted in Polish; every piece of documentation and specification, as well as the actual contract are written/signed in Polish, all data provided by suppliers have to be in Polish.

- **Existing business relations**

Many local distributors were established by former (retired) army employees or they are main consultants/managers of these vendors. They have best knowledge of and established connections to relevant state's institutions.

- **Experience on the market, knowledge of legal regulations, procurement plans and overall political climate**

The Polish army is in an ongoing process of modernization and reorganization. There are times when procurement processes speed up, and then they slow down. In the past, newly elected government have repeatedly brought a different vision for the army, its equipment and overall operation, changing earlier strategies and introducing new ideas.

- **Familiarity with local standards, technical situation of military equipment and the army's actual needs**

Local firms know which army units require modernization, as well as their budgets, thus they can direct sales and marketing activities more effectively.

Examples of major US contractors who have established some in-market presence and operations in Poland include:

- Northrop
<https://www.northropgrumman.com/AboutUs/OurGlobalPresence/Europe/Poland/Pages/default.aspx>
- Raytheon
<https://www.raytheon.com/ourcompany/global/europe/poland> + <https://www.raytheon.com/news/feature/hub-defense>
- Boeing
<https://www.boeing.com/resources/boeingdotcom/global/pdf/Poland-Backgrounder-2017.pdf>
- Lockheed Martin
<https://www.lockheedmartin.com/en-pl/index.html>

4.2 ASSOCIATIONS, PUBLICATIONS AND FAIRS

TRADE SHOWS

Name: **MSPO International Defence Industry Exhibition**
Website: www.targikielce.pl/pl/mspo
Date: 8-11 September 2020
Venue: Kielce
Profile: tradeshow of military, aviation, ships, police equipment



Name: **Balt-Military-Expo Baltic Military Fair in Gdańsk**
Website: <http://baltmilitary.amberexpo.pl/title,Jezyk,lang,2.html>
Date: 22-24 June 2020
Venue: Gdansk
Profile: tradeshow of military, aviation, ships, police equipment



Name: **Europoltech**
Website: <http://europoltech.amberexpo.pl>
Date: last edition 8-10 May 2019
Venue: Gdansk
Profile: tradeshow for security systems focused on uniformed forces and national security



Name: **Securex**
Website: www.securex.pl
Date: 21-24 April 2020
Venue: Poznan
Profile: largest Polish tradeshow for security systems



ASSOCIATIONS AND ORGANIZATIONS

Name: **Association of Suppliers for Armed Forces**
 Website: www.wojsko.media.pl
 Description: Organization gathering manufacturers and importers of equipment sold to army, police and other armed forces, security companies, etc.



Name: **Polish Chamber of National Defense Manufacturers**
 Website: <http://przemysl-obronny.pl/en/>
 Description: Association of 120 defense sector companies



Name: **Dolina Lotnicza (Aviation Valley)**
 Website: www.dolinalotnicza.pl
 Description: Cluster of 140 companies in aviation, located mainly in the south-eastern part of Poland



Name: **Polish Chamber of Security**
 Website: www.piooim.pl
 Description: Nationwide association of companies and public institutions in the security sector



Name: **Polish Chamber of Information and Communication Technologies**
 Website: www.piit.org.pl
 Description: nationwide association of ICT developers, integrators and equipment providers



PUBLICATIONS

Name: **Nowa Technika Wojskowa**
 Frequency: monthly
 Website: www.magnum-x.pl/sklep/nowa-technika-wojskowa/id-2019
 Publisher: Magnum X
 Description: magazine about military issues and equipment



Name: **Polska Zbrojna**
 Frequency: monthly
 Website: www.polska-zbrojna.pl
 Publisher: Wojskowy Instytut Wydawniczy
 Description: magazine focused on general military issues



Name: **Ochrona Mienia i Informacji**
 Frequency: bi-monthly
 Website: www.ochrona-mienia.pl
 Publisher: Euro-Media
 Description: magazine for security professionals



Name: **Zabezpieczenia**
 Frequency: bi-monthly
 Website: www.zabezpieczenia.com.pl
 Description: magazine for security professionals

