Humanities and Social Sciences **2021**
Research Journal 28, No. 4 (2021), pp 101-113 **October-December**

Rafał MIĘTKIEWICZ[1]

POLISH NAVY IN SECURITY OF STRATEGIC FOSSIL FUELS SUPPLIES – ADEQUATE SHIPS

This article defines the importance of naval forces in maintaining energy security related to supplies of strategic raw materials, examining the literature and normative and strategic documents in the area of state security. The paper presents estimates of capital expenditure and benefits drawn from the development of energy infrastructure. Particular attention is paid to the lack of general understanding around the need to take advantage of the Navy as an effective tool in implementing the state's policy, along with alliances, partnerships, and geopolitical structures that reinforce Poland's image of being a declared, active, and reliable partner catering to its own national interests.

Keywords: energetic security, Polish Navy, maritime security.

1. INTRODUCTION

Poland is currently undergoing a profound transformation involving a change of sources of supplies of fossil fuels that are of strategic importance to the energy security of the state. This billion dollars' worth investment program aims at diversifying the supplies of natural gas and crude oil and allowing Poland to establish an autonomy from the Russian Federation in this respect. One of the key aspects in this area is access to the sea and the degree to which this supply chain route can be utilized (sea routes, sea ports). The operation and extension of the LNG terminal in Świnoujście, as well as progress reported for the "Baltic Pipe" project, opening access to sea gas fields situated in the Norwegian continental shelf, or, ultimately, the announced launch of a floating terminal, will have significant impact on improving the energy security of Poland and other countries, and will build a new quality in gas trading in the Baltic area. Another important aspect involves the mining of fossil fuels (Baltic deposits) which, although conducted at a small, but feasible scale, supplements the external supplies to cover the country's demand. The sea is a natural resource of wind power and has therefore become a desirable area for producing renewable, energy which is to flow in from offshore wind farms in the foreseeable future. Sea ports are indeed our true window to the world when it comes to transporting, distributing and storing raw materials. An analysis of state revenues generated by sea ports has indicated that they are responsible for approx. 10% of the inflows. In 2018, approximately PLN 40.6 bn were paid to the state

[1] CDR (OF-4) Rafał Miętkiewicz, PhD, Commander Adjunct, Maritime Operations Section, Department of Command and Maritime Operations of the Polish Naval Academy of the Heroes of Westerplatte, ul. Śmidowicza 69, 81-549 Gdynia; e-mail: r.mietkiewicz@amw.gdynia.pl. ORCID: 0000-0002-3129-7092.

budget in taxes, customs and excise tax on goods handled in sea ports (marking an 80.3% increase compared to the preceding year)[2] (*Ustawa*, 2019). Such extensive investments require gigantic expenditures. Subsequent projects aiming at implementing plans specified in the "Polish sea ports development program by 2030" will require expenditures of PLN 40 bn. Their purpose is to prepare Polish ports for competing against the leading players on the European transportation market and to strengthen the position of ports as leaders of the Baltic Sea area (*Program*, 2019).

These investments are the living proof of the maritime character of our country. However, it is the opinion of the author that the social awareness of the importance of the sea remains low. The fiscal share paid by taxpayers to cover the needs of the state's maritime policies in the pursuit of their strategic objectives is not spent on the financing of main entities responsible for maintaining the country's maritime security. When this security is guaranteed, which involves the minimization of challenges and threats associated with the sea, conditions for the utilization of water basins of essential importance to the state will be created according to the will and interest of the nation (Szubrycht, 2011). In reality, however, modernization of the Navy, one of the primary components of the Polish Armed Forces, is financed well below the required level, particularly in the light of the condition of its offshore potential. The average service period of naval ships is over 30 years (the designed service life being 30–35 years in service). Media commentaries have indicated that government programmes to launch nine new vessels in 2017–2021 (the author intentionally uses the term vessel instead of combat ship, as not all of ships can be qualified as such), built in Polish shipyards, are undoubtedly an achievement, although mainly a media one, i.e. easy to implement and relatively cheap (minehunters, tugboats). Which is also noteworthy, within the span of just six years, four different concepts for the development and upgrading of the Navy have been proposed (Dura, 2019a). Considering the policies implemented by the key players in the region, with particular emphasis on the Russian Federation, this state of things has visibly reduced our state's resistance to possible blockages of sea deliveries and increased its vulnerability to a wide palette of threats attributable to the maritime domain. The Navy's annual budget of several hundred million is sufficient for persevering, but the primary capacity is systematically, hopefully not irretrievably, lost[3].

Naval experts have emphasized that, considering the issue of energy security (fossil fuel supplies by sea route), the country needs to be in possession of ships capable of assisting gas carriers and tankers carrying cargoes from distant parts of the world. What is notable today is the lack of understanding of the specific character of the functions which the Navy serves and which surpasses the scope of defence and stabilizing operations in the regions. Instead, it should be construed as the pursuit of objectives referred to as the national interest (Mickiewicz, 2019). In order to guarantee the protection of national interest and the pursuit of Poland's political and economic objectives, the Navy should have adequate potential and

[2] In 2019, state budget revenues were PLN 387.7 bn, out of which PLN 179.6 bn was paid in VAT, PLN 34.8 bn in CIT and PLN 64.3 bn – in PIT. The state budget expenditure was planned at PLN 416.2 bn. The key expenditures include: PLN 97.6 bn for healthcare, PLN 84.5 bn for primary, secondary and higher education and science, PLN 79.6 bn for defense and homeland security, PLN 66.2 bn for social purposes.

[3] For instance, in 2019, the Navy's budget was ca. PLN 668 mn (constituting 12.4% of the overall budget for the armed forces).

combat capacity. According to this concept, transport policies and the policy assuming the diversification of fossil fuel supplies of strategic importance to the energy security of the country have critical impact on the current and future role of the Navy. In this vision, the Navy should be equipped with corvettes or frigates (Mickiewicz, 2018).

The strategic concept of Poland's maritime security points to the need to develop the naval forces to the level of a category 3 fleet, i.e. a medium-size navy with adequate potential to project limited-range force on all waters of the world. Such naval forces can permanently and consistently demonstrate the state's determination in the pursuit of the objective in cooperation with other navies capable of conducting a full spectrum of naval operations (1st and 2nd category navies) (*Strategiczna*, 2017). At the same time, the general opinion was that corvettes and frigates were not necessary due to their low usability in combined defence operations, great costs of shipbuilding, or oceanic aspirations of a small group of seamen.

The purpose of this article is to display the significance of having a navy adequate for the policies implemented and the interest of the state, possessing sufficient naval potential in the form of corvettes and frigates to pursue strategic objectives, particularly in the aspect of the security of fossil fuel supplies with strategic significance to Poland's safety and in the aspect of producing power from renewable energy sources. Therefore, one purpose is to pursue political and economic objectives in distant areas of the world, and another purpose is to shape domestic security in the Baltic area and protect Polish sea territories. The author also points to the discord between investments made to diversify strategic fuel supplies delivered by sea as one of the key objectives to strengthen Poland's energy security, and investments made to adapt the Navy to contemporary challenges.

It was assumed that the measurable benefits drawn by Poland and resulting from having access to the sea, modern port infrastructure allowing for the supplies of strategic fuels to be diversified, as well as billion dollars' worth expenditure on the development of the extended sector require strong Naval presence to ensure the security and continuity of supplies.

This research objective was achieved by conducting an in-depth analysis of available literature covering the issue of maritime policy, Poland's energy security, and a preliminary survey of strategic documents, developmental programmes and studies devoted to the theory of use of naval forces in the implementation of state's policies, as presented by the most prominent domestic authorities in this field. The author's focus was first on elements of the maritime policies of the Republic of Poland. Subsequently, the author provided a brief description of the main investments carried out on Polish waters, related to the diversification of supplies of fossil fuels, with particular emphasis on expenditures incurred by the state and aiming to diversify the supplies of natural gas and crude oil, and to develop offshore wind farms (an attempt at estimating the costs and potential financial gains from the projects implemented). Ultimately, the article discusses the costs and purpose of purchasing corvettes and frigates in the light of critical voices opposing the need to defend "our Baltic Sea".

2. ROLE OF STRATEGIG RESOURCES SUPLIES – MARITIME ASPECTS

The assumptions of Poland's maritime policy are focused around the maximization of multi-dimensional benefits drawn from the sustainable use of the country's access to the sea, as well as from the global ocean resources, by the economy and the citizens. It was

indicated that the maritime sector offers significant potential when it comes to the production of energy in offshore wind farms. Measures aiming to increase the energy security of the country and implemented directly on Polish waters include such investments as the extension of the LNG terminal in Świnoujście (capable of receiving up to 7.5 bn m^3 a year and more) investments in the diversification of natural gas supplies and the crude oil terminal in Gdansk (an offshore hub). Crude oil deliveries carried out by sea to Naftoport are essential to the functioning of Polish refineries. Attention is also paid to the question of crude oil and gas extraction from underneath the Baltic seabed and their efficient transport and processing on shore. The construction and upgrading of offshore transfer and storage infrastructure dedicated to fossil fuels are the main objectives of the activities aiming to strengthen the energy security of Poland. Apart from the aforementioned investments intended to increase the energy security of the country and which are directly related to the sea domain, we can also list such projects as the "Baltic Pipe" (target imports of ca. 10 bn m^3, exports of 3 bn m^3 of gas), announcements of the construction of an FSRU terminal[4], another connection of the B8 oil field with the Power Plant in Władysławowo (of local significance, however showing possibilities), upgrading of major Polish ports to intermodal hubs of the Trans-European Transport Network TEN-T (*Polityka*, 2015).

Any discussion of the energy security maintained on the basis of sea access cannot take place without reference to Poland's Energy Policy. The document states that diversification of directions and sources of gas supplies will be continued by extending the import capacities and developing connections with neighbouring countries. This will create conditions for the development of a hub for gas transfer and trading with other countries of Central and Eastern Europe, and the Baltic States (*Polityka*, 2019). This "vision" points to clear needs of Poland (guaranteeing the continuity of supplies), its high aspirations and the resultant extensive international interest.

Elements of the supply chain which could be used to diversify sources to guarantee the state's energy security should be briefly characterized in a breakdown into individual strategic fossil fuels.

Natural gas supplies provided by sea are an important element of the process of diversifying the supplies of this fuel. This aspect encompasses such facilities as specialized terminals capable of regasifying and storing gas, kriogenic tankers transporting liquefied gas, as well as facilities designed to serve as floating regasification terminals. Thirdly, gas lines are laid at the bottom of the sea for the purpose of transporting the fuel directly from its production site. Ultimately, this notion also includes the exploration of undersea oil gas deposits or gas as a by-product of crude oil production. In Polish conditions, different gas import scenarios estimate from 7.75 bn m^3 to 30.95 bn m^3 of gas imported a year (LNG terminal in Świnoujście, the "Baltic Pipe" project, the FSRU terminal and a "small-scale" terminal in Gdynia, oil production in the Baltic Sea, and the B8 oil field – Władysławowo gas line) (Miętkiewicz, 2019a). New possibilities of obtaining the fuel are direct indicators of its diversified supplies, and thus of improved energy security of the state. Furthermore, they promote Poland to the role of a leader in the regional system of supplying neighbouring countries interested in obtaining autonomic supplies from outside the Russian Federation, and in strengthening market principles in natural gas trading.

[4] FSRU – Floating Storage Regasification Unit.

An analysis of a contract entered into with the world's largest LNG[5] exporter, QatarGas, for a period from 2014 to 2023 and stipulating the import of 1.5 bn m^3 of gas a year to Poland, points to a very high price of the contract, i.e. USD 550 mn a year, which sums up to USD 11 bn (PLN 43,12 bn) in a 20-year period. Additionally, another long-term contract signed in 2018 increased the volume of gas imported to Poland to 2.7 bn m^3 a year. The costs of extending the LNG terminal in Świnoujście are estimated at ca. PLN 840 mn, however, Poland is entitled to apply to the European Regional Development Fund and the Cohesion Fund for PLN 553 mn to obtain maximum reimbursement of the costs incurred. The original cost of building the terminal was PLN 3 bn (Gaz System, 2017).

Apart from the possibility of importing an additional volume of LNG in the amount of 4.1 to even 8.2 bn m^3 (or 4.5 bn m^3, as is also often quoted), the Polish gas supply system will also include a FSRU which will further develop its potential. The costs of this enterprise are difficult to estimate, but data obtained for the FSRU terminal in Lithuania may serve as guidance in this matter. Local authorities decided to buy out the "Independence", a floating terminal which had been leased. Lithuanian media have speculated about the price of purchase, proposing sums ranging from EUR 121 mn to 160 mn. The Lotos Group, operating in a consortium with Gas-System, has announced an investment project consisting in the construction of a "small-scale" LNG terminal in Gdansk. The final costs of this investment are not known, but the original design states EUR 1.74 mn (Sawicki, 2019). At the same time, the project assuming the extension of the Port of Gdynia includes the construction of a "small-scale" LNG terminal capable of receiving 2.5 billion m^3 of gas a year.

Analysing large-scale gas projects, the author is bound to quote the costs to be paid by the Polish party in the "Baltic Pipe" investment project. The Polish share of this international investment controlled by the operator of the transfer network will be approximately EUR 784 mn, which is more than PLN 3.6 bn[6] (the total cost will oscillate around EUR 1.604 bn) (Gaz-System, 2017). According to estimations, from the economic point of view, Poland is to be the largest economic beneficiary of the project. A 67% ENPV[7] (Economic Net Present Value) is EUR 682 mn (ca. PLN 3.1 bn).

Naftoport in Gdansk is the main facility which is responsible for the diversification of crude oil supplies in Poland. It is used to supply refineries with crude oil pursuant to long-term contracts with suppliers from Saudi Arabia and Russia, and spot deliveries from Angola, Nigeria or United Arab Emirates, among other countries. The terminal has 6 tanks, 375 thousand m^3 each. A project to increase the storage capacity in the form of 5 tanks, aprox. 600 thousand m^3 in total capacity, has been launched with the cost of PLN 327 mn. The value of the growing capacity of the hub has been proven when all supplies via the "Friendship" pipeline were withheld in 2019. Within 46 days, a total of 51 tankers arrived at Naftoport, delivering 2.2 mn tons of crude oil in one month only (Kiewlicz, 2019).

Crude oil and natural gas fields in the Baltic Sea are a viable source of fossil fuels, mined for decades. However, offshore oil production requires significant financial expenditures, as exemplified by the management of the B8 oil field which cost PLN 5.5 bn until the first half of 2018. Furthermore, Lotos has been investing in the exploration of new deposits (e.g. Yme in the North Sea), for which the company spent more than PLN 500 mn in 2018-2019.

[5] LNG – Liquefied Natural Gas.
[6] According to an average exchange rate of the NBP from 07.04.2020 = PLN 4.53.
[7] ENPV – Economic Net Present Value.

The company is planning to spend another PLN 500 mn for this purpose in 2020 (*Grupa Lotos*, 2020).

Export of cheap coal is important in guaranteeing the energy security of the country. In 2018 only, a record amount of 19.67 million tons of coal was imported to Poland (a 52% increase compared to 2017 – 12.9 mn tons). A great part of the imported coal (68%, i.e. 13.5 mn tons) was important from the Russian Federation (also by sea). Export by sea assumed handling of coal imported from the United States (1.53 mn tons), Australia (1.47 mn tons) and 1.46 mn tons from Colombia, 0.55 mn tons from Mozambique and Kazakhstan (0.50 mn tons) and the Czech Republic (0.36 mn tons). Import from other countries is approx. 0.3 mn tons (*Rosyjski węgiel*, 2019).

What is noteworthy is the large number of tankers arriving at Naftoport, with successive vessels entering the port virtually every day. Sea ports are main coal import hubs, whereas the Port of Gdańsk plays a key role in terms of the amount of coal handled. Together with Gdynia, the Port of Gdańsk services 80% of all coal cargoes. The terminal in Świnoujście is currently the only point of import for liquefied gas, whereas the Szczecin-Świnoujście port complex serviced nearly 20% of the overall coal imports in 2018.

Analysing the geographic locations of sources of fossil fuel supplies, we can see that their routes match the busiest oceanic trade routes. They often cross areas with pirate activity, prone to terrorism at sea, drug smuggling or illegal migration. International shipping routes are often the arenas where the politics of international political and military blocks is often manifested. These include rising sea powers (Russia, China, India), for which physical presence in the form of naval ships, displaying their actual determination in the implementation of their strategic objectives, is more relevant than international laws and agreements. Firstly, large distances between base ports and areas of potential activity[8] (*Strategiczna*, 2017) force these countries to have larger vessels to guarantee their adequate autonomy and seaworthiness, and to develop an extensive logistics network based on a system of allies.

The geographic locations of the suppliers of main fossil fuels described in the article point to the need to protect the country's own strategic interests to guarantee the energy security of the state on distant waters. Due to economic and geopolitical conditions, countries alone are not able to implement a maritime policy to guarantee the full protection of fossil fuel transport. The solution is to intensify their presence in multinational teams operating with the NATO or the European Union, and guarantee their permanent involvement in issues of maritime security on key pan-oceanic transport routes (limited to waters of vital importance to the interest of Poland).

According to estimates of by 2040, more than 10 GW of power is to be generated offshore. Construction of offshore installations is however only a part of an extensive package of enterprises aiming to increase the volume of energy obtained from high-efficiency wind farms (Miętkiewicz, 2019b). Capital expenditure by 2034 is estimated at PLN 73 to 101 bn (Rączka, 2018). An attempt at estimating the total costs and the potential benefits drawn from the aforementioned projects is presented in table 1.

[8] Areas of potential activity shall include sea basins, in which, due to: the interest of national security, obligations under alliances or coalitions and the state's aspirations, the likelihood of military operations at sea is the highest.

Table 1. An attempt at estimating the costs and potential financial benefits (revenues) of projects implemented on Polish waters

Item	Project name	Estimated cost [PLN]	Estimated revenues / other data [PLN]
1	Offshore Wind Farms	Expenditures by 2034 From **73** bn To **101** bn	inflows to the GNP by 2030 **60 bn** and an additional **15 bn** in CIT and VAT
2	Outer Port of Gdynia	ca. **3.34 bn** (EUR 787 mn)	State budget revenue in 2018 – PLN 40.6 bn
3	Central Port of Gdańsk	**11 bn**	
4	LNG Terminal in Świnoujście 2007–2023 extension	Construction **3 bn** Extension ca. **840 mn**	Value of contracts 43.12 bn (2014–2034) + unknown value of increasing deliveries by 2.7 billion m^3/year from 2018
5	Baltic Pipe EU subsidy	**3.6 bn**	ca. PLN 3.1 bn (67% of ENPV)
6	FSRU Terminal	**3 bn** (estimates from 2017)	
7	Naftoport	**327 mn**	
7	Extraction	2018–2019 – 500 bn 2020 – 500 bn	Operating profit in the extraction segment was PLN 1046.2 mn

Source: Own study based on: (Rączka, 2018; McKinsey & Company, 2016; Dzwonnik, 2019) and previous sources.

3. THE ROLE OF THE NAVY – DISCUSSION

Doctrinal documents state that participating in the defence of Poland and in collective defence as part of joint NATO forces, as well as strengthening the deterrence system of the allied states, are the primary tasks of the Polish Navy. Naval forces participate in crisis response operations of the Organization (*DD-3.1(A),* 2018). Due to its specific character, the naval part of the armed forces is particularly involved in the process of building the economic security and sovereignty by providing active defence measures (policing function) and protecting the freedom of maritime navigation.

The significance of sea transport routes, underwater transfer lines, and particularly the impact of their interruption, combined with the specific legal status of the sea, magnify the visibility of competition of the biggest sea powers on water, compared to their activities on land. The interactions occurring between antagonized parties (the US, NATO – Russia, China) on land involve more severe political and military outcomes. Russia further strengthened its position by taking advantage of the opportunities created by combining technology with strong political will, and with its skill in taking unexpected actions (including in geographic terms), and by staying ahead of other, western countries in conceptual terms. The Allied forces are therefore facing a challenge in the form of an adversary who approves the use its own armed forces in manner that is legally, morally and ethically unacceptable for the political and military leaders of NATO (Roberts, 2018).

According to A. Makowski, all discussions pertaining to the shape of the naval forces should be based on an assumption arising from an analysis of the current and continuously

intensified operations of the Russian Federation, which aim to destabilize the situation in the country, including possible use of the armed forces. The key element of this approach lies in its different objective, whereby the armed forces are used to repress the intentions of the opponent instead of stopping the opponent's oppressing capacities (Makowski, 2018).

The head of the Allied Maritime Command (MARCOM), recommended acquiring three to four frigates. This approach is indicative of a broader outlook on the problem of use of the Navy, one that does not limit its role to the mere defence of the country's territory. Seafaring countries have visibly adopted a different approach to the pursuit of their interests and, most importantly for the United Kingdom, to the method in which benefits from the country's access to the sea and from its maritime policies are derived. Poland can be visible as an active partner in the implementation of maritime policies under NATO or the European Union. In a practical dimension of shaping the country's safety at sea, dedicated vessel units participate in operations of the aforementioned, multinational task groups or multinational groups (European Union).

Many maritime safety authorities have emphasized the significance of the provisions of Article 3 of the North Atlantic Treaty, which obligates all parties to maintain and develop both their individual and the joint capacity to resist armed attack (North Atlantic Treaty). Our membership in the NATO is the key guarantee of our safety, however our national potential represented by the armed forces and our NATO membership remains the determinant of security. Political authorities are in fact responsible of making decisions as to the level of involvement of the Polish Navy in NATO's maritime endeavours. It is the role of specialists in maritime operations and the naval forces to develop and present variants of involvement at different involvement levels (Szubrycht, 2018a). Such recommendations in a wide range of operation to protect the interest of the state have basically been prepared. They are however crowded by a multitude of analyses, assessments and opinions of centres having little to no experience in the matter, but are opinion-forming and able to push their agenda in the general discussion. The opponents of equipping the Navy with "large" vessels often provide the following arguments:

- High costs of building and operating the vessels,
- The proposed action is not complementary with the territorial defence concept and, in the event of a mass enemy attack, the forces have little chance of surviving,
- Such units would primarily serve as a guard of honour (presenting the flag and sea diplomacy) and would be of little use on the Baltic Sea,
- Focus on building potential and developing the capacity to conduct effective fire targeting the opponent,
- Comparison to the September campaign from 1939.

Analysing the participation of vessels in standing NATO units, assuming the maximum variant, naval forces should have 6-8 ships capable of completing operations in minesweeping, as well as 3–4 ships deployed to participate in operations of striking forces (corvettes, frigates). **The optimum variant assumes owning 6–7 mine hunters and 2–3**[9] **frigates (large corvettes).** The minimal number of vessels which the Polish Navy should own are 4-5 mine hunters to be deployed in the Standing NATO Mine Countermeasures Group (SNMCMG) and 2 vessels capable of participating in operations of the SNMG. The operational cycle preferred in NATO is 8 quarters (24 months) and the Navy has three large

[9] The 1:3 coefficient of operational use of ships adopted in Poland should be taken into account.

corvette – frigate vessels. The resultant cycle is 2-4-2[10] relative to two vessels and one ship in the 2-2-4 cycle. Which is noteworthy, as part of their international deployments, ships will be capable of operating for 6 quarters, i.e. 25% of the cycle. The next 10 quarters will be dedicated to domestic operations (ca. 42% of the time), and the remaining 8 quarters – to recovery (ca. 33%). In the minimum variant, when a smaller number of ships is available, the 2-4-2 or 3-2-2 domestic cycle could prove to be more effective if a larger presence in international operations is required. The calculations above indicate that the effective use of forces as part of an operational cycle leads to a concord in the role of the naval forces as a tool used for implementing the state's policy, pursuing its ambitions and completing tasks related to protecting the state's sovereignty and independence.

Sceptics opposing the expansion of naval forces by equipping the Polish Navy with corvettes and frigates point to the economic factor. The price depends on many considerations, like sensors and effectors and the command systems installed on board. Another important factor in this calculation is the cost of deploying ships of discussed classes to take part in operations in overseas standing units, compared to a similar land contingent, which is 1:25. It is even more beneficial when mine hunters or command vessels are deployed (Szubrycht, 2018b).

Depending on the displacement, its combat and operational potential may vary. Hence, the capabilities of individual vessels in a breakdown into the most important types of operations, such as combating airborne, surface and submarine targets, should be taken into account. It is difficult to specify the price of navy platforms, as the values of such units, including training and offset packages, are negotiated by governments in confidence. Frigates and corvettes are the most frequent objects of discussions devoted to recommended Navy purchases (Table 2). The requirements for new frigate types are not known, similarly to the budget which is planned for the "Miecznik" project, often compared to the Danish design, used as reference for analysing the costs of purchase of these ships. A single ship of this type is priced at 340 mn dollars (50 to 70% of the overall ship cost). With reference to the Iver Huitfeldt, this cost was 64% (the hull cost 133 million dollars, whereas individual systems, weaponry sensors and electric equipment are worth 207 million dollars). Considering further, domestic conditions (margins, markups, insurance), the price of the Polish frigate variety increases to 550 mn dollars (Dura, 2019b).

Analysing the data, our attention is drawn to differences in the price of ships of the same class. The cost of acquiring one Iver Huitfeldt frigate, expressed in PLN, is similar to the Chinese offer. The Finnish corvette has also been intentionally replaced, the cost of which is well above the cost stated for all types of frigates. Of course, the ultimate price is determined by the size of the ship, its equipment, the size of the order or the cost of labour, as well as logistics and training packages. The final price is always the result of long-term negotiations conducted at the highest levels of authority. It appears that purchases of new ships capable of impacting the maritime policy of Poland according to its actual needs (which go beyond the aspects of fuels and energy discussed in the article), can be performed only on the basis of a national programme, as in the case of the F-16 purchase. A programme like this would have to be based on a guarantee of stable and long-term financing of the construction or cooperative acquisition of vessels of desired classes, counted in billions of

[10] 2-4-2 – a cycle of 2 quarters (6 months) as part of international operations, 4 quarters (12 months) as part of domestic operations and 2 quarters (6 months) as part of recovery, renovation and repairs, forming a complete cycle of 8 quarters (24 months).

PLN. This certainly requires consensus from all political forces which, considering the diverse concepts and negation of the concepts of past political leaders, is not easy. Therefore, specialists must face a difficult challenge in that they must convince top leasers about the significance of the state's maritime policy in guaranteeing its proper development and functioning.

Table 2. Comparison of the costs of acquiring ships of individual classes

Frigates						
Type	Meko 200 (Germany)	FFG(X) (USA)	054A (China)	Iver Huitfeldt (Denmark)	FREMM (EU)	F 125 (Germany)
Displacement [T]	3700	4000–6000	4053	6645	6700	7200
Unit price	USD 500 mn	USD 800–950 mn	USD 348 mn	USD 350 mn (British version)	USD 936 million to 1.2 bn French version, USD 676 bn for Morocco	USD 740 mn
Price [PLN bn[11]]	**2.16**	**3.14–3.53**	**1.36**	**6.04**	**3.67–4.7**	**2.9**
Corvettes						
Type	Visby (Sweden)	066 (China)	K130 (Germany)	Sigma (Indonesia)	Milgem (Ada) (Turkey)	Pohjanmaa (Finland)
Displacement [T]	640	1500	1580	1700	2000	3800-4300
Unit price	USD 184 mn	USD 230 mn	USD 580 mn	USD 222 mn	USD 250 mn	EUR 325 mn
Price [PLN bn]	**0.72**	**0.9**	**2.48**	**0.86**	**0.98**	**5.56**
Notes	x	x	x	Manufactu-rer DAMEN	Pakistani version	x

Source: Own study based on data obtained from the manufacturers.

The "Technical Modernization Plan for 2021–2035" adopted in 2019 incorporates multiple programs, among which three include a direct reference to the Polish Navy (the "Miecznik" programme of two coastline defence ships, the "Orka" programme dedicated to the purchase of two submarines, the "Murena" programme of 6 lightweight missile ships). The whole plan, including the year 2020, stipulates the sum of PLN 524 bn (ca. USD 133 bn). The program was extended, compared to the preceding PMT, to 2026, which assumed the expenditure of PLN 185 bn for the modernization of the armed forces.

[11] The EUR exchange rate as of 02.03.2020 announced by The NBP was PLN 4.33, the USD exchange rate was PLN 3.92.

Modernization expenditure devoted to the implementation of a program of combating threats at sea can reach PLN 859 mn (*Plan*, 2019). Due to the specific nature of the ships which are to be acquired to replenish the naval forces, we must refer to the past results of technical dialog conducted in response to the "Miecznik" programme. The displacement of these ships was at least 1900 tons, their range was 6000 nautical miles and their length was up to 100 m.

4. CONCLUSIONS

In the opinion of the author, the general awareness of the marine character of our country and its pursuit of overseas interests is insufficient with respect to the needs and Poland's true aspirations. A notion which has already been brought up a decade ago, Poland's marine interest have long been limited to the Baltic Sea. This translates into an incorrect and limited perception of the issues discussed in the article, and manifested by an ubiquitous reference to exaggerated "overseas" needs of the Polish Navy, fuelled by the desires of "naval seamen" in need of far-away voyages. We must also agree with the notion that the hopes to possess a fleet, even in the "blue water navy" edition, one that would be capable of representing the interest and creating the policy of the state overseas, which rose after Poland joined NATO, a maritime organization by assumption, manifested by the mere reference to the Atlantic in its name, were thwarted. It is the opinion of the author that, if radical measures are not taken, the current condition of the Polish Navy will suffer a technological collapse, whereby successive operational capacities, experienced personnel will be irretrievably lost, and the role of the Navy will be reduce to a policing formation capable of conducting fire targeting surface objects from land. The absence of stable financing of customized programmes responding to the actual needs of the Navy will lead to a situation where restoring its full capacity, even in conditions of a maritime boom, will be impossible due to the costs and time of building it anew. Operations conducted with the use of submarines are an excellent example here.

Another discernible aspect is the pursuit of diversification of supplies of fossil fuels of strategic importance to the state, and the need to become independent from partners taking advantage of the gas and oil market to exert pressure in bilateral relations, purposefully orchestrating international interests on global scale. Due to significant distances to sources of fossil fuel supplies, this diversification is carried out on seas and oceans. Considering the legal status of oceanic waters, they have become an ideal scene for creating threats and should be considered as a weak link in the supply chain. Active participation in the process of maintaining safety and order at sea as part of multinational naval groups can be a response to the need to protect offshore transport routes navigated by tankers. This cannot however be accomplished without a fleet equipped with corvettes and frigates, which serve to protect our territory from the sea and can be used as a tool for protecting the country's overseas interests, including to implement its energy security strategy.

Nevertheless, recent reports of the impending economic crisis resulting from the COVID-19 pandemic may critically affect the implementation of armaments programs. Plans to acquire new ships, therefore, may become the first victims of cuts in the modernization budget of the armed forces.

REFERENCES

DD-3.1(A) (2018). *Prowadzenie operacji przez Marynarkę Wojenną.* MON, CDiS SZ. Bydgoszcz.

Dura, M. (2019a). *Ile będą kosztowały fregaty dla Marynarki Wojennej RP?* [Opinia]. Defence 24 [Access: 16.05.2020]. Access on the internet: https://www.defence24.pl/ile-beda-kosztowaly-fregaty-dla-marynarki-wojennej-rp-opinia

—— (2019b). *Marynarka Wojenna RP 2019 – walka o przetrwanie* [Opinia]. Defence24 [Access 16.05.2020] Access on the internet: https://www.defence24.pl/marynarka-wojenna-rp-2019--walka-o-przetrwanie-opinia

Dzwonnik, M. (2019). *Tak będzie wyglądać Port Centralny w Gdańsku. Koszt budowy: 11 mld zł. „Gazeta Wyborcza Trójmiasto"* [Access 10.05.2020]. Access on the internet: https://trojmiasto.wyborcza.pl/trojmiasto/51,35612,24806981.html?i=0

Gaz-System: Koszt Baltic Pipe po stronie polskiej wyniesie około 874 mln euro (2017) [Access 10.05.2020]. Access on the internet: https://biznesalert.pl/gaz-system-koszt-baltic-pipe-stronie-polskiej-wyniesie-okolo-874-mln-euro/

Gaz-System: Koszt rozbudowy Terminala LNG to sto kilkadziesiąt mln zł (2017) [Access 10.05.2020]. Access on the internet: https://www.money.pl/gielda/wiadomosci/artykul/gaz-system-koszt-rozbudowy-terminala-lng-to,50,0,2376242.html

Grupa Lotos planuje przeznaczyć ok. 500 mln zł na inwestycje w wydobycie w 2020 r. (2020) [Access 10.04.2020]. Access on the internet: https://www.money.pl/gielda/grupa-lotos-planuje-przeznaczyc-ok-500-mln-zl-na-inwestycje-w-wydobycie-w-2020-6488143150917249a.html

Kiewlicz, R. (2019). *Naftoport: rekordowe przeładunki* [Access 10.03.2020]. Access on the internet: https://biznes.trojmiasto.pl/Naftoport-z-rekorodowymi-przeladunkami-n136113.html

Makowski, A. (2018). *Polska Marynarka Wojenna – sto lat i co dalej?*. *„Morze, Statki i Okręty",* Vol. 7–8.

McKinsey & Company; report: Development of offshore wind energy in Poland. Perspectives and assessment of impact on the local economy (2016) [Access 10.05.2020]. Access on the internet: https://www.mckinsey.com/pl/~/media/McKinsey/Locations/Europe%20and%20Middle%20East/Polska/Raporty/Rozwoj%20morskiej%20energetyki%20wiatrowej%20w%20Polsce/Developing%20offshore%20wind%20power%20in%20Poland%20-%20report%20in%20English.pdf

Mickiewicz, P. (2018). *Jaka Marynarka Wojenna jest potrzebna Polsce?*. *„Morze, Statki i Okręty"*, Vol. 9–10.

—— (2019). *Potrzeby szkoleniowe Marynarki Wojennej Rzeczypospolitej Polskiej w świetle przeobrażeń zagrożeń bezpieczeństwa i funkcji sił zbrojnych. „Bezpieczeństwo. Teoria i Praktyka"*, Vol. 3.

Miętkiewicz, R. (2019a). *„Sea gas" inclinations for the Polish energetic system safety. "Polityka Energetyczna – Energy Policy Journal",* Vol. Vl, 22, Issue 2.

—— (2019b). *Morskie farmy wiatrowe a bezpieczeństwo morskie państwa*. *„Sprawy Międzynarodowe",* Vol. 72/1.

Plan Modernizacji Technicznej do 2026 r. Wybrane zagadnienia (2019). MON Centrum Operacyjne.

Polityka Energetyczna Polski do 2040 r. (projekt) (2019). Warszawa: Ministerstwo Energii.

Polityka Morska Rzeczypospolitej Polskiej do roku 2020 (z perspektywą do 2030 roku) (2015). Międzyresortowy Zespół do spraw Polityki Morskiej Rzeczypospolitej Polskiej. Warszawa, s. 13–14, 18, 49–52 (Uchwała nr 33/2015 Rady Ministrów z dnia 17 marca 2015 r.).

Program rozwoju polskich portów morskich do 2030 roku (2019). Warszawa: Ministerstwo Gospodarki Morskiej i Żeglugi Śródlądowej.

Rączka, J. (2018). *Energetyka morska z wiatrem czy pod wiatr?. „Forum Energii, Analizy i Dialogi”.* Access on the internet: https://www.forum-energii.eu/pl/analizy/offshore

Roberts, R. (2018). *Will the Alliance discover navies again?* NATO Review [Access 10.02.2020]. Access on the internet:https://www.nato.int/docu/review/articles/2018/04/30/will-the-alliance-discover-navies-again/index.html

Rosyjski węgiel zalewa Polskę. Rekordowy import surowca (2019) [Access 10.05.2020]. Access on the internet: https://tvn24.pl/biznes/z-kraju/import-wegla-kamiennego-do-polski-dane-me-za-2018-rok-ra914780-4504959

Sawicki, B. (2019). *Lotos szuka podmiotu, który przeprowadzi studium wykonalności budowy terminalu LNG w Gdańsku* [Access 16.03.2020]. Access on the internet: https://biznesalert.pl/lotos-szuka-podmiotu-ktory-przeprowadzi-studium-wykonalnosci-budowy-terminala-lng-w-gdansku/.

Strategiczna Koncepcja Bezpieczeństwa Morskiego Rzeczypospolitej Polskiej (2017). BBN. Warszawa-Gdynia.

Szubrycht, T. (2011). *Bezpieczeństwo morskie państwa. Zarys problemu*. Gdynia: Akademia Marynarki Wojennej.

Szubrycht, T. (2018a). *Wybrane problemy zaangażowania polskich okrętów w działania stałych zespołów okrętów* (część I) [w:] Wilk-Woś, Z., Marjański, A., red. *„Bezpieczeństwo i zarządzanie kryzysowe. Wybrane problemy, Przedsiębiorczość i Zarządzanie”*, Vol. XIX/I, Part III. Łódź–Warszawa, Wydawnictwo Społecznej Akademii Nauk.

—— (2018b). *Wybrane problemy zaangażowania polskich okrętów w działania stałych zespołów okrętów* (część II) [w:] Wilk-Woś, Z., Marjański, A., red. *„Bezpieczeństwo i zarządzanie kryzysowe. Wybrane problemy, Przedsiębiorczość i Zarządzanie”*, Vol. XIX/I, Part III. Łódź–Warszawa: Wydawnictwo Społecznej Akademii Nauk.

Ustawa budżetowa na rok 2019 z dnia 16 stycznia 2019 roku (Dz.U. z 2019 r., poz. 198).

DOI: 10.7862/rz.2021.hss.34

The text was submitted to the editorial office: September 2020.
The text was accepted for publication: December 2021.