

### 3. ARMED FORCES, MILITARY TECHNOLOGY

# MODERNIZATION OF THE POLISH AIR FORCE

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#### ABSTRACT

The article is discussing the overall situation in Polish Air Force in the context of its technical modernization. The topic is especially important in the context of evolving role of airpower in contemporary warfare during last decades. Another aspect has been changes in the Poland's security environment, the threat to the NATO East Flank, and Russian narrative and modernization of armed forces. The study is based on official documents, open-source data and the authors' experiences in the field utilizing qualitative research methods. The technical modernization is exceptionally ambitious and expensive, but necessary. Nevertheless, its continuity and focus could be treated from differing angles requiring raising that topic in academic studies.

#### KEYWORDS

Poland Air Force; technical modernisation; Russian Federation policy and military, air operations.

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## Introduction

The Technical Modernisation Plan is one of the most notable investments into the Polish Armed Forces (PAF) of Poland's Armed Forces during the last decades. Such the program is a very up-to-date decision as it is aimed to enhance the capabilities of PAF significantly as a response to internal and external requirements. Internally, Poland's leadership has recognized that there is an urgent need to modernize Air Force, which possesses obsolete combat platforms based on the aging fleet of aircraft. Externally, the evolution of the security environment and a growing threat coming from the modernized Russian air force and air defence is recognized as the existent challenge. Moreover, the requirement to fight together with modern NATO mem-

ber's air forces is causing the requirement for modernization to avoid exclusion from contribution to major combined joint operations. The PAF is of great importance being a critical contributor within modern warfare as it key for any joint operations as proved during the last conventional conflicts but also fighting a non-conventional enemy like terrorist organizations in Syria. Even during peacetime, Poland has deployed air components to Afghanistan and Iraq and is currently supporting the security of air space over Estonia, Latvia, and Lithuania<sup>1</sup> within the NATO Air Policy mission, when facing provocative actions of the Russian air

<sup>1</sup> A. Antczak, Z. Śliwa, 'Security dilemmas of the Baltic region', *Środkowoeuropejskie Studia Polityczne* No 3/2018, Adam Mickiewicz University (Poznań October 2018) pp. 119-134.

force. It could be assumed that the 'Cold War' spirit is back, causing a rapid arms race with the highest intensity since the collapse of the Soviet Union causing political, economic, social and cultural changes in the security environment. Such trends are continuing with newly emerging challenges and threats shaping national and global security<sup>2</sup>, causing a growing gap between globalization breaches and national interests of single states and between developing and developed countries.

The article aims to present the major notions within the technical modernisation of Poland's armed forces with the focus on those programs, which are related to the air force. The paper is not discussing Poland's air defence capabilities although those are very important and directly linked with air domain allowing denying the effectiveness of an adversary. The research is implementing qualitative methods taking into account modernization of armed forces as a case study utilizing multiple types of open data sources and experiences of the authors. The paper consists of three major parts allowing recognizing their interactions and interrelations. The first part is dealing with the role of airpower based on its utilization in conventional and unconventional conflict from historical perspective. The second is allowing recognizing the implication of national security environment and its perception on decisions to modernized armed forces. The third part is providing an overview of armed forces modernization processes with the focus on air force. It is leading to conclusions and recommendations.

## The airpower within contemporary warfare

Airpower is the significant component of any armed forces as its capabilities are related to successful operations contributing to a synergy effort with all other services. The military conflicts of last decades have presented that the air dimension of contemporary operations will not diminish its importance as of specific characteristics of the airpower, as follows: speed, height, and reach. Combining these key characteristics gives the airpower a high degree of flexibility, although there are some limitations, e.g. inability to seize and hold terrain, to establish direct contact with the local population, etc. However, the air component can deliver strategic effects by disrupting or destroying an adversary centre of gravity or other vital targets like leadership, command and control system, military industry, critical infrastructure, etc. Nevertheless, the main missions are related to counter-air operations to achieve a desired or necessary level of control of the air, namely a favourable air situation, air superiority or even air supremacy<sup>3</sup>. John Warden III, U.S. Air Force, highlighted is stating,

*"air superiority is essential. Since the German attack on Poland in 1939, no country has won a war in the face of enemy air superiority; no major offensive has succeeded against an opponent who had air superiority. Conversely, no state has lost a war while in maintained air superiority, and attainment of air superiority consistently has been a prelude to military victory"*<sup>4</sup>.

The statement is supported by the history of the Second World War and after the war

<sup>2</sup> For details read: K. Załęski, *Sily zbrojne. Teoria i praktyka funkcjonowania*, (Warsaw: Difin 2019); see also: K. Załęski, *Relacje i stosunki międzynarodowe w kształtowaniu bezpieczeństwa europejskiego*, (Dąbrowa Górnicza: Akademia WSB 2017).

<sup>3</sup> Read: P. Mailingier, 'Supremacy in the Skies', *Air Force Magazine* (February 2016) pp. 46-50.

<sup>4</sup> J.A. Warden III, *The Air Campaign. Planning for Combat*, (Washington: the National Defense University Press 1989) p. 10.

period. However, there are also cases e.g. the War in Vietnam, when too heavy reliance on air force coupled with underestimation of the enemy led to losing the war. The air power has strong potential to create strategic effects like in Libya when No Fly Zone "to help protect civilians"<sup>5</sup>during the 'Operation Unified Protector' (OUP)<sup>6</sup>was the crucial facilitator of success<sup>7</sup>. The same occurred during 'Operation Allied Force' in 1999 after establishing the Kosovo Engagement Zone (KEZ)<sup>8</sup> when air attacks convinced "Milosevic that it was time to end the fight"<sup>9</sup> leading to his capitulation<sup>10</sup>. The operations in the Persian Gulf in 1990-1991 and during 'Desert Storm', marked by U.S. air supremacy, proved the critical value of air force capabilities<sup>11</sup>.

Similarly, in Afghanistan, airpower support enabled the victory of the Northern Alliance in 2001 and it was stated, "There is no substitute for effective air and space

power"<sup>12</sup>. However, in Syria, it was not panacea to fight the Islamic State of Iraq and Greater Syria (IS)<sup>13</sup>causing that "the U.S. air campaign has turned into an unfocused mess"for Russia it was an opportunity to test own air force engaging asymmetric enemy<sup>14</sup>. Therefore, it could be said, "air power alone will not win a campaign"<sup>15</sup>. Currently, there is a great investment in unmanned air platforms and careful conceptual consideration of their role in future conflicts. The UK is considering the change of manned to unmanned aircraft ratio (from an 80:20 split to even 20:80 split)recognizing the growing impact of technology on warfare<sup>16</sup>.

The last conflicts have not been fought between equal air force involving enemy with very limited airpower (Iraq, Libya) or even lack of that crucial component of modern armed forces (Taliban, IS). Therefore, the air forces'adversaries'capabilities were limited,causing overconfidence into friendly force capabilities, creating the

<sup>5</sup> UN Security Council Resolution 1973 (2011), 17 March 2011, *the UN Security Council*, para. 4 and 6, available at: [http://www.un.org/en/ga/search/view\\_doc.asp?symbol=S/RES/1973\(2011\)](http://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/1973(2011)) (accessed 12 December 2019). The underline provided by the Authors.

<sup>6</sup> *Present Paradox. Future Challenge*, (Kalkar: the Joint Air Power Competence Centre March 2014) pp. 44-45.

<sup>7</sup> F. Gaub, *The North Atlantic Treaty Organization and Libya, Reviewing Operation Unified Protector*, Carlisle: U.S. Army War College, Strategic Studies Institute June 2013), pp. 6-8.

<sup>8</sup> 'The Kosovo Air Campaign, Operation Allied Force', *NATO Website* (last update 11 November 2014) [http://www.nato.int/cps/en/natohq/topics\\_49602.htm](http://www.nato.int/cps/en/natohq/topics_49602.htm) (accessed 12 December 2019).

<sup>9</sup> 'Operation Allied Force', *Global Security*, (last modified 16 October 2013) [http://www.globalsecurity.org/military/ops/allied\\_force.htm](http://www.globalsecurity.org/military/ops/allied_force.htm) (accessed 14 December 2019).

<sup>10</sup> S. Ritchie, *The British Experience in Operation Allied Force*, in J. Fergusson (ed.), *Aerospace Power. Beyond 100 Years of Theory and Practice*, (Winnipeg: University of Manitoba, Centre for Defence and Security Studies 2005) p. 126; *Kosovo/Operation Allied Force. After Action Report*, (Washington: Report to Congress 31 January 2000) p. 126- 139.

<sup>11</sup> R. Citino, *Blitzkrieg to Desert Storm. The Evolution of Operational Warfare*, (Lawrence: the University Press of Kansas 2004) p. 277.

<sup>12</sup> AP 3000. *British Air and Space Power Doctrine*, Fourth Edition, (London: UK Ministry of Defence, Air Staff 2009) p. 50.

<sup>13</sup> M. Gunzinger, J. Stillion, 'The Unserious Air War against ISIS', *the Wall Street Journal* (14 October 2014), <http://online.wsj.com/articles/mark-gunzinger-and-john-stillion-the-unserious-air-war-against-isis-1413327871> (accessed 14 November 2019).

<sup>14</sup> M. Thompson, 'What the Failure of ISIS to Take Kobani Means', *Time* (26 October 2014), <http://time.com/3540401/kobani-isis-islamic-state-pentagon/>, (accessed 14 December 2019). T. Ripley, 'Scope of anti-Islamic State air ops continues to evolve', *Janes's Defence Weekly* Vol. 51, issue 43 (22 October 2014) p. 23. R. Shield, 'Russian Airpower's Success in Syria: Assessing Evolution in Kinetic Counterinsurgency', *The Journal of Slavic Military Studies* (Vol. 31/2 2018) p. 229.

<sup>15</sup> General Sir David Richards quoted in: C. Letsch, C. James, P. Lewis, N. Watt, 'Syrian Kurds say air strikes against Isis are not working', *The Guardian* (6 October 2014), <http://www.theguardian.com/world/2014/oct/05/air-strikes-isis-not-working-syrian-kurds> (accessed 15 December 2019).

<sup>16</sup> G. Jennings, 'UK sets out post-2030 combat aviation force structure', *IHS Jane's Defence Weekly* (29 July 2014), [http://www.janes.com/article/41309/uk-sets-out-post-2030-combat-aviation-force-structure?utm\\_campaign=\[PMP\]\\_PC6110\\_E14%20DF%20NL%20SECURITY%2008\\_05\\_2014\\_DW\\_Deployment&utm\\_medium=email&utm\\_source=Eloqua](http://www.janes.com/article/41309/uk-sets-out-post-2030-combat-aviation-force-structure?utm_campaign=[PMP]_PC6110_E14%20DF%20NL%20SECURITY%2008_05_2014_DW_Deployment&utm_medium=email&utm_source=Eloqua) (accessed 14 December 2019).

myth of easy victories and a tendency to underestimate opponents. In that context, it is necessary to remember, "If you fight the weak, you become the weak"<sup>17</sup>. One of the lessons identified was that even some obsolete weapon systems inflicted damage to advanced aircraft. Therefore, looking into the future conventional combat, facing a more technologically developed enemy in a significant number, both quantity and quality will matter. It caused misleading assessment of airpower roles as a panacea for quick and bloodless wars giving the wrong perception, especially when the West armed forces would confront the modern enemy with up-to-date equipment and training and readiness to dedicate the life of soldiers to achieve political and military goals. Such the judgment could divert doctrines and military programs into wrong directions, and "the impact of airpower can mislead decision-makers in future conflicts"<sup>18</sup>. Victory in the air will not be so easy requiring proper preparations. The last conflicts made a warning to NATO and something to consider through by Poland's Air Force leadership. It presented the capability gap among NATO nations highlighting "NATO's reliance on the United States"<sup>19</sup> and diversity of member nations' capabilities. They were visible within many NATO air forces and in the case of coalition forces like in the Gulf War. That observation is important in the context of Russia as there are even much deeper differences among the capabilities of nations, and such the gap is widening every year, particularly as major powers are speeding up their air forces modernization. Inevitably, it is push-

ing smaller and less powerful countries into cooperation with more reliable and proved partners.

## The challenges of the national security environment

Poland military leadership has observed carefully such developments related to the air force, its technological development and the importance during conventional and nonconventional conflicts. It was especially important as after the change of political system, the Polish armed forces possessed equipment produced mainly in Russia and it was very true in the case of all types of fixed-wing and rotary-wing aircraft. Entering NATO in 1999 caused a need to adjust air component to the Alliance requirements to allow conducting combined joint operations. The first step was the creation of the command and control element of Poland's Air Force, which has been the Centre of Air Operation established in 2001<sup>20</sup>. It has been performing a range of missions during peacetime ensuring the safety of Polish air space. It is also part of the NATO Integrated Air and Missile Defence System (NATINAMDS) and is a commanding element of the national contribution to the Baltic Air Policing Mission<sup>21</sup>. The temporary lack of threat from Russia was not on the top among challenges as of such the courteous documents as the 'Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation' designed to guide relations by building increased trust. The threat assessment, al-

<sup>17</sup> Martin van Creveld quoted in: L. Susser, 'Closing Ranks: Series of critical reports to the Israeli Defence Forces' failure in the second war in Lebanon, citing poor professional training, mistaken military philosophy and misguided values and principles', *The Jerusalem Report* (08 January 2007) p. 12.

<sup>18</sup> F. Gaub, *The North Atlantic Treaty Organization and Libya*,..., op., cit., p. viii.

<sup>19</sup> *Present Paradox. Future Challenge*, op., cit., p. 27.

<sup>20</sup> For details see: Centrum Operacji Powietrznych - Dowództwo Komponentu Powietrznego, <https://cop.wp.mil.pl/pi/2.html>, (accessed 22 February 2020). About Poland's Air Force command and control read: J. Rajchel, K. Załęski, Dowodzenie Siłami Powietrznymi, Aspekt narodowy i sojuszniczy. Uwarunkowania, tendencje i kierunki zmian (Air Force Command, National and Allied Aspect, Conditions and Directions for Change), Scientific Papers, Naval Academy year LII, No 3(186), Gdynia 2011, pp. 229-250.

<sup>21</sup> Polish Military Contingent 'Orlik', <http://airpolicing.wp.mil.pl/en/35.html>

though never excluding the East neighbour, was up to some extent causing investment into other aspects of Poland's daily life and economy. The 2008 war in Georgia was recognized as a wake-up call for Poland as of historical memories and recognition that the so-called 'near border' in Russian foreign policy was not forgotten. Polish authorities already in 2013 recognized the negative changes in East European security and that assessment was correct.

The war in Ukraine in 2014 was the real message, as the war became a reality in the country directly bordering Poland. It was also the time when the so-called 'Komorowski Doctrine' was implemented marking the shift of strategic priorities from expeditionary operations to a national defence based on national military capabilities as a guarantor of sovereignty and security<sup>22</sup>. The role of the air force was strongly emphasized during the meeting with pilots in 2012, after the exercise 'Red Flag' finalized the implementation of F-16s. It was recognized that PAF was ready to accomplish all tactical and operational tasks as a critical deterrence provider (by denial and punishment) for the country<sup>23</sup>, which is the border nation of NATO. The Alliance priority on collective defence and the security of the Eastern Flank, especially the sovereignty of Lithuania, Latvia and Estonia, were key topics during NATO Summit in Newport (2014)<sup>24</sup>, pointing the requirement to extend assurance and deterrence posture to face it. It was line with Polish narrative. Therefore, some decisions were taken to support it as Poland's Sejm (Parliament) decided

to raise the defence budget allocating at least 2% of GDP from 2016 onwards, establish the Territorial Defence Force service of armed forces and launch a Strategic Defence Review including technical modernisation programme until 2022. The decisions have been continued and "the military community has not lagged behind the policy changes. Reforms, although slow in progress, were carried despite some critics from within the armed forces"<sup>25</sup>. An important was NATO Warsaw Summit in 2016 in line with Polish expectations including such the decisions as reinforced deterrence and defence and the statement about no option to go back to business as usual with the Russian Federation<sup>26</sup>. So, in Warsaw, the "renewed emphasis has been placed on deterrence and collective defence"<sup>27</sup>. A similar narrative was continued in NATO Summits in Brussels and London, extending military posture in East Europe in front-line nations.

'The Defence Concept of the Republic of Poland' published in 2017 highlighted the role of Air Force: "the Land and Air Forces remain the key elements of the Polish defence" and it was the outcome of research and analysis<sup>28</sup>. This is closely linked with the modernization of current capabilities based on the assessment that:

*"A crucial element of our deterrence force will be played by the Air Force equipped with long-range precision weapons and the 5th generation combat aircraft, the number of which will steadily grow. Due to the reinforcement*

<sup>22</sup> S. Koziej, *Rozważania o Bezpieczeństwie. O bezpieczeństwie narodowym Polski w latach 2010–2015 w wystąpieniach i referatach szefa Biura Bezpieczeństwa Narodowego*, Lazarski University, Warsaw 2016, pp. 190–191.

<sup>23</sup> *Ibid.* pp. 118–119.

<sup>24</sup> See: *Wales Summit Declaration*. Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Wales, (Newport: 05 September 2014) para 7, pp. 16–18.

<sup>25</sup> M. Szymański, *Security Franchising: Polish – American Defence Cooperation*, in M. Zachara (ed.), *Poland in Transatlantic Relations after 1989: Miracle Fair*, Cambridge Scholars Publishing 2018, p. 130.

<sup>26</sup> K. Przybyła, *NATO wobec konfliktu na Ukrainie*, *Bezpieczeństwo Narodowe 2016/I-IV*, National Security Bureau, Warsaw 2016, pp. 125–127.

<sup>27</sup> *Warsaw Summit Communiqué*. Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw 8–9 July 2016, (Warsaw: 09 July 2016) para 6.

<sup>28</sup> *The Defence Concept of the Republic of Poland*, Ministry of Defence, Warsaw May 2017, p. 47.

*of the coastal missile units, manned and unmanned reconnaissance platforms, modern mine warfare and submarines, we will greatly increase our capabilities to protect our coastline. The above adjustments will contribute to the establishment of our national A2/ AD potential*<sup>29</sup>.

This is closely linked with the threat assessment, which is the Russian Federation policy, military build-up and declaration of NATO as the main threat to its security as enlightened in the Russian Military Doctrine published in December 2014<sup>30</sup>. Therefore, "the Russian government defines security along its borders as a top priority"<sup>31</sup> so it is directly related to Poland and is visible by trying to falsify history and undermine the nation's role as a member of international organizations. Recognizing it, Poland's 'Defence Concept' is describing that "by 2032 Russia will maintain its aggressive stance in its foreign and security policies. Taking into account the asymmetry of military capabilities between Russia and NATO's eastern flank members, such a situation creates a direct threat for Poland and the region"<sup>32</sup>. Such the threat perception is shared among think tanks and experts dealing with security like RAND<sup>33</sup>, Potomac Foundation, Chatham House, and the regional ones as the International

Centre for Defence and Security(ICDS)<sup>34</sup> and by politicians, military experts as Juri Luik, General (ret.) Wesley Clark or General (ret.) Sir Richard Shirreff<sup>35</sup>. Another report by the Jamestown Foundation 'How to defend the Baltic States'<sup>36</sup> discussed Russian scenarios to act aggressively against Lithuania, Latvia and Estonia. The pretext could be the need to 'defending the rights of the Russian minority' within the compatriot policy concept.

It could be assumed that there is a clear perception of the threats and challenges; among them, Russia is still the primary conventional and 'hybrid' adversary. Therefore, it could be assumed that further investments into armed forces will be continued. As for now, priorities of modernization are showing a clear understanding of air domain importance for future warfare. It is a very important contribution to NATO capabilities concerning achieving the desired level of air superiority or even air supremacy in any potential conflict. The overall effort is significant nevertheless, according to foreign observers:

*"Despite these investments, both Polish experts and international observers have diverging views on the status of Poland's military capability. .... However, uncertainty regarding the present government's priorities, coupled with substantial and controversial staff replacements and dismissals, have led to a bureaucratic deficit that has impaired the country's ability to prepare decisions relating to the modernisation of the Armed Forces. The priority given to the*

<sup>29</sup> Ibid., p. 51.

<sup>30</sup> Военная доктрина Российской Федерации, (Moscow: The Security Council of the Russian Federation 25 December 2014), para 12a-d, <http://www.scrf.gov.ru/documents/18/129.html> (accessed 6 February 2020).

<sup>31</sup> V. Zakem, P. Saunders, D. Antoun, 'Mobilizing Compatriots: Russia's Strategy, Tactics, and Influence in the Former Soviet Union' *CNA's Occasional Paper* (November 2015) p. 14.

<sup>32</sup> The Defence Concept of the Republic of Poland, op. cit., pp. 23-26.

<sup>33</sup> D.A. Shlapak, *Deterring Russian Aggression in the Baltic States. What it Takes to Win*, (Santa Monica: RAND Corporation 2017); *Testimony of David A. Shlapak before the Committee on Armed Services Subcommittee on Tactical Air and Land Forces United States House of Representatives*, (Washington: United States House of Representatives 01 March 2017).

<sup>34</sup> H. Praks, *Hybrid or Not: Deterring and Defeating Russia's Ways of Warfare in the Baltics – the Case of Estonia*, (Rome: NATO Defence College, Research Paper No 124 December 2015).

<sup>35</sup> W. Clark, J. Luik, E. Ramms, R. Shirreff, *Closing NATO's Baltic Gap*, (Tallinn: International Centre for Defence and Security 2016); R. Shirreff, *War with Russia*, (London: Coronet Books 2016).

<sup>36</sup> R.D. Hooker, Jr., *How to defend the Baltic States*, (Jamestown Foundation October 2019) pp. 14-18.

*domestic defence industry in acquisition can also prevent the efficient use of resources. In addition, efforts to rapidly recruit and arm the new Territorial Defence force may divert resources from the other branches of service. Moreover outdated equipment—dating back to the Warsaw Pact period—still represents up to 70 percent of the total stock*<sup>37</sup>.

This assessment is coming from observing the impact of the political situation in Poland on the continuity of reforms and modernization within armed forces during the last decade. When discussing the role of Air Forces; this service is very fundamental as it must effectively defend national airspace and parallel control the skies above places where its ground troops are operating to make any successful joint operations possible. The security environment is evolving along with still improving Russian Federation's air force and air defence capabilities. Those are deployed in so-called anti-access/ area denial hubs like Kaliningrad and Belarus is ready to be another hub next to the Polish border<sup>38</sup>. The scenarios could differ in nature from a conventional attack against Poland or Baltic countries and the need to implement NATO Article 5 (most dangerous and less probable) to 'hybrid' conflict below the threshold of war. Another danger is a violation of national airspace, which is currently occurring quite often toward Estonia, Latvia and Lithuania requiring NATO's Air Policy mission fighters to react, and the need to protect critical national infrastructure in a case of attack. Parallel, the air force must

preserve capabilities to support Allies and U.S., when requested or as of political necessity, to conduct 'out of area' operations. The later ones could ask for specific abilities, as an area of operations would require adjusting current aircraft fleet capability to prepare them properly.

## Modernization of Poland's Air Force – the past

The political changes at the beginning of the nineties of the previous century have changed the political – military situation in Europe. It was the time when Poland decisively started its drive toward the West values and membership in NATO and the European Union. It initiated a significant effort to transform armed forces into the NATO model along with the modernization of existing military capabilities<sup>39</sup>. The modernisation of the Air Force was part of this effort and it occurred in the early nineties, after a report of a commission appointed by the Minister of National Defence. The report specified that PAF combat potential (then – Air and Air Defence Army) was degrading based on aging, obsolete Soviet-made combat aircraft. As a result, within the 'Armed Forces Modernisation Plan for 1998-2012' prepared in 1997, the decision about the acquisition of modern multi-role fighter aircraft was included. The ambitious aim was to introduce as many as 160 platforms before 2001. To make it realistic, the 'Plan' was supported by proper funds reaching some 1.95% of GDP and this decision was key to ensure financial resources<sup>40</sup>. The Council of Ministers on 23<sup>rd</sup> May 2000 highlighted the tasks for PAF to defend national airspace, support Army and Navy within the NATO Integrated Air Defence System

<sup>37</sup> E. Hagström Frisell, A. Sundberg, Poland – An Increasingly Important Ally in the Defence of NATO's Eastern Flank, International Centre for Defence and Security, Tallinn 13 March 2017, <https://icds.ee/poland-an-increasingly-important-ally-in-the-defence-of-natos-eastern-flank/> (accessed 24 February 2020).

<sup>38</sup> Z. Sliwa, V. Veebel, 'The Suwalki Gap, Kaliningrad and Russia's Baltic Ambitions', *Journal of International Studies*, 12(3) 2019, pp. 109-121.

<sup>39</sup> J. Rajchel, *Bezpieczeństwo powietrzne Polski po akcesji do NATO* (Warsaw: TNP S.A. 2013) pp. 369-385.

<sup>40</sup> R. Ciastoń et al., *Przyszłość Sił Powietrznych i jednostek obrony powietrznej w Siłach Zbrojnych RP*, Kazimierz Pułaski Foundation, Warsaw 2015, p. 9.

(short: NATINADS). On June 22, 2001, the Sejm of the Republic of Poland (lower house of the Polish parliament) adopted the law 'Equipping the Polish Armed Forces with multi-role aircraft'<sup>41</sup>, which envisaged the acquisition of 60 aircraft as part of the government program and sequenced implementation of new aircraft. So the previous Plan was suspended and the new one introduced new deadlines for 2001-2015. Following the new decisions, the Poland's and U.S. governments signed an agreement on delivery of new fighters on 27 December 2002. Recognizing the role and as regional partner, U.S. Lockheed Martin agreed to offer a newer version of the F-16 fighter jet<sup>42</sup>. Meanwhile, the situation in respect to fighters improved slightly after the handover of 22 MiG-29 aircraft from Bundeswehr in 2004, which it had acquired from the East Germany a force air force after reunification<sup>43</sup>. Germany sold them for a symbolic price of 1 Euro, but Poland was to spend some 43 Million Euros to modernize them using own military industry. Following the new Plan, the 48 (not 60) F-16s block 52+, from that time the most advanced aircraft in PAF, entered service between 2006 and 2008 under. It happened however, with a 12-year delay compared to the original plans. The deal was worth 3.8 billion USD and included a package of hardware like missiles, bombs and aerial reconnaissance kits. In that context, it proved to be essential for Polish Air Force that "with the reception of

the new fighter, they conducted reforms on a 'revolution in military affairs' scale. The most significant is the fact that Polish air bases came able to receive and facilitate operations of U.S. Air Force aircraft"<sup>44</sup>. The contract was not only military and it was a political message strengthening the relationship with the U.S. as a strategic partner, especially as "America struggled for a new, credible and loyal partner in Europe"<sup>45</sup>.

The 'Plan of Technical Modernisation of the Armed Forces 2013-2022' was following the proclamations of the 'Program of development of Polish Armed Forces in years 2013-2022'. The 'Plan of Technical Modernisation' included 30 programs divided into six categories - anti-aircraft and missile defence, unmanned aerial vehicles, helicopters, air forces, navy, and land forces. It was prepared in the different security environment and it was still based on MiG-29s and Su-22s, which were produced in the late 1980s and early 1990s and newly delivered F-16s. They former were planned to be out of service as in October 2013 their continuity of service was recognized as "unprofitable due to 'operational-economic' reasons. As the security situation evolved as of Ukraine war, already in "2014 the Ministry of National Defence declared a desire to maintain the Su-22 in the Air Force and provide the necessary, basic modernization including installation of new radio stations, as well as more modern reconnaissance systems (IFF, Identification Friend or Foe)"<sup>46</sup>. The Plan was financed with allocation "for the period from 2013 to 2016 amount about 135.5 billion PLN from which expenses for technical modernisation will equal about 37.8 billion PLN – 27.8% of the

<sup>41</sup> Act of 22 June 2001 on Establishing a Multi-Annual Program 'Equipping the Armed Forces of the Republic of Poland with multi-purpose aircraft' and ensuring conditions for its implementation, (Warsaw: Poland's Parliament 22 June 2001) <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20010890972> (accessed 26 January 2020).

<sup>42</sup> Poland Country Study Guide. Volume 1 Strategic Information and Developments, International Business Publications 2013, p. 109.

<sup>43</sup> German-Polish MiG-29 Transfer Complete, Deutsche Welle 5 August 2004, <https://www.dw.com/en/german-polish-mig-29-transfer-complete/a-1287949-1> (accessed 26 January 2020).

<sup>44</sup> M. Szymański, Security Franchising, ..., op. cit., p. 141.

<sup>45</sup> Ibid, p. 140.

<sup>46</sup> R. Lipka, Polish combat aviation – maintaining the illusion? Defence24, 25 July 2014, <https://www.defence24.com/armed-forces/air-force/polish-combat-aviation-maintaining-the-illusion> (accessed 23 February 2020).



whole budget<sup>47</sup>. Act from 15<sup>th</sup> September 2017 on modernisation and financing the armed forces ensured defence spending increase to 2.1% of GDP in 2020, and ultimately to a minimum 2.5% of GDP in 2030. Therefore, it could be expected that no later than in 2035, the Polish Air Force will be able to respond effectively to contemporary threats and challenges related to national and regional security. The expenses planned for 2017-2022 would "amount about 273.2 billion PLN with 102,1 billion for technical modernisation what gives about a 10% rise of expenses for technical modernisation that is 37.3% of the budget"<sup>48</sup>. Therefore, the financing was planned based on real needs and an important part of those funds was designated for the air force.

## Modernization of Poland's Air Force – the way forward

On 28<sup>th</sup> February 2019, Mariusz Błaszczak, the Minister of National Defence, approved the 'Plan of Technical Modernization until 2026' allocating 185 billion PLN, which is 45 billion more compared to the previous plan<sup>49</sup>. The critical element of the Plan is program 'Harpia' (Eng. 'Harpy') to procure new generation multirole aircraft to enhance operational capabilities of air force and able to operate in an anti-access and network-centric environment. An imperative is an ability to cooperate with NATO air component. The aim is to acquire 32 fifth-generation Lockheed Martin F-35 Lightning II multirole stealth combat aircraft to equip two fighter squadrons. F-35s will allow PAF

to operate deep in the enemy's airspace up to 800 km without aerial refuelling, based on a tactical radius, which up to 1100 km. As the result, the Air Force will enhance the ability to perform a range of air tasks: Offensive Counter Air (OCA), Defensive Counter Air (DCA), and in contribution to joint operations by Air Interdiction (AI) and Close Air Support (CAS). Next, it will enable effective Suppression of Enemy Air Defence (SEAD) and Combat Search and Rescue (CSAR). So far, those capabilities have been limited in the PAF. Polish F-35A deliveries would begin in 2024, and all the 32 aircraft should join PAF in 2030<sup>50</sup>. They will be equipped with Block 4 software, and the agreement includes a modernization package and upgrades introduced later. Other elements are<sup>51</sup>: ground support equipment and pilots' equipment, ground training equipment for airbases, Integrated Training Centre and 8 Full Mission Simulators included, full logistics support package, operational support IT system for the F-35A, and training for 24 pilots, up to the instructor level as well; training for 90 members of the tech support personnel.

The U.S. Congress approved selling 32 F-35 aircraft for an estimated USD 6.5 billion<sup>52</sup>; the negotiations could reduce this price to down to USD 4-4.5 billion. However, it will be only part of the total program as of costs required training, armaments, technical support, logistics and modernisation of existing infrastructure. Financial issues have been raised by civilian and military experts in Poland being concerned about

<sup>47</sup> Technical Modernisation of Polish Armed Forces 2013-2022, Defence Aerospace Source 14 December 2014, based on data from the Polish Ministry of Defence, <http://www.defense-aerospace.com/cgi-bin/client/modele.pl?shop=dae&modele=release&prod=141459&cat=3> (accessed 23 February 2020).

<sup>48</sup> Ibid.

<sup>49</sup> Modernizacja techniczna SZRP, Ministry of Defence, Warsaw 28 February 2019, <https://www.gov.pl/web/obrona-narodowa/modernizacja-techniczna-szrp> (accessed 24 February 2020).

<sup>50</sup> M. Szopa, Harpia Fighter Procurement Details - Polish F-35 Deal Unveiled, Defence 24, 31 January 2020, <https://www.defence24.com/wyzukiwanie/harpia-fighter-procurement-details-polish-f-35-deal-unveiled> (accessed 21 February 2020).

<sup>51</sup> Ibid.

<sup>52</sup> B. Pietsch, The US just approved the \$6.5 billion sale of 32 F-35 fighter jets to Poland, Reuters Business Insider 25 April 2018, <https://www.businessinsider.com/us-backs-proposed-65-billion-sale-of-32-f-35-lockheed-jets-to-poland-2019-9> (accessed 28 February 2020).

increasing F-35 operating costs. Poland's decision is reasonable, just considering the highly militarized Kaliningrad Oblast. The challenge is that Poland does not have yet F-35 capable infrastructure to facilitate operations in terms of logistics, network-centricity, command and reconnaissance and to analyses and collect data. Besides, the existing (and recently implemented) training system for flying personnel is dedicated to previous generation aircraft. There is no doubt that the direction of changes is correct, while the sequence of implementation of individual system elements raises serious doubts. What is of significance, the countries in the F-35 program, being advanced with respect to the technical support of their armed forces, have been preparing themselves to implement this type of aircraft for 8-10 years. The very last stage was the introduction of F-35 aircraft as such. Poland has decided on the differing sequence, which will probably shorten the period of modernisation of support systems, using the experience of allies and based on cooperation. However, it will not allow Poland to operate the aircraft entirely independently for at least several years after its implementation.

The program for acquiring comprehensive aerial reconnaissance aircraft - 'Płomykówka' (Eng. 'Barn Owl'), is another essential factor within the Plan. It is associated with the acquisition of battlefield Imagery Intelligence buying unmanned medium-range tactical class aircraft – program 'Gryf' (Eng. 'Griffin') and acquisition of unmanned micro-class aircraft for urban terrain – program 'Ważka' (Eng. Dragonfly). Such the Unmanned Aerial Vehicles (UAVs) equipped with optoelectronic systems, intended for land forces and special forces, will provide a high-resolution picture of the battlefield, necessary to enhance the security of operations by land forces and spe-

cial forces combat teams. There is an opportunity for PAF to take advantage of the American program by joining the "Loyal Wingman" UAV programme, aimed at developing a large drone which will accompany the F-35s during missions"<sup>53</sup>. The 4.6 billion program 'Harpi Szpon' (Eng. 'Harpy Talon') will additionally allow swarm tactics approach as those UAVs will carry out combat tasks within joint combat groupings with both 4<sup>th</sup> and 5<sup>th</sup> generation fighters. Next, they will be able to exchange reconnaissance and command information between them as part of a network-centric battlefield.

Although air defence programs are not the primary focus of the paper, it is necessary to mention the program for acquiring medium-range Patriot surface-to-air missile (SAM) system. The program 'Wisła' (Eng. 'Vistula'), will replace the outdated Air Defence System being importance when considering the air domain. Next, concerning land forces the program 'Kruk' ('Eng. Raven'), to acquire modern attack helicopters, will start in 2020. It intends to procure at least two squadrons (32 helicopters) to replace the post-Soviet equipment (Mi-24 helicopters) by 2026 as the deadline for implementation. Similarly, another land based program 'Homar' (Eng. Lobster), to procure 20 'Himars' multiple rocket launchers (MLRs), has importance. It could engage targets located 70-300 km away, allowing attacking enemy airfields and air defence systems e.g. in Kaliningrad (SEAD missions) based on reliable intelligence.

The last Plan's shortcoming is a lack of programs about air transport or aerial refuelling as if this topic did not exist or did not matter for NATO's future operations. Currently, the basic air transport aircraft is

<sup>53</sup> Poland to sign USD 4.6 bn deal for F-35 fighter jets, 27 January 2020, Polish Press Agency PAP, <https://poland.in.com/46376261/poland-to-sign-usd-46-bn-deal-for-f35-fighter-jets> (accessed 28 January 2020).

CASA 295 designed only for tactical transport. This is modern aircraft, but too intensively operated as of lack of medium transport planes, such as C-130. The five possessed C-130 has already been in service for some 50 years, but their replacement will not solve all air transportation needs. There still will be a shortage of two or three strategic air transport aircraft, which is important because of the commitment to missions and operations outside of the country. The PAF capacity in aerial refuelling are similarly negatively assessed and despite many attempts to solve this problem, there has been no solution. The air force is still based on temporary solutions; the current program also does not deal with this problem at the desired level. It is also worth noting that TMP pays little (too little) attention to the human factor, and thus the shrinking possibilities of recruitment to the armed forces as of competition on labour market, aging society and low attractiveness related to military payment. It is equally important, as advanced technology will require a systematic increase in quality of operational staff to maintain the operation of the new generation of aircraft.

General costs the Polish Armed Forces modernization for the period 2021-2035 will amount PLN 524 billion (est. 133 billion USD)<sup>54</sup> and the planning timeframe was extended from 10 to 15 years. The allocation of funds will be progressive, i.e. in 2025, the Ministry is planning to spend PLN 24 billion on modernization, while in 2050, it will reach PLN 50 billion<sup>55</sup>. The 2021-2035 TMP includes programs has not been dis-

cussed in public debates to see other options as procurement of the F-16 Block 70 version, created based on the solutions developed for the F-35. In general, doubling the number of F-16 aircraft makes sense because there is already a national training system and infrastructure prepared for this aircraft. The analysis related to the PAF combat potential is assuming that it should have ten air squadrons composed of 160 combat aircraft. As for now, because of the withdrawal of old aircraft, the number of squadrons has decreased to eight.

Moreover, two of current squadrons (MiG-29s), due to incidents and accidents, were suspended from flying indefinitely<sup>56</sup>. Therefore, those will be restored by purchasing F-16 aircraft (three squadrons), to join already existing three squadrons. The planned purchase of 32 F-35s aircraft (two squadrons) will allow the possession of eight combat aviation squadrons. Two MiG-29 squadrons will end service around 2030 due to their age. The purchase of F-16s aircraft, regardless of the latest or older generation, is necessary if PAF is determined to retire the post-Soviet combat platforms (SU-22s aircraft). As many Soviet-made aircraft have been operational for more than 35 years, they will disappear in a few years; therefore, PAF could lose some operational capabilities. The F-16s fleet has been already some 15 years in service, so in 5-7 years (2025-2027), they will require modernisation and a major maintenance. According to the manufacturers, Poland's F-16s have 8000 hours lifespan, with an average annual total flight span on the plane up to 200 hours. Theoretically, a 40-years' service is possible, but the major renovation will be required, which must be seriously considered. This will cause another costly position in the military budget.

<sup>54</sup> 524 mld na modernizację i więcej F-16. Błaszczak podpisał PMT, Defence24 10 October 2019, <https://www.defence24.pl/plan-modernizacji-technicznej-2021-2035-zatwierdzony> (accessed 28 January 2020).

<sup>55</sup> Błaszczak: Plan Modernizacji Technicznej opiewa na 524 mld zł, Puls Biznesu 10 October 2019, <https://www.pb.pl/blaszczak-plan-modernizacji-technicznej-opiewa-na-524-mld-zl-972642> (accessed 28 January 2020).

<sup>56</sup> 'Polskie MiG-29 wznowiły loty', Defence24 (28 November 2019) <https://www.defence24.pl/polskie-mig-29-wznovily-loty> (accessed 28 January 2020).

It is assumed that in an emergency in Central or Eastern Europe, the Alliance aviation and air defence assets should be deployed to Poland as early as possible. It is requiring investment into infrastructure and provision of reasonable capabilities to protect them against enemy attack using air, land and sea based missiles. This is especially important with respect to the U.S. Air Force, as those will not be deployed into fragile and unprotected airbases. Next, as Poland is located close to potential adversary even small stealth aircraft will be observed when taking off, limiting its specific characteristics<sup>57</sup>. Therefore, to make such a deployment possible, it requires properly infrastructure in Poland, additionally assets to deny dangerous Russian anti-access and area denial capabilities like in Kalinin-grad enclave<sup>58</sup>. The PAF, despite acquiring new capabilities including tactical missiles AGM-158 JASSM (range of 400 km) and initiating the procurement of modified JAS- SM-ER missiles (range of up to 1000 km) has limited potential to support deterrence by punishment<sup>59</sup> independently. It is limiting options for effective engagement of targets outside of national borders.

## Summary and conclusions

The decisions on the modernization of the Polish Air Force are highly required and the overall direction is very proper; the challenge would be the continuous dedication of funds to support it. It is linked with the preservation of GDP increase, as there are

some symptoms of economy slowdown. Next, the consensus among political parties towards modernization priorities must be preserved, such as the negative trend happened as “the change of government in 2015 has also raised questions and international concern about Poland’s political reliability”<sup>60</sup>. That aspect is very important as of Poland’s geostrategic location and being the critical link with the NATO East Flank nations to facilitate any deployment of units to endangered regions. The air force capabilities will play a significant role in those aspects; therefore, modernization of equipment and infrastructure is of great significance. It will require following the current trends in aircraft development and it must be done in cooperation with leading air powers, as Poland alone is not able to develop and produce a 5<sup>th</sup> generation aircraft. In this case, procurement is required, and as of NATO membership and its obligation, U.S. is a solution not only related to F-35 but maybe F-16 ‘Viper’.

There are other aspects, as the Polish core interests are linked with the desire to strengthen the country’s role in NATO and within the region. The modern air force is closely related to such roles based on economic provision, foreign policy and population support. As security becomes a fundamental issue; therefore, its funding should be stable. This is key for PAF as of the progressive degradation of military equipment; it is estimated that some 50% of the primary and auxiliary equipment is older than 20 years of operation. It appears that the needs of the Air Force are understood and the key is the preservation of constant support by governments and preserved financing level. The challenge is that the military budget could be cut in the case of any economic downturn causing

<sup>57</sup> Gen. Rajchel: Polsce potrzebne są typowe myśliwce. Co z wykorzystaniem F-35? [SKANER Defence24], Defence24 20 February 2020, <https://www.defence24.pl/gen-rajchel-polsce-potrzebne-sa-ty-powe-mysliwce-co-z-wykorzystaniem-f-35-skaner-defence24> (accessed 28 January 2020).

<sup>58</sup> Z. Sliwa, V. Veebel, ‘The Suwalki Gap, Kaliningrad and Russia’s Baltic Ambitions’, op. cit.

<sup>59</sup> T. Rostoks, *The Evolution of Deterrence from the Cold War to Hybrid War*, in: N. Vanaga, T. Rostoks (eds.), *Deterring Russia in Europe. Defence Strategies for Neighbouring States*, 1st Edition, (London: Routledge 2019) pp. 20-26.

<sup>60</sup> E. Hagström Frisell, A. Sundberg, Poland – An Increasingly Important Ally, ..., op. cit.

delays or cancelation of some programs. It would deny capabilities to be in line with other NATO nations when fighting in the air domain and would not be the credible answer for a complex security environment.

Technical modernization 2021-2035, although its focus and continuity raise some doubts, create a chance to increase the operational capabilities of the armed forces. It is especially important to face the contemporary threats and unpredictable development of the geopolitical situation in Europe and the world. According to the Polish National Defence Ministry, it is the result of an in-depth analysis of the perspective battlefield and the need to adopt armed forces to new tasks. The tasks will not only be military in nature taking into account phenomena such as demography, urbanization, climate change, the emerging technology influencing the regional security<sup>61</sup>. If such the analyses were carried out, it would facilitate proper actions to prepare the nation to face them. However, many of these essential elements are difficult to recognize in the available research and studies. Although the modernisation of the Polish Air Force is still definitely behind schedule and real needs, it is ongoing. It is a milestone allowing adjusting this service to the requirements of contemporary warfare within the evolving security environment. Without its implementation and continuity, it is difficult to imagine the ability to conduct contemporary operations nationally and within the Alliance facing the policy and capabilities of the Russian Federation. This is why the entire TMP and Poland's Air Force procurement is of critical importance as the geostrategic location of Poland is causing her to be involved and to suffer consequences in the case of crisis and war. The crucial

aspects are political support and continuity, coupled with assurance to financing as a long-term project.

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<sup>61</sup> 'Szef MON podpisze nowy Plan Modernizacji Technicznej', *Defence24* (09 October 2019) <https://www.defence24.pl/szef-mon-podpisze-nowy-plan-modernizacji-technicznej> (accessed 27 February 2020).

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