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**WIND ENERGY - A KEY
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IS POLAND THE OFFSHORE WIND ENERGY LEADER?

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THE POTENTIAL OF THE POLISH OFFSHORE

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HIGH-TECH INDUSTRY

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COAL FUELS RESULTS

XVI



Wind energy - a key pillar of the Polish mix

—How do you assess the preparation process for the implementation of the first offshore wind farm projects?

—After many years of preparation and obtaining the necessary permits, offshore wind farm projects are entering the implementation stage. An installation terminal and service bases are also under construction, and work at sea will begin soon. Polish offshore is gaining momentum, but it is certainly a multi-stage and comprehensive process. Electricity from the first Polish wind farm in the Baltic Sea will flow as early as in 2026. Such a dynamically developing renewable energy technology has never existed in Poland before. Poland can and should be a leader in the development of offshore wind in the Baltic Sea, because offshore wind energy will have a huge impact on the country's energy independence. As geopolitical tensions remain with us for a long time and security becomes fundamental, relying solely on "external market forces" is not only risky, but also uncertain.

—Are the dates declared by developers for putting the first farms into operation realistic (recently, the turn of 2026 and 2027 was mentioned)?

—It must be admitted that the current difficult geopolitical situation in Europe, as well as the ongoing war in Ukraine, are not conducive to the implementation of investments. Nevertheless, launching the first offshore wind farm at the turn of 2026 and 2027 is a very realistic goal. The projects are in an advanced stage of development and are being implemented, among others: investments in ports and investments related to the construction of transmission networks.

—Do you see any threats in implementing these investments? If so, what are they?

—There are several challenges. First of all, permitting procedures. Today, Poland is the last country in Europe in terms of the pace of implementation of the administrative process for offshore wind farms. We see a pressing need to speed up the process of issuing permits and decisions. Investors must also take into account the rising costs caused

by inflation and the war in Ukraine, which, in the case of such large and long-term projects, severely affects the final bill, as well as cope with unstable supply chains. Rising prices of materials and components are a serious problem and challenge in implementing investments. Polish offshore is one of the essential elements of the deep transformation of the energy system. The development of this sector will allow for a significant increase in renewable energy sources in the Polish energy mix and will guarantee the supply of clean energy to hundreds of thousands of households. However, in order to implement ambitious plans related to OWE, we need to verify the currently outlined potential and designated areas for investment - otherwise it may turn out that we will waste the opportunity to use the appropriate volume of offshore wind energy in Poland.

—Discussions are still ongoing about the real participation of local content in phase I projects. What do you think its level will be and what will it involve?

—The green transformation will not be successful without a strong industrial base and local supply chain. It is crucial that the beneficiaries of this process are our domestic enterprises. Companies forming the national supply chain have the potential to offer, for example, construction elements, such as wind towers, cables and underwater support structures. Local content will also be increased by offshore service ports—an example is the port in Łeba, which will be used to service an offshore wind farm for at least 30 years. To fully exploit the potential of Polish enterprises, urgent government support and decisive investment activities are needed. Although Polish enterprises have demonstrated the ability to compete globally in many industrial sectors, in the area of offshore wind energy we should fight for an increase in the number of new companies, more jobs, and high added value based on technology development. We welcome new investments in this sector with hope, but without a targeted policy we will not obtain the competences and experience, as well as financing and staff—necessary to compete on European and global markets,



Janusz Gajowiecki, head of Polish Wind Energy Association (PWEA) talks to Piotr Frankowski.

despite the huge potential. Currently, over 100 domestic entities have been identified that are involved in the supply chain for offshore wind energy, even more Polish entrepreneurs could participate in this market. Here I emphasize the need to include the maritime industry focused on offshore wind in the industrial policy of our country and to implement instruments supporting this sector. Poland is a country with a long maritime and shipbuilding tradition, we can support the development of the sector both in the production of structural elements or components for offshore wind farms, as well as specialized units for the foundation and servicing of offshore wind farms. Our service sector can also successfully participate in the development of Polish and European projects.

—When can the first phase 2 projects be launched? Can the participation of Polish companies in their implementation be higher than in the first phase?

—The sector agreement on offshore wind energy assumes that the level of local content in projects implemented in phase II

will increase to approximately 45-50 percent. We estimate that up to 300 Polish companies may participate in the supply chain of offshore wind farms. As mentioned above, some of them are already implementing contracts for the foreign offshore industry, others are just planning their debut on the market. The scale of involvement of Polish entities will increase as offshore projects develop in Poland, but as the experience of foreign markets shows, instead of striving to excessively maximize local content at the expense of investment development, it is worth fully exploiting the potential of international partnerships.

—As part of phases I and II, MEW with a capacity of 18 GW is to be built. However, the PWEA report from 2023 talks about the potential of our part of the Baltic Sea at the level of 33 GW. Is phase III, which can so significantly increase the possibility of using MEW, realistic?

—Taking into account the scale of planned investments in offshore wind farms, Poland has a chance to become one of the largest offshore centers in Europe. The Baltic Sea is a body of water with great potential. Most of the projects implemented today are in the North Sea, but the Baltic Sea is shallower and calmer, hence the great interest of investors and the ambitious plans of the countries of the Baltic Sea Region. The great interest of investors in the Polish OWE market clearly indicates that its further growth is not only desirable, but also impossible to stop. According to our analysis, we have 20 new areas with a total area of 2,171.5 km², including 18 in the exclusive economic zone and two in the territorial sea, which may be allocated for the development of OWFs. The potential of these areas is 17.7 GW, with the assumed energy production of 70.7 TWh.

—What could stand in the way of implementing these plans? What general problems is the entire offshore wind industry currently struggling with?

—With the dynamic increase in installed capacity in the European Union, significant investments in transmission infrastructure as well as auxiliary infrastructure—ships, ports, roads—are necessary. The industry also needs qualified employees with specialist knowledge who can cope with the specific nature of work at sea, e.g. wind turbine installers or service technicians. The permitting system is also a bottleneck for the development of offshore wind in Poland—failure to accelerate administrative procedures in the second and subsequent phases may result in the inability to achieve the ambitious goals of our energy policy.

—So what should be changed to speed up the entire investment process?

—Poland needs, above all, simple procedures that will unlock the potential of the renewable energy sources area. Efficient implementation of the provisions of the EU directive on facilitating investment in renewable energy sources is necessary, including RED III elements in terms of simplified procedures and repowering, but also greater predictability and faster issuing of permits. This will have a major impact on the speed of investment implementation. Today, the process of preparing an offshore investment takes 13 years (the first permits were issued in 2011). We should reduce it to 5 years or even less. We already have extensive experience and we know the weak points of Polish legal regulations. Today, PWEA is preparing legislative proposals that will have a positive impact on the process of preparation and implementation of these investments. Those in power will receive ready-made solutions and we very much hope that there will be the will to use them.

—Moving from sea to land. What does the onshore project market in Poland currently look like? And what are the prospects for its development?

—Onshore wind energy is growing quite quickly, thanks to large generating units with a capacity of over 10 GW, which dominate the Polish onshore industry. The development of onshore wind farms in Poland has a huge impact on GDP, the labor market and the situation of production plants. The implementation of subsequent projects will increase the activity of Polish enterprises operating in the supply chain. New onshore wind farms in the best development scenario will guarantee PLN 70-133 billion of GDP growth, PLN 490-935 million of additional revenues for local governments, approximately PLN 80 billion of orders for products and services in the supply chain and several dozen thousand new jobs in the perspective of 2030.

—Has the amendment to Act 10H revitalized the investment process or is the industry waiting for the next announced amendment?

—The industry is definitely waiting for an amendment to the Wind Farm Act and a change in the minimum distance between a wind farm and residential buildings to 500 m. After the latest announcement of the Ministry of Climate and Environmental Protection, we can count on this happening soon. This will make it possible to use the full potential of wind energy while maintaining broad sociopolitical consensus and

good practices. The 700 m limit had no substantive justification and additionally limited the areas available for further investments by 50 percent. The onshore wind energy market will be able to develop again and systematically increase its share in the energy mix, and what's more—on a much larger scale and pace than in the case of a distance of 700 m.

—What should generally be the share of wind energy in the Polish energy mix?

—Wind energy is and will be one of the key pillars of the Polish energy mix, and its place is on the podium. So far, according to the Polish Energy Policy, the planned power from wind turbines in 2030 was to be 14.5 GW. However, in the updated NECP document there is a provision stating the capacity of some 15.8 GW from onshore and approx. 5.9 GW from offshore wind. The government rightly noticed the need to adapt these assumptions to the current dynamics of development of the wind industry, and thanks to the introduction of a number of legal and regulatory changes, we could look into the future with much greater optimism. According to PWEA estimates, the wind energy capacity in 2030, when using its full potential, may amount to approximately 26.6 GW, and in 2040 it will be almost three times more—approximately 69 GW.

—Thank you for your interview.



Is Poland the offshore wind energy leader?

Poland can become a European leader in offshore wind energy development, making a significant contribution to the European Union's energy and climate goals. In addition, offshore wind energy can be an important element in building the country's independence and energy security. These are the conclusions of the report "Wind Energy in Poland," prepared by experts from the Polish Wind Energy Association, the consulting firm TPA Poland/Baker Tilly TPA and the law firm DWF.

Advancement of Phase I and II projects

By the end of 2023, Poland had 10 valid permits for the erection or use of artificial islands for the construction of offshore wind farms. The facilities, developed by Polenergia and Equinor, RWE, Orlen and Northland Power, PGE and Ørsted, and Ocean Winds, are to be built in these areas. The remaining 11 areas were in the procedure for granting permits for the erection or use of artificial islands, structures and facilities in the Exclusive Economic Zone as part of Phase II projects. Finally, in late September/early October last year, licenses were allocated for 10 areas with a total area of 1,000 square kilometers, giving development potential of more than 9 GW. PGE and Orlen each received five.

The potential for offshore wind energy development in the Baltic Sea has also been noticed by other foreign investors. Among those submitting applications, in addition to Ørsted, Equinor or RWE, were France's Total, the UK's Shell, Sweden's Eolus and OX2, Spain's Iberdrola, France's EDF Renewables, France's Engie, Portugal's EDP and the consortium of SSE Renewables and Acciona Energia. This means that the largest global players are entering the competition for Polish areas.

Rules of support

Much space in the report was devoted to issues related to administrative procedures for preparing offshore wind investments in Polish areas. Attention was drawn to the need to include them in the Spatial Development

Plan for Polish Maritime Areas, which came into force on May 22, 2021. Significantly, the SMP (Spatial Development Plan for Polish Maritime Areas) stipulates that the construction of OWFs is allowed only in areas with a primary function, defined as the production of renewable energy. However, this restriction does not include infrastructure for connecting OWFs to the National Electricity System. Currently, the maritime spatial plan designates seven water areas for renewable energy generation, while the OWF Law mentions 13 areas.

The timing and capacity in the auctions held for OWFs by the Energy Regulatory Office are also extremely important. Significantly, the dates for the auctions in the first period have been set top-down, as well as the maximum total installed capacity that can be granted the right to cover the negative balance. The auctions will be held in years:

- ▶ 2025: for the volume of installed electrical capacity up to 2.5 GW,

- ▶ 2027: for the volume of installed electrical capacity up to 2.5 GW, with the proviso that if the winning bids in 2025 do not exhaust the entire volume offered, the difference shall increase the volume offered in 2027.

- ▶ 2028: the auction will be held if the volume of capacity offered in 2027 is not used in full, and if the unused capacity volume is at least 500 MW.

It is also necessary to obtain a license to generate and feed electricity into the grid. Its acquisition is basically done under the same conditions as for onshore farms and other RES installations.

Supply chain and local content

In the OWE sector, the domestic supply chain is particularly sensitive to any change in economic conditions. According to the provisions of the sectoral agreement for



PHOTO: ØRSTED

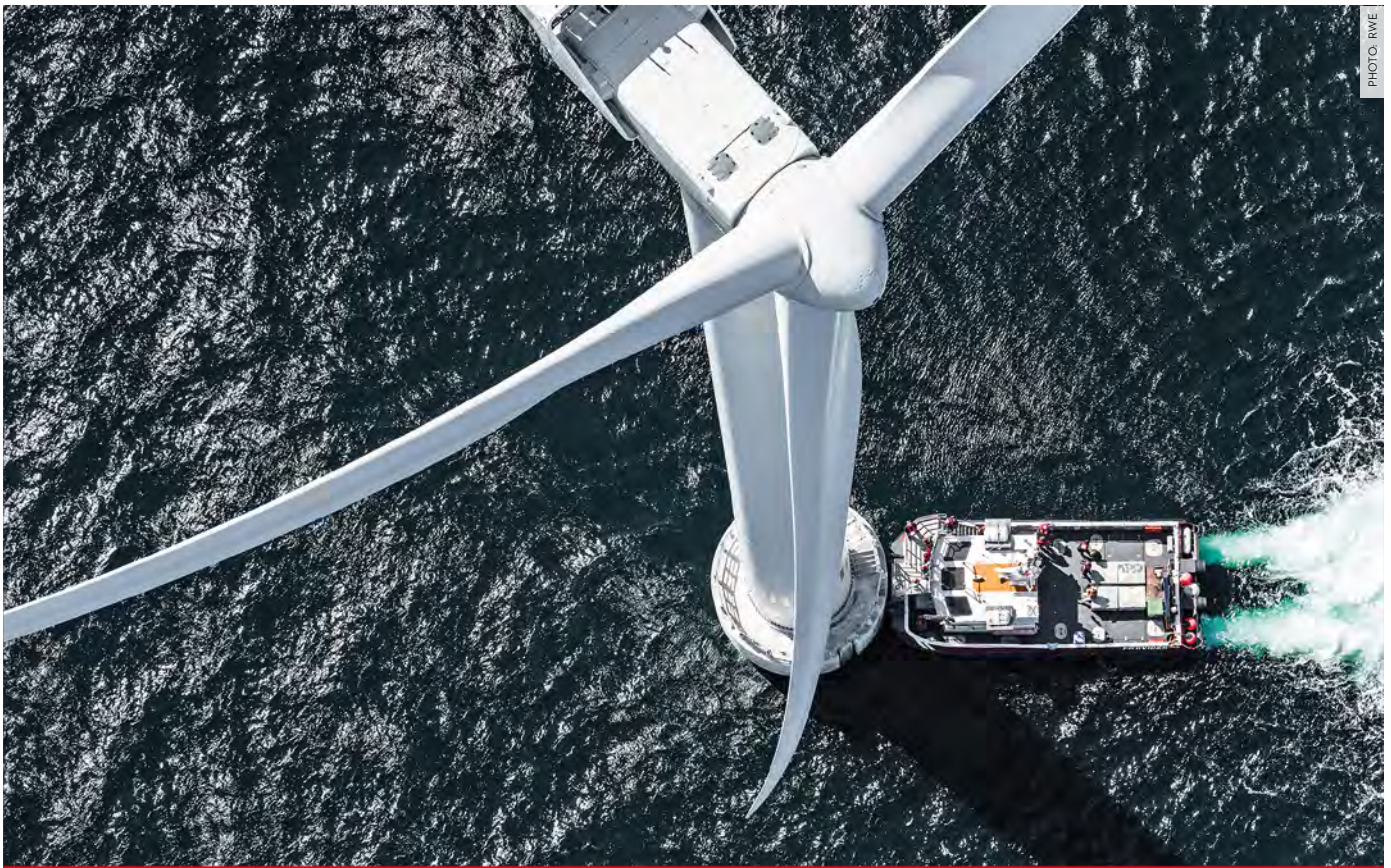


PHOTO: RWIE

the development of offshore wind energy in Poland, it is assumed that the so-called local content will reach 20-50 percent, depending on the stage of investment.

The authors themselves point out that these assumptions may prove to be too ambitious, as the industry is already reporting a deterioration—compared to 2 years ago—in its ability to secure a domestic share in the supply chain. Risks related to the availability of adequately trained workers, among others, are raised.

It is therefore worth examining global best practices as to the participation of local companies in the supply chain. As experience in foreign markets has shown, it is a mistake to try to over-maximize the domestic supply chain, as this is unworkable and consequently slows down investment. A much better solution is international partnerships. It requires less participation of local companies in the supply chain for investments made in their country, but instead allows them to participate in the supply for projects abroad. This, in turn, allows for more effective exchange and building of offshore experience in smaller local markets as well.

An example of unsuccessful implementation of local content is France, which in 2011 launched its first MEW bidding procedure. Development was very slow, and France made it a condition to work mainly with domestic players along the value chain.

In 2018, France was forced to break existing contracts and renegotiate lower tariffs. Hence, it is worth emphasizing that the optimal form of local content is not about cooperation with domestic players only, but about productive international cooperation, exchange of experience and subsequent replication of good practices both at home and in other markets.

There are currently more than 100 players in Poland that participate in the MEW supply chain, and even more Polish companies could participate in this market. Hence, enabling partnerships with experienced foreign players can be seen as one of the most important in delivering local content, but also as an opportunity to curb capital expenditures for new projects in Poland. Experience from mature markets shows that forming effective alliances with large foreign partners helps build a strong offshore wind sector, in a cost-optimal way and with the involvement of the domestic industry.

Barriers to investment

The report also devotes a lot of space to the problems that hinder the development of Polish OWE. It notes that the first localization permits were issued in 2012, but no investment has yet been made in Polish offshore areas. Lengthy administrative procedures mean that the completion of the first

investments is planned for 2025-2026, which is 13-14 years after obtaining localization permits. Thus, the development of this sector faces a number of legislative, administrative and infrastructural barriers.

Much attention has been paid to insufficient investments in electrical grids. According to information provided by Poland's power system manager, the development plan for meeting current and future electricity demand for 2023-2032 includes connection agreements for offshore wind farm projects with a total capacity of 8.4 GW, which includes all projects currently under construction under Phase I and Phase II. However, the planned investments are expected to enable a total of 10.9 GW to be connected from offshore wind farms by 2032 and power production from these sources to reach 40 TWh. Experts point to the insufficient pace of development of electricity grids, especially in the context of planned other energy investments (including in nuclear power plants, which are also to be built in the north of the country).

Coordinating the connection of OWFs to the National Power System (NPS) and the construction of offshore transmission grids will be an important element in the strategic development of OWFs in Poland. Cooperation of developers in connecting projects will reduce costs by avoiding radial connection. Foreign wind farms can



PHOTO: VESTAS

15.3 GW under Phase I and Phase II, with offshore wind productivity varying from area to area. The report also pointed out 20 new areas (including 18 in the exclusive economic zone and two in the territorial sea) that have the potential to be used for OWE development. The total area of development for OWE of the new sites identified in the document is 2171.5 square kilometers. However, these areas are not included in the spatial plan, so their possible use must involve consultation with all users of these areas. The installed capacity potential for the new areas identified by PWEA was estimated at 17.7 GW, and in terms of average annual productivity at 70.7 TWh.

As a result, the total actual potential of offshore wind power in Poland, according to the PWEA report, is 33 GW. Offshore wind farms of this capacity could produce about 130.3 TWh per year. These values are well above the current goals of

Poland's Energy Policy until 2040 from offshore wind farms (18 GW). If all of PWEA's estimated potential is used, offshore wind could meet up to 57 percent of Poland's total electricity demand. Additionally, assuming an annual production of 130 TWh, the decrease in CO₂ emissions could be as much as some 102 million per year. These investments could also generate more than 100,000 jobs and 178 billion PLN of gross value added in the development phase, and 46 billion PLN per year in the operational phase. Given the scale of the planned investments in OWE and its actual potential, Poland has a chance to become one of the largest offshore centers in Europe.

In addition, it is estimated that by 2050 about 2 percent of the electricity produced from renewable sources is expected to come from floating wind farms. The use of these solutions will increase flexibility in site selection, including the ability to choose areas with higher wind speeds, located in bodies of water with greater depth and farther from shore, and with less social and environmental impact. The European Commission expects 150 MW of floating offshore wind turbines to be operational in Europe by 2024. Poland also has potential for floating wind power. In PWEA's report, of the 20 new offshore areas identified, the use of floating foundations was assumed for six sites. The total power that could be realized in these areas is 9.6 GW, which is more than 50 percent of the total potential of these areas.

Compiled by PETE

serve as an example, where great emphasis is placed on planning offshore grid development and coordinating project connection. Currently in Poland, the responsibility for connecting a OWF to the NPS lies with the investor, which means limited influence of the transmission grid operator on the final shape of the connection and the possibility of creating synergies with other investments. This also results in an increase in the risk of the investment, and an increase in the cost of the projects themselves associated with the need to construct separate connections.

The document also highlights the lack of port infrastructure for the construction and servicing of OWFs. Each of the Phase I investors plans to build their own service base: Ocean Winds in Władysławowo, RWE and PGE in Ustka, Polenergia and Equinor and Baltic Power in Łeba. Decisions have also been made to build an installation terminal in Świnoujście, which will be used for the Baltic Power's project. It is expected to be ready by the end of 2025.

The authors of the report noted the frequent changes in plans for the installation terminal. Initially, a decision was made to build it in the Port of Gdynia (announced in 2021 in a resolution of Poland's Council of Ministers). Then, at the beginning of 2022, the location was changed to the Port of Gdańsk, but due to the lack of visible activities aimed at the construction, the authors of the documents doubt its construction on the specified date (June 1, 2025).

Then come the problems with the installation and maintenance fleet. A report

by WindEurope and PWEA indicates that the world will run out of installation vessels for offshore wind farm foundations (FIV) starting in 2024, and a year later, problems with the availability of installation vessels for offshore turbines (WTIV) will begin. A projected shortage of installation ships by 2027 could cause delays in the implementation of about 3 GW of new capacity, and after 2027, as much as 36.7 GW. The report indicates that the anticipated problems after 2027 can be prevented if decisions on fabrication of new vessels are made early enough. Their design and production time is 3-4 years, which means that they will not be able to appear on the market until 2026 at the earliest. In addition, those currently in operation may not be technologically capable of handling the installation of the largest wind turbines (+15 MW).

One of the most significant risk factors for OWF investment, though, is the uncertainty of future energy prices. It affects the prices that can be offered by developers in auctions in Phase II.

The future of offshore wind energy in Poland

In 2022, a consortium of the Gdynia Maritime University's Maritime Institute, Ramboll and KP Consulting, commissioned by PWEA, calculated the actual potential of Polish offshore areas for offshore wind energy production (the report "Offshore Wind Energy Potential in Poland"). The results of the analysis showed it to be

The potential of the Polish offshore

According to expert estimates, the installed capacity of wind turbines in Baltic waters is expected to reach up to 93 GW by 2050. With the increasing use of renewable energy sources (RES), there is growing interest in the potential of wind energy in the Baltic Sea. This creates opportunities for Poland. The country's investment in offshore wind power will not only help reduce harmful emissions, but may also enable the development of the RES and offshore wind industry. Poland wants to install at least 18 GW of capacity by 2040, as part of Phase I and Phase II projects. By comparison, the total capacity of domestic power plants is more than 40 GW. Its development will be helped by the growing involvement of both domestic companies (including Enea, PKN Orlen, PGE Baltica, Polenergia and Tauron) and foreign players (such

as Ørsted, Equinor, RWE and Vattenfall). In turn, the report "Offshore Wind Energy Potential in Poland", prepared by the Polish Wind Energy Association, shows that an additional 15 GW can be achieved under Phase III, while the total offshore wind power capacity in the Polish Baltic areas could reach 33 GW.

Polish offshore companies, which have many years of experience in implementing projects in both the oil & gas and wind power sectors, hope to participate as much as possible in the implementation of these projects in terms of local content.

Pomeranian leader

Especially since they have the potential and know-how to participate in offshore wind projects in the Baltic Sea. They have gained

experience by working with major energy companies, operating in both offshore wind and oil & gas.

In the spring of this year, Mostostal Pomerania has completed work on another project for the offshore industry. The delivered elements will be used for three gas fields located in the northern part of the Norwegian Sea. The structures were built as part of the Skarv Satellites Project (SSP) and were ordered by Aker Solutions for Aker BP. Each weighs about 300 t, and the project was carried out over 11 months. The scope of the contract included prefabrication of three sets of structures with manholes, prefabrication and installation of pipelines, corrosion protection and compliance testing.

Last June, in turn, Mostostal Pomerania signed the largest contract in its history. The contract with Aker Solutions is worth more



PHOTO: ØRSTED

than PLN100 million. The structures that the Polish company will make will be delivered to the Aker BP-managed Yggdrasil oil and gas production area in the Norwegian North Sea. The entire field will be remotely controlled from an onshore integrated operations center and control room in Stavanger. Mostostal Pomerania's scope of work includes process platform sections, which include prefabrication and assembly of steel modules, installation of support infrastructure and corrosion protection. The contract started in late 2023 and will take 18 months to complete.

In addition, the company is constructing five subsea templates, which will be installed at the bottom of the Norwegian Sea as part of offshore gas development. In addition, seven more such structures will be produced.

Another project is the construction of secondary steel structures for an offshore wind farm. Mostostal has already handed over the last of the 97 boat landings produced, while in June work began on another order for another 87 sets of this type. These are auxiliary structures that will allow access from the ship to the turbines installed at sea. At the same time, the company is to build support structures for a new heavy lift vessel, which will eventually transport mono-

pile foundation components to the offshore installation site.

In general, over the past 3 years the company has completed a number of orders from the offshore wind sector, both for offshore transformer stations and secondary steel components. For the next 2 years, Mostostal's production capacity is reserved for the manufacture of steel structures for the subsea and oil & gas industries, both those installed on the seabed and mining platform modules.

Opportunity for the factory

On the other hand, the future of the ST³ Offshore wind tower foundation plant in Szczecin has been clarified. The plant was purchased for more than PLN170 million by Denmark's Vestas, one of the world's largest manufacturers of wind power components, including turbines. ST³ Offshore has 205,500 sqm of space and a fleet of machinery, including the tallest gantry crane in Europe (120 m high, 1,400 t lifting capacity) for the final assembly of foundations. Its bankruptcy was declared in March 2020. In addition, Vestas will build a new factory in Szczecin to assemble blades for wind turbines. The plant is expected to open in 2026.

In addition, the Spanish company Windar is building its tower and foundation factory in Szczecin, on the port grounds. Work will begin this fall, and the first elements will be produced in 2026, with an investment value of EUR70 million.

Crist Offshore, a subsidiary of Crist Shipyard, is also making its mark on the offshore market. It works with Norwegian contractors, mainly in the oil & gas sector, including Aker BP. The contract, worth PLN90 million, is for the production and assembly of topside components for the Yggdrasil oil and gas production area in the North Sea. Crist will be responsible for a number of modules of the Fusion A platform. The scope of delivery includes the production of components of various weights, from 250 t to 400 t, equipped with support structures for pipelines and passive fire protection.

In addition, the company continues to actively participate in tenders in the O&G sector and in competitions for the supply of complete transformer stations under the EPC (Engineering, Procurement and Construction) formula, and is currently in the final phase of one of them. The company has so far delivered 12,000 t of offshore structures such as top side, subsea and structures for offshore operations.



PHOTO: MOSTOSTAL POMERANIA

Substation section handling

Power of the group

In turn, the Industrial Development Agency and Baltic Industrial Group, together with Spanish company GRI Renewable Industries, which supplies components for the offshore and onshore industry, have started construction of a tower factory for offshore wind farms. It is being built on Ostrów Island in Gdańsk and is expected to be operational in mid-2025. The investment will include the construction of an offshore tower production hall for the largest planned offshore wind turbines of more than 14 MW, and the state-of-the-art production facility, designed and built to Industry 4.0 standards, will have a production capacity capable of manufacturing more than 120 towers per year. The estimated value of the investment is about PLN450 million.

In addition, GP Baltic has manufactured two substations that will be installed at the Ocean Wind 1 wind farm off the coast of New Jersey. The power plant will have a capacity of 1100 MW. Each of the substations is 42 m long, 34 m wide and 22.5 high with a weight reaching 1150 t. In addition, in early October it signed a contract to build two offshore substations for Poland's first wind farm in the Baltic, Baltic Power, with a total weight of 2,600 t.

GP Baltic was established by the Industrial Development Agency in 2020. Its portfolio included Gdansk Shipyard, GSG Towers, Baltic Operator and Energomontaż Północ Gdynia. The group assumed that it would focus on winning contracts in the offshore wind energy sector, and has so far completed orders for steel components, including substations and support structures for Kaskasi, Arkadis Os, Borkum and Vineyard farms, among others. GPB, along with several other Polish offshore and shipbuilding companies, has also signed a letter of intent expressing its readiness to cooperate and develop the offshore wind energy sector in Poland.

The group also includes Energomontaż-Północ Gdynia, which has been struggling. Baltic Industrial Group, together with the management of EPG and Baltic Operator, is implementing a recovery program for EPG. The group is a specialist in the construction of offshore transformer



PHOTO: GRI RENEWABLES

stations for offshore elevators. In agreement with a British partner, ODE intends to participate in one of the offshore wind projects in the southern waters of the Baltic Sea. The design of the transformer station to be erected there was developed in cooperation with a group of companies from Poland and Western Europe, and includes its design, construction and installation.

In turn, the Gdansk-based Protea company built an offshore crane, which sailed to the BorWin5 HVAC platform off the German coast in late April. The structure was ordered by Dragados, while Tennet is responsible for the overall construction. In addition, the company will supply two cranes with folding booms for the transformer station of the Baltic Power offshore wind farm being built by Orlen Neptun. The machines, which have a lifting capacity of 6 t with a reach of 28 m, will play a key role in transporting cargo from vessels to the platform, working with CTVs (crew transfer vessels) and SOVs (supply offshore vessels). The units will be delivered to CS Wind, the contractor responsible for supplying the traffic for the Baltic Power farm.

Shipyards' expectations

Polish shipyards are also awaiting orders from the offshore wind sector. As their representatives emphasize, they have all the necessary competence to build both jackup installation vessels, as well as supply

vessels, cable-layers and service vessels. The Crist shipyard from Gdynia has a series of jackups built for the German construction concern Hochtief.

The Polish Register of Shipping's report "Installation Fleet Operator. Potential of the Polish Offshore Industry for Offshore Wind Farms" points to a possible global bottleneck in the installation fleet. By 2025, there will be only 11 jackup vessels available worldwide, capable of installing turbines of more than 10 MW, which are also to be installed on Polish wind farms. According to plans for wind power investment in Europe and the world, these projects will overlap, which will make access to installation vessels even more difficult and increase demand for their services.

On the other hand, companies such as PŻB Offshore and Lotos Petrobaltic, interested in managing a fleet of CTVs or SOVs (Service Operation Vessel) vessels, are considering ordering new vessels of this type from Polish shipyards. They are to complement the tonnage to be acquired from the market as well. Recently, even Lotos Petrobaltic has signed a contract with design bureau Seatech Engineering for the design of a CTV unit, and PŻB Offshore has established cooperation with Dutch service fleet operator SeaZip Offshore Services. Decisions on the construction of jackup units for Polish operators are not yet available.

PETE



High-tech industry

—The European shipbuilding industry is now a shadow of its former power. Back in the early 1980s, our continent's share of shipbuilding production expressed in CGT units was 45 percent, and today it is about 6 percent. China, unlike the EU, has recognized the shipbuilding industry as strategic to achieving its goal of maritime dominance as a means to world domination,—says **Ireneusz Karaśkiewicz**, director of the office of the The associations of Polish Maritime Industries FORUM OKRĘTOWE..

In recent decades, China has generously supported its shipbuilding industry with subsidies, surrounded it with protectionist barriers and provided access to financing on very favorable terms. The current production capacity of Chinese shipyards is now 10 times greater than the combined production capacity of EU and US shipyards. The EU therefore faced a dramatic choice: either develop and implement a strategy for the shipbuilding industry, treating it as a particularly important sector for our common security, or lose the remnants of the shipbuilding market to China with disastrous consequences in the future.

As a result, in the spring of this year, the SEA Europe association presented in the European Parliament in Brussels the assumptions and recommendations for the forthcoming EU maritime industrial strategy. The authors set a goal of building as many as 10,000 offshore and inland waterway vessels in Europe by 2035. The means to achieve this are to include facilitating financing for the construction or conversion of ships, creating a system of incentives for European shipowners to commission the construction or conversion of ships in European shipyards and introducing the “Made in Europe” criterion in public tenders for certain types of vessels (including ferries, patrol vessels, research vessels, platforms).

He also points out that the shipbuilding industry has divided into two groups of shipyards: large ones that build huge container ships or LNG carriers, and medium-sized or smaller shipyards. In the first case, almost 100 percent of global production is concentrated in 10 shipyard groups located in Asia. There has been a significant recovery in this assortment, and Asian shipyards are the only

beneficiaries. In contrast, smaller and medium-sized shipyards continue to face recession and overcapacity.

For the sake of the environment

The specialty of Polish shipyards, as far as finished vessels are concerned, are ships using modern and environmentally friendly propulsion technologies, which have already become a hallmark of our shipbuilding sector. The latest challenge in this regard is the construction at Remontowa Shiprepair Yard held by Remontowa Holding of a series of two ro-pax ferries (with an option for four) with LNG propulsion, for the company Polskie Promy, whose shareholders are the State Treasury and Polsteam. The first of these, which will sail in the colors of Unity Line, was launched in late October last year. The contract for the construction of the vessels was signed on November 26, 2021, and production of the first one began in late October 2022. As stated by I. Karaśkiewicz, this is one of the largest orders of a series of passenger ferries of this size by European ship-



PHOTO: CRIST

Double-ended hybrid ferry for FinFerries

yards, which in recent years have been almost exclusively located in China. The ferries being built at GSR will be 195.6 m long, 31.6 m wide and have a ro-ro lane length of 4100 m. They will be powered by four dual-fuel LNG engines with hybrid assistance. Instead of conventional propellers, each ferry will be equipped with two azimuth thrusters at the stern and two thrusters at the bow to improve maneuvering in ports. The first ferry is expected to enter service in late 2024/early 2025. Remontowa Holding has experience in building LNG-powered ferries. Indeed, it has built four such vessels (at Remontowa Shipbuilding) for Canadian shipowner British Columbia Ferries, which is reportedly considering returning to the shipyard with another order.

In addition, Remontowa Shipbuilding, as of May this year, is building a hybrid-powered passenger-car ferry for one of Norway's largest shipping companies, Torghatten Nord AS. The Gdańsk-based

company will build the fully-equipped vessel to navigate the Norwegian fjords. The unit will operate the Stornes-Bjørnerå connection. The vessel will be 63.65 m long and 15.50 m wide. It will take on board 149 people and 50 cars or six trucks. It will be equipped with two azimuth thrusters with vertically mounted electric motors powered by batteries or emergency generators. In normal operation, the batteries will be recharged from the shore network during unloading/loading. This will occur relatively frequently, as a single pass of the vessel will take no more than 12 minutes. The ferry will be delivered to the shipowner in the first quarter of 2026. The Gdańsk shipyard built 8 ferries for Torghatten Nord, including four LNG-powered ones, between 2011 and 2013.

On the other hand, Partner Stocznia of Police, together with Neptune Shipyards, was honored with the prestigious Ship of the Year award, which was given last November in Rotterdam. Recognition in the eyes of the jury went to the *Canopée* vessel, as "a revolutionary design of a twin-engine ro-ro powered by wind energy." The vessel's hull was built by Partner Stocznia and launched in Szczecin, while the Dutch shipyard Neptune was already responsible for its completion and outfitting. The vessel entered service last August and sails under the colors of the French company Alizés, a joint venture between Jifmar Offshore Services and Zéphyr & Borée. It is an open ro-ro ship, carrying parts and fuel for Ariane rockets from

France to French Guiana. It is 121 m long, 22 m wide and reaches a speed of 16.5 kn. The innovative hull shape, supported by four Oceanwings sails, reduces fuel consumption by 18 percent, thus reducing CO₂ emissions.

Specialist and unusual

Polish shipyards also focus on the production of specialized vessels and non-standard floating structures. Thus, at the end of last year, the Crist shipyard left the multi-purpose pontoon (MPP) with a submersible backfill tool (SDT) under construction for the FLC (Fehmarn Link Contractors) consortium, responsible for the construction of the caisson submersible tunnel, which is part of the undersea tunnel in the Fehmarn Belt Strait, intended to connect Puttgarden in Germany and Rødbyhavn on the island of Lolland in Denmark. Construction began in June this year. The entire route will be 18 km long. The MPP's hull is 130.2 m long, and including the transmission belts it is 149 m, and 48 m wide.

In addition, a multi-purpose NB100 vessel is being built at the shipyard, also under contract with FLC, which will be used to transport tunnel elements to the foundation site. It will be equipped with generator sets, a system of winches and elevators, a hydraulic system and a range of other specialized equipment necessary for such a large and unusual project.

Crist Shipyard is also building three vessels for Ulstein Verft to service wind farms.

PHOTO: REMONTOWA MARINE DESIGN AND CONSULTING



Ro-pax ferry visualization

The construction service operation vessels (CSOVs) will be completed in Norway and will go to shipowner Olympic. They will be used to transport personnel, cargo, fuel, water, spare parts and other general cargo. They will be 89.6 m long, 19.2 m wide, have 91 cabins and will accommodate a maximum of 126 passengers. Hybrid battery propulsion and methanol fuel will make it an emission-free vessel. The hull shape, based on Ulstein Twin X-Stern technology, will provide fuel economy, maneuverability, speed and stability. Cooperation between the shipyards, in this regard, began in 2013, and so far 16 projects have already been completed.

In addition, Crist is building, also on behalf of Ulstein Verft, a partially equipped CLV (cable lay vessel) with a DP3-class dynamic positioning system for Nexans. The

vessel, designed by Skipsteknisk, is an updated version of the *Nexans Aurora*, a vessel handed over by Ulstein Shipyard to shipowner Nexans in 2021, which, as a partially equipped vessel, was also built at Crist Shipyard. The vessel, under construction in Gdynia, is designed to transport and lay various types of submarine cables, including cable harnesses, as well as to take them up from the seabed and repair them. It will be equipped with a rotating spool (known as a carousel) that can hold up to 10,000 t of cable, a cable spool with a capacity of 3,500 t below deck, and a fiber-optic cable basket with a capacity of 450 t. The vessel will be 31 m wide, 149.9 m long and accommodate a crew of 90.

Crist shipyard is also building large cruise ship blocks for the Finnish shipyard Meyer Turku. The scope of work includes the con-

struction of a fully equipped 94×48×15 m floating block for deck 3 of the third *Icon*-class vessel. The weight of the block itself is about 5200 t, and the weight of the equipment is additional 2500 t. Major components include two LNG tanks. The handover of the block is scheduled for fall this year. *Icon*-class vessels are the largest cruise ships in the world. They are being built to order by Royal Caribbean International.

Tugs and trawlers

Among the hulls built in Polish shipyards, fishing vessels and tugboats account for a significant portion. Thus, for example, the Safe shipyard regularly builds hulls and fully-equipped tugboats to the order of, among others, the Damen group. For this client, this Gdańsk based yard has already

PHOTO: MON



built ca. 60 vessels, including *Shoalbuster* tugs (such as the *Shoalbuster 2711* and *Shoalbuster 2711 ICE*). The *Shoalbuster 2711* is one of the most popular models of multipurpose work vessels with a shallow draft. It is characterized by a sizable working deck on which a deck crane can operate, allowing vessels of this type to perform a variety of roles and perform well in many working environments. The tug is 27.02 m long and 10.5 m wide, with a draft of about 3 m. Its bollard pull is 40 t.

The market is also served by Karsensens Shipyard Poland, a subsidiary of the Danish company, which currently operates in Gdańsk. At the end of this year, another fishing vessel NB 477 was launched there, which is being built for the Norwegian company Havfisk, a subsidiary of Veibust Fiskeriselskap. The ves-

sel is 75.10 m long and 16.20 m wide. It is distinguished by a fully watertight cargo deck, as well as a sweep deck, raised by one level from the standards of this type of ship. In this way, the freeboard has been increased, which is expected to contribute to safer work on board. The ship will now go to Karsten's shipyard in Denmark for completion. Meanwhile, in March of this year, the shipyard launched the fishing vessel NB 476 Høgaberg for a Faroese shipowner.

For the military and administration

Polish shipyards are also carrying out projects for the Navy and maritime administration, and not only Polish ones. At the end of January this year, construction began on

the first frigate for the MW, which is being built under the *Miecznik* program. It will be the *ORP Wicher* ship. According to the plan, the three modern ships will be built at the PGZ Naval Shipyard in Gdynia, in cooperation with arms industry leaders such as Babcock, MBDA, Thales and Remontowa Shipbuilding. The first frigate will enter service by 2026. A hull hall and a production hall have been built at PGZ SW for this project.

Remontowa Shipbuilding, meanwhile, is focusing on the construction of three more *Kormoran* II-type mine destroyers. The contract for their production was signed at the end of July last year, while the laying of the keel of the 4th ship, which will be named *ORP Jaskółka*, took place at the end of November last year, and in March this year the keel was laid for the 5th ship, named *ORP Rybitwa*. The newly-built ships will be improved based on the operational experience of earlier versions, will have more powerful armaments and will be equipped with better sensors and naval robots, as well as an upgraded integrated combat system. They will enter service in 2026-2027 and will be part of the 12th minesweeper squadron of the 8th Coastal Defense Flotilla in Świnoujście, forming part of the Navy's mine defense system. The construction of the ships is supervised by a consortium consisting of: Remontowa Shipbuilding, the Research and Development Center of the Marine Technology Center and PGZ Naval Shipyard.

The Gdańsk-located shipyard is also building two SIGINT (signal intelligence) ships of the *Delfin* class. The first will be named *ORP Jerzy Różycki*, and the second *ORP Henryk Zygałski*, in honor of the outstanding mathematicians who contributed to breaking the German Enigma code. Their construction was commissioned to the shipyard by the Swedish company Saab Kockums AB, which signed a contract with the Armament Agency in 2022 for the design, construction, delivery and logistical support of these vessels. The SIGINT-type radio reconnaissance ships are used to support intelligence acquisition.

Meanwhile, Baltic Operator began, last December, the construction of offshore patrol vessels (OPVs) for Meyer Turku and Finnish Border Guard. The scope of the commissioned work includes the production of two partially equipped hulls, 98 m long, 17.6 m wide. The vessels will operate in waters along Finland's 4,600 km coastline. They are to be equipped with a 12 MW main propulsion system. The first vessel is expected to be ready in 2025, and the second in 2026.

PIF



Coal fuels results

In 2023, Poland's major seaports (Gdańsk, Gdynia, Szczecin, Świnoujście and Police) achieved a record result by handling a total of more than 146 million t of cargo. This result was due to a significant increase in the volume of liquid fuels at the Gdańsk's port, as well as a jump in grains throughput. At the same time, declines in other cargo groups were already recorded last year. This was particularly evident in the second half of 2023 (70.1 million t), which represented a reversal of the upward trend observed since 2020.

Unfortunately, the first half of 2024 ended with another decline. Despite the fact that traffic of liquid fuels, general cargo and grains grew again, drops in other groups resulted in a 10.9-percent decrease in volume. This translated into a total of 67.96 million t. The main reason for this was radically

declining coal volumes. In the first half of 2023, it was 14.30 million t, while now it is only 4.45 million t. These declines basically affected all ports, so the global market share structure did not change significantly. The Port of Gdańsk is still dominant, and despite losing 0.7 p.p. of its share, it is now responsible for handling 56.1 percent of cargo traffic. Indeed, it is responsible for 79 percent of liquid fuel handling and 73.3 percent of coal traffic. The second position with a share of 23.4 percent is taken by the ports of Szczecin and Świnoujście, which suffered a slight decline in shares (0.2 p.p.). Gdynia, on the other hand, was gaining. An increase of 0.8 p.p. translated into a market share of 20.2 percent. The Port of Police recorded a systematic reduction in the volume of cargo handled in recent years, the culmination of which was in the first half of 2023, when

only 150,000 t were handled there. The second half of 2023 was already better because 578,000 t was handled. The current result (215,000 t) marks a renewed decline, although not as deep as last year. Consequently, Police gained 0.3 percent of the market share. It is worth mentioning that in the past, Police's annual throughput exceeded 2 million t.

The indicated changes were reflected in the cargo structure, where two groups with similar shares now dominate—general cargo (40.2 percent) and liquid fuels (37.5 percent). Changes in the volume of coal handled result in the following positions: grains (8.8 percent), coal (6.6 percent) and other bulk (5.9 percent). It is worth mentioning that a year earlier, coal handling accounted for nearly 19 percent of total throughput at Polish ports. Low volumes of ores and lum-



PHOTO: ZNPIS

ber handling result in their market shares hovering around 0.5 percent.

Port of Gdańsk

The Port of Gdansk ended in the first half of 2024 with a result of 38.1 million t (12.1 percent less). However, it was the result of multidirectional changes in individual cargo groups. As mentioned, the liquid fuels group gained the most (1.77 million t up), with a total of 20.1 million t handled (9.6 percent compared to the first half of 2023). This is, of course, a historic record, especially important because it is related to exceeding the 20 million t level. It can be said that prior to 2009, the total traffic of the Port of Gdańsk rarely and slightly exceeded this level. Today, such a large volume of liquid fuels is due to the import needs of the domestic and German fuel sector, which previously relied on crude shipped via pipeline from Russia. Thus, the strategic importance of ports in ensuring the supply of oil and other energy resources to the country's socioeconomic system should be emphasized. Cargo handling of general cargo increased by nearly 500,000 t to 26.2 million t (4.5 percent up). Significant contributions were made here by increases in container handling, where 1.07 million TEU was handled in Gdańsk in the first half of 2024. This represents an increase of 7.9 percent compared to the first half 2023, and a return to over 1 million TEU levels. Grains were also on the rise. In the first half of this year, it was 1.51 million t (10.3 percent up). On the downward side, other cargo groups remain, with the biggest impact of coal throughput. The nearly 70 percent drop

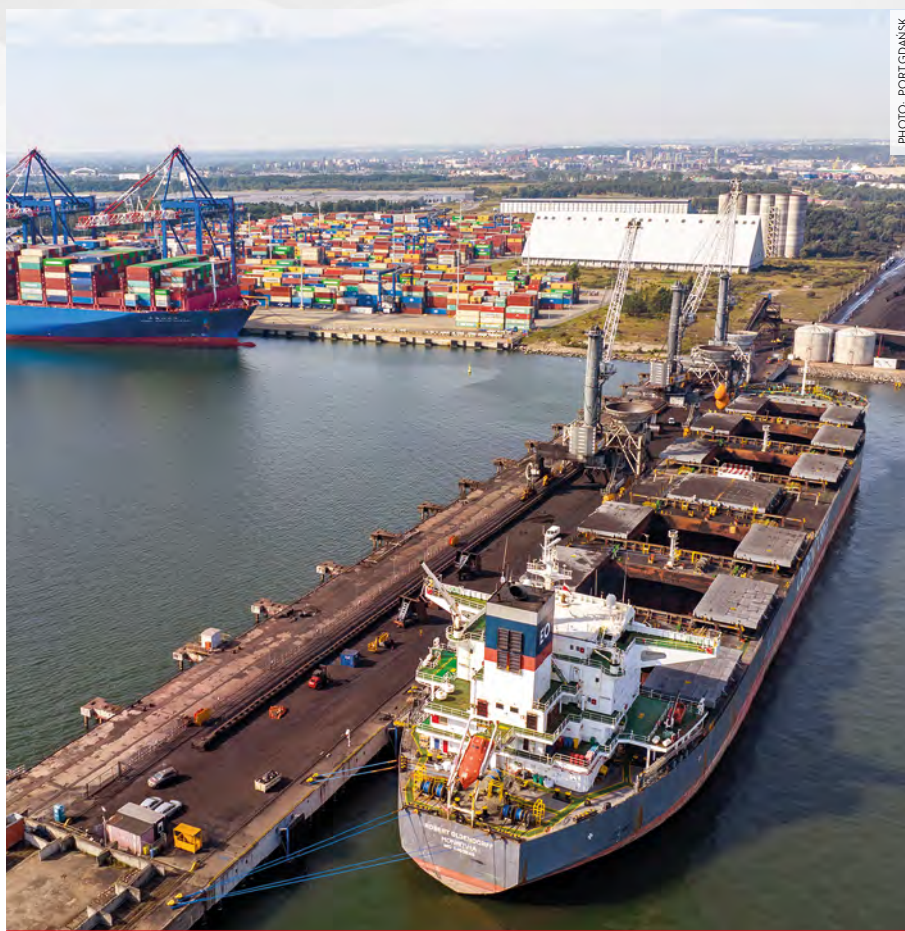


PHOTO: PORT GDAŃSK

resulted in the disappearance of as much as 7.3 million t in this port. Of the 10 million t, just over 3 million t remained. The relative decline was equally high for lumber and ores, 68.5 percent and 64 percent respectively, making a total loss of only 180,000 t. In the case of other bulk cargoes, the relative

decline of 10.9 percent translated into a volume of 1.53 million t (186,000 t down). The result of the described changes was a significant modification of the structure of throughput, in which liquid fuels became the leading (54 percent), significantly ahead of general cargoes (30 percent). This result was com-

THROUGHPUT IN MAJOR SEAPORTS IN 2023 AND 2024 FOR JANUARY THROUGH JUNE (THOUSAND T)

Port	Year	Coal	Ores	Other bulk	Grains	Lumber	General cargo	Liquid fuels	Total
Gdańsk	2023	10,545.4	146.9	1,714.3	1,369.3	124.5	11,092.0	18,348.6	43,341.0
	2024	3,277.0	52.6	1,527.9	1,510.6	39.3	11,587.1	20,117.7	38,112.3
	2024/23	31.1%	35.8%	89.1%	110.3%	31.5%	104.5%	109.6%	87.9%
Gdynia	2023	1,904.6	0.0	510.5	3,285.0	113.3	7,231.6	1,738.2	14,783.2
	2024	553.4	0.0	490.2	3,311.4	57.6	7,706.6	1,593.1	13,712.3
	2024/23	29.1%	-	96.0%	100.8%	50.8%	106.6%	91.7%	92.8%
Szczecin - Świnoujście	2023	1,845.7	549.8	1,891.0	1,244.2	94.6	8,235.6	4,178.3	18,039.2
	2024	618.1	372.8	1,766.8	1,179.4	171.3	8,049.9	3,765.2	15,923.5
	2024/23	33.5%	67.8%	93.4%	94.8%	181.1%	97.7%	90.1%	88.3%
Police	2023	7.6	20.4	122.1	0.0	0.0	0.0	0.0	150.1
	2024	22.2	0.0	192.1	0.0	0.0	0.312	0.0	214.6
	2024/23	291.6%	0.0%	157.3%	-	-	0.0%	-	142.9%
Total:	2023	14,303.3	717.1	4,237.9	5,898.5	332.4	26,559.2	24,265.1	76,313.5
	2024	4,470.6	425.4	3,977.0	6,001.4	268.2	27,344.0	25,476.0	67,962.6
	2024/23	31.3%	59.3%	93.8%	101.7%	80.7%	103.0%	105.0%	89.1%

pounded by declines in coal, in the total it lost as much as 15 p.p. being now only 9 percent, and, of course, the described increases in the handling of fuels. Other bulk cargoes and grains account for another 4 percent share each.

Ports of Szczecin and Świnoujście

The result of 15.92 million t in the first half of 2024 was achieved by the ports of Szczecin and Świnoujście. In this case, the recorded traffic decline was 11.7 percent, which in absolute terms can be translated into 2.16 million t. In the ports of Western Pomerania, declines affected basically all cargo groups, only lumber with an increase of 77,000 t was up to 171,400 t (81.2 percent more). As in Gdańsk, one of the main factors here was coal traffic. A decrease of 64.5 percent translated into a loss of 1.23 million t of this cargo, resulting in total coal handling of 0.62 million t. The second cargo group recording relatively large drops was liquid fuels. In this case, a 9.9-percent decline meant a throughput of 3.77 million t. There was a relatively small decline in general cargo (2.3 percent less), which finalized at 8.05 million t (185,000 t less). On the other hand, a large 32.2-percent loss for ores translated into a 177,000 t traffic reduction. Relatively small drops affected further cargo groups, such as other bulk (6.6 percent less) and grains (5.2 percent less). All in all, the port handled 1.77 million t of other bulk cargoes and 1.18 million t of grains in the first half of the year. The indicated changes resulted in an adjustment of the port's cargo structure. The significant reduction in the handling of coal, and the consequent drop in its share in the structure by 6.3 p.p. to 3.9 percent, contributed to growth in other areas. Thus, despite the traffic declines, general cargo (50.6 percent) strengthened

in the leading position, gaining 4.9 p.p. Liquid fuels (23.6 percent), other bulk cargoes (11.1 percent), grains (7.4 percent) and lumber (1.1 percent) recorded half a percentage point increases in their shares. Ore, down 0.6 p.p., retained a 2.3-percent share of West Pomeranian ports' throughput.

Port of Gdynia

The smallest loss in throughput among Polish ports was recorded by Gdynia. A 1 million t decrease in traffic meant a 7.2-percent drop, and resulted in 13.71 million t in the first half of the year. Here, similarly to other ports, the factor determining the final result was a nearly 71-percent drop in coal throughput. A reduction in the stream of 1.35 million t meant handling only 553,000 t of this raw material. Liquid fuels, lumber and other bulk cargoes were also negatively affected. In the case of fuels, an 8.3-percent decrease translated into 1.59 million t going through. Relative changes for lumber are significantly higher (49.2 percent down), although they represent a volume reduction of 56,000 t. As a result, lumber traffic in the first half of the year amounted to 50,800 t. An even smaller level of change was observed in other bulk, where a 4-percent decrease meant a reduction of just over 20,000 t. Finally, traffic in this group amounted to 490,000 t. The cargo group that contributed to the reduction in losses was general cargo. An increase of 6.6 percent was recorded here, which yielded an additional 500,000 t. As a result, traffic reached 7.71 million t in the first half of the year. The positive change was mainly due to an improvement in the container handling market, where a 10.0-percent increase was observed compared to the first half of last year. A small 0.8-percent increase in throughput was also recorded in grains handling. In this case, an additional 26,000 t

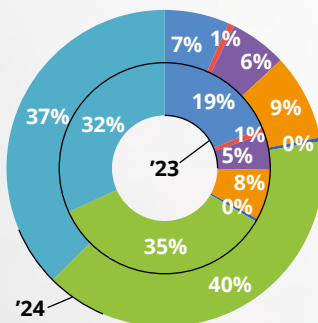
helped bring the total to 3.31 million t. The presented changes, both negative and positive, shaped the structure of throughput in Gdynia in which general cargo is the clear leader. What's more, a 7.3 p.p. increase means as much as 56.2 percent of total port throughput. A positive 2 p.p. change was also seen in grains, which now determines 24.1 percent of the total. There was a 0.1 p.p. increase in the share of other bulk cargoes (3.6 percent) and a decrease in the share of liquid fuels (11.6 percent). Of course, as a result of the shifts presented, coal lost some share. From last year's 12.9 percent, only 4 percent remained.

Port of Police

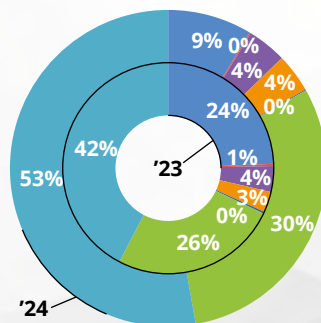
The Port of Police is still struggling to rebuild cargo traffic. After a very difficult first half of 2023 and a throughput increase in the second part of the year, it is again recording low traffic. The first half of the year ended with 215,000 t handled. Referring to the January-June 2023 period, it can be pointed out that gains were recorded in the handling of other bulk cargoes, which totaled 192,000 t. In this case, the increase was 57.3 percent, although this is mainly due to very low cargo traffic a year earlier. Interestingly, Police also gained in the area of coal handling (191.6 percent up). However, this growth was achieved at a very low absolute level, with throughput of only 22,000 t. The third and final group handled at the port was steel structures. Their total weight reached 312 t. The indicated data show the structure of traffic, with other bulk cargoes accounting for 89.5 percent of the total throughput.

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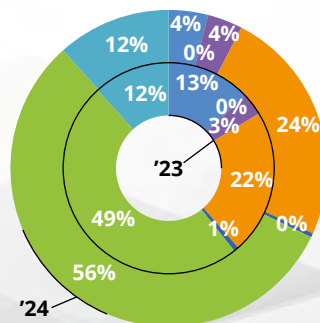
CARGO GROUPS SHARES IN POLISH SEAPORTS TRAFFIC IN JANUARY-JUNE OF 2023 AND 2024



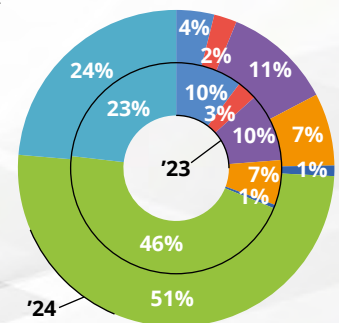
CARGO GROUPS SHARES IN PORT OF GDAŃSK IN JANUARY-JUNE OF 2023 AND 2024



CARGO GROUPS SHARES IN PORT OF GDYNIA IN JANUARY-JUNE OF 2023 AND 2024



CARGO GROUPS SHARES IN PORTS OF SZCZECIN AND ŚWINOUJŚCIE IN JANUARY-JUNE OF 2023 AND 2024



■ coal ■ ores ■ other bulk ■ grains ■ lumber ■ general cargo ■ liquid fuels

With moderate optimism

Container terminals ended the first half of 2024 with 1.556 million TEU handled, a 7.7-percent increase over the same period last year. Thus, it can be said with an abundance of caution that the market made up for the loss of 2023 and equaled the level of handling in 2022, when 1.585 million TEU were handled in the first half of the year.

The first quarter of the year was marked by pronounced volume fluctuations. After relatively low January results, terminals reported record results in February, only to score declines again in March and April. In the second quarter, however, there was a clear upward trend, with the total number of units handled rising from 241,000 TEU in April to more than 277,000 TEU handled in June.

If we consider the terminals excluding the Baltic Hub, the increase in the half-year was primarily due to increased import traffic. Containers accepted at storage yards were almost 23 percent more than in the first half of 2023. Such a change seems impressive, but at this point it should be added that in the first half of 2023 the same indicator fell by a similar amount (24 percent) compared to 2022. Thus, comparing the halves of 2022 and 2024, we are still talking about a 5-percent adjustment in throughput. Noteworthy, the increase was stimulated primarily by imports (22 percent) while exports basically remained at a similar level.

Of the terminals surveyed, the largest increase over last year was recorded by OT Port Gdynia, where handling increased by 28 percent over 2023 and by 10 percent over 2022, respectively. At the other end of the list was DB Port Szczecin. The terminal's score of 35,000 TEU handled represents a decline of 7 percent against last year and an equalization of throughput levels against 2022.

Gdansk's Baltic Hub recorded similar dynamics of change. Throughput of 1.071 million TEU marks a 7-percent change for the largest terminal compared to last year. Thus, the terminal approached the level of throughput from the first half of 2022. The investments underway at the terminal therefore seem justified. In addition to the already advanced construction of the T3 terminal, Baltic Hub in July announced a tender for the expansion of storage yards within the T2 quay. The T2D project is to cover an area of 6.5 hectares inland, along Kontenerowa Street.

BCT, on the other hand, handled 267,000 TEU in the first half of the year, slightly over 4 percent more than last year. However, it was about 15,000 TEU short of equaling the level of throughput 2 years ago. Interestingly, BCT increased the volume of containers received by 1/3, while exports fell by 10 percent. This primarily reflects the weaker position of Polish exporters, dictated by the global economic situation, the strengthening zloty and rising production costs. On the other hand, the rapid growth of imports at BCT indicates geographic diversification of purchases, as direct services calling at the terminal connect Gdynia with the Middle East, the Indian Peninsula, or the US.

Neighboring GCT ended the half-year with nearly 18,000 TEU handled, recording a 20 percent increase over last year. This is a noteworthy result, given that the second half of 2023 and the beginning of 2024 were turbulent times for the terminal. The departure of a major customer, the shipowner CMA CGM, the handling of Mærsk Line vessels and the launch of the short sea ser-

vice of the shipowner Ellerman brought positive effects to the handling statistics. Slightly higher dynamics were recorded in the area of exports (23 percent), while imports increased by less than 18 percent. It is also worth noting that the GCT terminal was least affected by the throughput fluctuations occurring in the first quarter of the year.

OT Port Gdynia, in addition to having the highest growth rate relative to 2023, was the only one to also show growth relative to 2022. The smallest of the analyzed terminals also based its growth on import traffic, which increased by 44 percent against 2023. Export traffic increased slightly less, by 8 percent at the terminal. In addition, among export units, the number of empty pieces increased, with a decrease in cargo pieces, further evidence of the ongoing weakness in the Polish export sector. Besides, growing imports at the OT Port terminal only confirms the geographic changes in the purchasing area and the drive to implement near shoring strategies among importers. The theory is also confirmed by the development of ferry and short-distance services. As an example, let's





PHOTO: BALTIC HUB

It can therefore be assumed with great reserve that 2024 will be a time for the market to make up for last year's declines in throughput. The recovery recorded in the second quarter of the year, as well as the Polish Economic Institute's forecasts of an increase in consumption relative to last year of about 3 percent, as well as the expected increase in investment, associated with the release of National Recovery Plan funds, seem to further confirm the aforementioned thesis. Also, if the trend is maintained, at the end of the year we can expect results significantly higher than those projected globally by UNCTAD/UN, which further allows for moderate optimism in the outlook for the second half of 2024.

Summer upswing

The summer months apparently favor the container boom in the Baltic. In June, the surveyed terminals handled a total of 277,400 TEU, nearly 10,000 more units than in the previous month. This is also more than 8 percent higher than last June, and more than 10 percent higher than in June 2022. Admittedly, the Port of Gdynia ended June with a result of 80,100 TEU, thus recording a decrease in throughput by 3 percent compared to the previous month, but this is a result giving as much as a 36-percent increase compared to June last year.

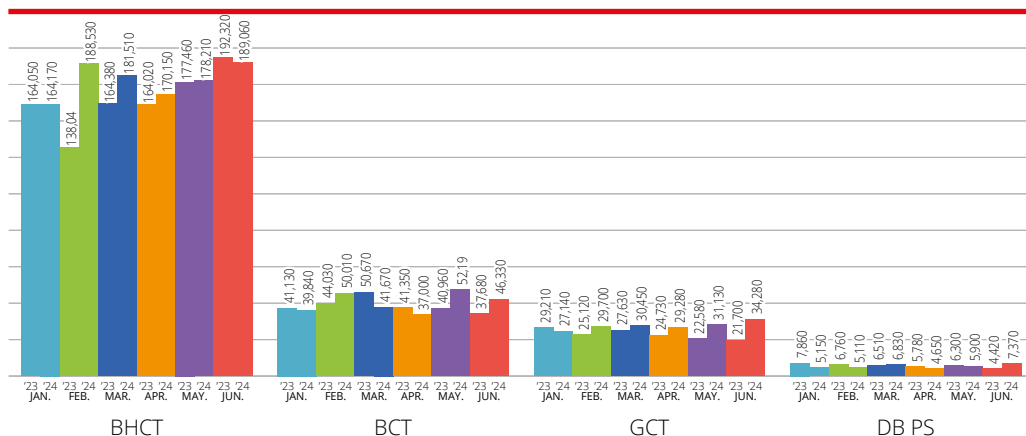
The container traffic decline in Gdynia is mainly due to the weaker result of BCT. The 46,300 TEU handled in June translates into an 11-percent adjustment against last month. However, it should be noted that in May BCT boasted one of the highest monthly throughput results. It is therefore not surprising that June's result is still 1/5 higher than in the same month last year. Relative to the previous month, BCT handled more export units (12 percent up), both empty and loaded units, unfortunately losing

take the ro-ro service from Sweden's Soderstalje, launched in May and calling at the OT terminal 3 times a week.

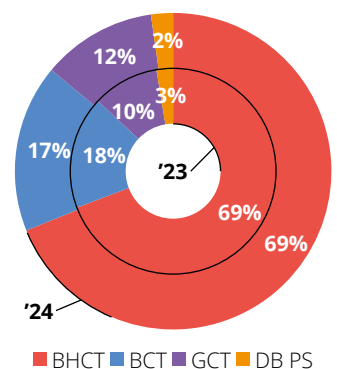
DB Port Szczecin handled 35,000 TEU in the period under review, and hence was the only terminal to record a decline in throughput. In doing so, it showed a trend completely opposite to that of the Tricity terminals. After an increase in 2023 throughput to 37,600 TEU, it returned to the 2022 traffic level. In Szczecin also, in contrast to the Tri-

City terminals, the trade statistics are fairly evenly distributed. For exports, the decline was 8 percent, while imports shrank by 6 percent. At the same time, information from the market allows us to look quite optimistically at the second half of the year. According to information from the operator P&O Ferrymasters, Szczecin will enjoy a connection to Swedish Helsingborg, which will undoubtedly contribute to an increase in throughput at the DB terminal.

CONTAINER TRAFFIC IN FOUR MAJOR SEAPORT TERMINALS IN THE FIRST HALF OF 2023 AND 2024 (TEU)



TERMINALS' SHARES IN TOTAL THROUGHPUT IN THE FIRST HALF OF 2023 AND 2024



THROUGHPUT IN SEAPORT CONTAINER TERMINALS IN THE FIRST HALVES OF 2022, 2023 AND 2024

Terminal*	Year	20'	40'	Import - pcs		Export - pcs		Total pcs	Import TEU	Export TEU	Total TEU
				Empty	Full	Empty	Full				
Baltic Hub	2022	146,304	376,441	33,583	237,722	75,240	176,200	522,745	566,577	506,756	1,073,333
	2023	188,436	405,915	35,055	285,723	90,783	182,791	594,352	537,267	462,995	1,000,262
	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,071,633
	2023/2022	128.8%	107.8%	104.4%	120.2%	120.7%	103.7%	113.7%	94.8%	91.4%	93.2%
	2024/2023	-	-	-	-	-	-	-	-	-	-
BCT	2022	49,863	116,569	22,550	50,494	12,794	80,594	166,432	121,831	161,170	283,001
	2023	52,551	101,634	10,674	39,972	36,124	67,415	154,185	84,538	171,281	255,819
	2024	62,654	102,189	3,445	66,509	32,542	62,347	164,843	112,665	154,367	267,032
	2023/2022	105.4%	87.2%	47.3%	79.2%	282.4%	83.6%	92.6%	69.4%	106.3%	90.4%
	2024/2023	119.2%	100.5%	32.3%	166.4%	90.1%	92.5%	106.9%	133.3%	90.1%	104.4%
GCT	2022	24,787	84,001	10,712	41,348	6,660	50,070	108,790	90,681	102,110	192,791
	2023	19,951	65,515	10,805	30,339	6,012	38,310	85,466	72,253	78,726	150,979
	2024	22,316	79,837	13,196	34,849	9,562	44,546	102,153	85,159	96,820	181,979
	2023/2022	80.5%	78.0%	100.9%	73.4%	90.3%	76.5%	78.6%	79.7%	77.1%	78.3%
	2024/2023	111.9%	121.9%	122.1%	114.9%	159.0%	116.3%	119.5%	117.9%	123.0%	120.5%
DB PS	2022	3,764	14,278	5,579	3,102	1,835	7,326	18,042	17,283	17,795	35,078
	2023	5,390	14,686	6,014	4,189	2,560	7,313	20,076	19,116	18,497	37,613
	2024	4,908	11,631	4,805	4,914	2,101	6,924	18,744	18,000	17,010	35,010
	2023/2022	143.2%	102.9%	107.8%	135.0%	139.5%	99.8%	111.3%	110.6%	103.9%	107.2%
	2024/2023	91.1%	79.2%	79.9%	117.3%	82.1%	94.7%	93.4%	94.2%	92.0%	93.1%
OT PGd.	2022	923	8	39	558	213	121	931	602	337	939
	2023	752	29	87	346	201	147	781	451	359	810
	2024	878	81	110	512	202	135	959	650	390	1,040
	2023/2022	81.5%	362.5%	223.1%	62.0%	94.4%	121.5%	83.9%	74.9%	106.5%	86.3%
	2024/2023	116.8%	279.3%	126.4%	148.0%	100.5%	91.8%	122.8%	144.1%	108.6%	128.4%
Total TEU	2022	225,641	591,297	72,463	333,224	96,742	314,311	816,940	796,974	788,168	1,585,142
	2023	267,080	587,779	62,635	360,569	135,680	295,976	854,860	713,625	731,858	1,445,483
	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,556,694
	2023/2022	118.4%	99.4%	86.4%	108.2%	140.2%	94.2%	104.6%	89.5%	92.9%	91.2%
	2024/2023	-	-	-	-	-	-	-	-	-	-

* BCT - Baltic Container Terminal Gdynia; GCT - Gdynia Container Terminal/Hutchison Ports Gdynia; OT PGd. - OT Port Gdynia; DB PS - DB Port Szczecin; Note: The sum of the data from the previous months may change as some terminals sometimes make some adjustments to their previous results. Source: Data comes from individual terminals (collected and compiled by the author).

more than 1/3 of its import volume. In turn, BCT's import volume increased by as much as 40 percent compared to June last year, while exports increased by 14 percent in the same period.

GCT ended June with 34,200 TEU. This represents a 10-percent increase over the previous month and more than half of the June 2023 figure. June saw higher import activity relative to May (15 percent). On the other hand, compared to last June, export container traffic had a greater increase, where the change was as high as 67 percent. It is worth noting, however, that the dynamics of change in export traffic largely involved the handling of empty pieces (149 percent up and 255 percent up), while in imports, the change in handled empty pieces (28 percent up) was more pronounced compared to last month, with a 76-percent increase in full pieces compared to June 2023.

The smallest of the Gdynia terminals handled nearly 350 TEU in June, an absolute re-

cord result for OT Port Gdynia. The increase was mainly due to imports (250 percent on a monthly basis), both empty (144 percent on a monthly basis) and full pieces (226 percent on a monthly basis). Much smaller increases occurred in exports, here the percentage stopped at a 6 percent increase over last month, being, however, a result nearly 60 percent better than last year. It seems, therefore, that the Lakeway Link service from Sodertalje, Sweden, inaugurated in May, may have had a positive impact on the terminal's performance in container handling as well.

Baltic Hub also recorded increases. The Gdańsk located terminal handled just over 189,000 TEU in June, 10,800 TEU more than in the previous month. Thus, it achieved a slightly weaker result compared to the same period last year, when more than 192,000 units were handled.

The positive rate of change in throughput also persists at DB Port Szczecin. The re-

sult of 7,373 TEU is the best since January 2023, and for the Szczecin terminal it represents an increase of 1/4 month to month and 67 percent over last year. The increase is mainly behind the 57 percent month to month higher level of export traffic with a slight increase in import traffic. The increase in exports, as at GCT, is particularly evident in the handling of empty pieces (197 percent up), with an increase in loaded pieces of just over a third. There was relatively little change in import containers, which were received in loaded condition by 7 percent more than in May, with only a 1.5 percent decrease in the receipt of empty pieces.

The second quarter of 2024 can be counted with a high degree of certainty as a successful one for Polish container terminals. Overall, it was a period of stable growth in the following months, which allows us to look optimistically at the second half of 2024.

JAKUB JANKIEWICZ

Is the Green Deal doomed to success?

Let's answer the questions that bother many: is Europe's decarbonization policy viable? Can alternative energy sources replace fossil fuels? When? What are the chances of this happening? And why are people protesting against this policy?

The European Commission, while announcing the Green Deal in 2019, scared us by claiming that "climate change is an existential threat to Europe and the world." I would agree in part with this claim. Indeed, in my opinion, "fighting climate change is an existential threat to Europe."

Technologies? Of course!

The answer to the question of whether decarbonizing Europe is feasible is simple. Of course, it is possible. We can achieve the net-zero ideal that Brussels is pursuing. At least when it comes to technology. Let's take a look at what it will take for us to contribute to saving our precious planet.

First, we need to limit our energy sources to wind and solar. And today we're already heading down that path, the vast majority of

new electricity sources in recent years have been these two resources: solar (photovoltaics and collectors) and wind (onshore and offshore wind farms). Other sources are either marginal (geothermal, hydropower, wave and tidal) or for some reason are not accepted by decision-makers, such as renewable energy (like biomass, biofuels or methanol).

The paradox is nuclear energy. It is a source of zero-carbon energy (the closest to such, because no source achieves the ideal), which is being fought and blocked in Brussels (and elsewhere). Officially, it is claimed that uranium is a fossil fuel after all, but realistically it is a type of energy that is untenable for private investors. First, the risks of possible catastrophe must be assumed by the state, but more importantly, the financial model of the atom is unbearable in today's model of financial markets.

Second, electrification, that is, the conversion of all existing energy sources to a single carrier—electricity. And more importantly, the elimination by this of virtually all chemical energy, which today we obtain through

combustion reactions of the element with atomic number 6 and its compounds. This compound inevitably combines with the element with atomic number 8, and hence all the misery of mankind.

Can alternative energy sources replace them? Of course, all that is needed is the right amount of resources, on the one hand, and on the other hand, bans on the operation of either coal mines and coal-fired power plants or cars with internal combustion engines. This mix of measures is effective. It will eliminate any competition.

There is also the problem of heat. And this in our latitudes is half of human needs, not to mention the industry. But heat pumps can be used to heat homes. However, they have their disadvantages, because at low temperatures their efficiency decreases, and at very low temperatures they simply turn into an electric heater. Their main disadvantage, though, is their dependence on electricity.

But here, too, technologies are hinting at a solution: energy storage facilities, mainly chemical ones. Their technologies have reached unparalleled performance against what they were just a few years ago. The primary driver of their development is the hard promotion (subsidization) of electric cars in the West and China. This has significantly improved their performance, efficiency and reduced costs.

The lack of high thermal performance of the new sources was and still is an obstacle to bringing the Green Revolution to the industry. But this is where hydrogen comes to the rescue. The technologies of heavy industry (e.g., steel) can be switched to this carrier. Hydrogen obtained, of course, in a climatically inert way, that is, not by the steam reforming process that now dominates it (99% of today's yield), but from unstable and intermittent sources, for which hydrogen in moments of peak generation can serve as energy storage.

On the technology side, all is well. Professor **Steven Chu**, a scientist and Nobel laureate who served as U.S. Secretary of Energy, argued that a few technological breakthroughs are missing for the success of



PHOTO: FREEPIK

“clean energy.” And, as we know, such are unpredictable, impossible to plan for, although they bring with them vast new opportunities.

Economics says: it is expensive

As you can see, there is a technological remedy for all the ills of new energy. It would seem that we are dealing with a new economic cycle in energy, which is so efficient that it pushes the old technologies and the competition using them, dating back to the previous economic cycle, out of the market.

This is not quite the case. The fundamental problem lies in the fact that new technologies, new sources of energy, are so economically uncompetitive that all their growth is introduced under duress. This is because new energy is prohibitively expensive in relation to functioning solutions, based on the burning of coal, fuels, gas, and therefore by physical necessity—emitting CO₂. And also based on atom smashing reactions.

Of course, the nightmarish untruth is the widely proclaimed claim that these sources are “available completely free of charge and can be used almost anywhere”. In order to use them, a large amount of capital is needed, and significantly more has to be invested in them than in burning coal or gas.

What is being offered to us today as a transformation is the replacement of products that are good, efficient and accessible to all with products that are inferior in quality, inefficient (heat) and expensive, and therefore inaccessible to a large part of the population. It is this weak point that is propped up by an ideology according to which we are supposed to sacrifice ourselves, reduce our needs, change our habits. All in the name of climate saving Planet Earth.

Societies protest

Why do societies not want such a transformation? Because they are supposed to tighten their belts, to give up the standard of living they have already enjoyed for decades. After all, what is at stake in the priority tasks set for Europe by Brussels?

First, we are to eliminate existing sources. Good—we are closing mines, eliminating coal-fired power generation. Second, we are to replace them with other sources. You know, solar panels and wind turbines on land and at sea. But third (and most important for societies), we are to reduce energy consumption, reduce needs and change habits. For Europe, a very rich continent after all, the energy transition means precisely a reduction in living standards. And the EU is not kidding, we are dealing with the first ever official, going from the top, decreed “turn-

ing off the energy tap” for the residents and economy of the Old Continent.

A year ago, the Energy Efficiency Directive came into force, determining the further development of energy in the EU. Or rather “coil”, as the sector is to shrink, the needs of users and the economy are to decline. In 2030, as set by the Brussels central planner, Europe is to consume 763 million t of oil equivalent (toe). And this is a legally binding indicator. Is it a lot or a little? Comparing it to 2021, it's a lot, because then we consumed 968 million toe, so we're supposed to shrink in energy by 205 million toe. That is, we are to reduce our needs by 22 percent. A very ambitious approach in belt-tightening: two energy economies the size of Poland are to disappear from the landscape in a few years.

Europe is already leaning energy-wise, having been reducing energy demand for years. Final energy consumption has been reduced by 7 percent since 2005, with an average annual reduction of 0.4 percent in recent years. Now Europe is facing a sharp deceleration in consumption, as we apply the handbrake and apply seven times more braking power over the next few years, annually to be 2.6 percent less. Interestingly, this is exactly how much the EU's final energy consumption decreased in 2022. This was the time of a massive energy crisis, a 13 percent reduction in natural gas consumption, the shutdown of fertilizer production, industrial recession. In planning such an energy brake, Brussels assumed an annual crisis comparable to the year the war broke out in Ukraine. Also, it turned out that the best way to regulate access to a good is not by rationing, but by raising the price. This was proven in 2022, when financial markets pushed energy prices skyward.

In general, energy is expected to be expensive. The idea of subjecting fuels to very high taxes in Europe, which no other continent is planning, is repeated. The same structure is already in place for other energy sources. Electricity (for the population) has been burdened to such an extent that there are more taxes in the price structure today than in the fuel price structure.

And this is just the beginning. Soon (2026) the CBAM (climate duty system) will start to operate, that is, the real burdening of energy-intensive industries with ETS (CO₂ emission fees), thus reducing it. The extension of the ETS to buildings and transportation will further burden portfolios, reduce housing availability and fuel consumption. Significant financial burdens will come with the new building directive.

The European public is not interested in whether in almost 100 years the air temperature will be 2 degrees higher or only 1.5. If to achieve this noble but very enig-

matic goal may live much worse, a protest is born. It is worth noting that the initial narrative sounded different: the Green Deal is the road to prosperity. As recently as five years ago, the EC was proclaiming the Green Deal as a way to “grow the economy, improve health and quality of life, “promising” a prosperous society, a competitive economy and new jobs”. Today, once this utopia is realized, a grim narrative of sacrifice, reduced consumption, lower living standards and adjustment to a “scarcity economy” emerges. All in the name of saving the planet.

Brussels head on

Yes, decarbonization is possible. Technologies make it possible. Europe today is the global leader in this race. Only the reward for first place is bitter, because very high are the costs that have to be paid, and so crucial are the values and interests that have to be sacrificed in the name of this. If our continent is decarbonized, it will be a very different continent. Brussels is betting everything on the very risky scenario of the full victory of the climate industrial revolution. It has adopted a very ambitious program, one could say: extremely difficult. It has taken it as a point of honor to be a climate pioneer.

The price for this role in the energy transition school is also a loss of global relevance. Until recently, the world's richest region is now increasingly giving way to America. And the Chinese are straightforward about what's at stake in this game: “Climate neutrality is not some sort of signing and fulfilling of agreements. It is something much more important, a new round of global industrial competition”. This “new round” is taking place without Europe, for which we will come to pay dearly.

Furthermore, it is worth noting that Europe is already dependent on China not only in raw materials for new technologies, but already in the technologies themselves. It is buying photovoltaic installations in China in large numbers. The EC wants 750 GW of solar installations in 2030 (up from 260 GW today). So it's forcing photovoltaics and subsidizing them generously. Only, 97% of the installations are imports from China. So you can clearly see that Brussels' priority is saving the climate, not European industry.

Continuing this policy, Europe will consume much less energy, emit less CO₂, but also produce less, live worse, as the best jobs will flee Europe along with capital seeking better investment conditions. I would not wish Europe such a scenario.

ANDRZEJ SZCZĘŚNIAK



PHOTO: FREEPIK

Virtual world's real security

—Cybercriminals are winning. Large companies rarely fall victim to hacking attacks. Small and medium-sized companies, on the other hand, become easy targets because they fail to implement adequate security solutions,—states **Brian Foremny**, head of SECNAP Network Security.

His words are particularly pertinent in the context of the increasing activities of cybercriminals. And they have room to grow. According to “The Blue Report” by cyber security firm PICUS, the effectiveness of security measures used in the TSL industry is 65%, meaning that for every three attacks, two are successful. In the first half of 2023, analysts of this company diagnosed more than 10,000 unique exploits, i.e. programs aimed at exploiting existing software flaws, that’s 68% more compared to 5 years ago. In addition, analysis by Veeam specialists shows that 83% of CEE companies have experienced ransomware attacks, namely attacks that encrypt data

and extort ransom. It is estimated that the total amount of damage caused by ransomware worldwide was 2021. USD20 billion, up from USD325 million in 2015.

They are already here!

Valery Tsiupa, senior consultant corporate affairs Information Systems Security Partners Holdings Inc., Kyiv branch, points out that the cumulative financial losses due to cybercrime are increasing year after year, and this is evidence that cybersecurity threats are becoming increasingly important. This is a consequence of the digital transformation and the continuous adaptation of its activities to the digital environment, not only by business, but also by society on a global scale. Hence, cyber security is now becoming one of the key factors for business stability, ensuring the security of society and national security of states. The new category of “widespread

cybercrime and cybersecurity” was listed as one of the top 10 global risks in the World Economic Forum’s Global Risks Report 2023.

Although current global annual spending on cyber security is around USD150 billion, and will reach USD265 billion by 2031, malware creators are constantly creating new generations of solutions that are increasingly difficult to detect. This forces cyber security vendors to stay ahead of threats. Also in the broader maritime and transportation sector.

—In 2021, a major Japanese shipping company experienced two attacks in the same year. It took 10 days to stop and restore operations. In June of the same year, a South Korean shipping company was hacked. A few months later, a large container shipping company lost all of its customers’ data. In November 2021, shipping companies in Singapore and Greece lost confidential information, including their customers’ proprietary data. We don’t fully know whether state-sponsored groups trying to steal govern-

ment secrets and attack critical infrastructure or organized crime trying to make money were behind it. However, these were critical incidents,— says **Sameer Bhalotra**, co-founder and CEO of ActZero, a cyber security company.

The Cyber Peace Institute stresses that “cyber attacks on the transportation sector can disrupt or disable entire systems or services, including transportation reservation systems (airlines and railroads), expose or block access to sensitive data, threaten the safety of personnel and passengers, and affect supply chains in all sectors (medicine, agriculture, mining, trade).” During the Ukraine-Russia war, for example, devastating attacks such as DDoS attacks on transportation service providers (railroads or airports in various countries) have been documented. In addition to this, transportation service providers related to the mining industry have also been attacked.

According to the Cyber Peace Institute, there were 69 cyber attacks on the Polish transportation sector in 2023, accounting for more than 10 percent of the total number of cyber attacks worldwide! In the second place is Lithuania, with transportation sector attacked 66 times, followed only by Ukraine, where 29 such incidents were officially recorded. Organized crime groups originating from Russia are the most active, with the highest concentration of cyber attacks occurring in Central, Northern and Eastern Europe.

—*It should be made clear that enemies and criminals are already working on ways to break into the IT systems of companies in this sector, and are probably already inside many of them. They are just waiting for an opportunity to launch an active phase of attack. We can tell from our past experience. Therefore, the level of cyber security is inadequate by default and more investment is needed in the protection and cyber resilience of such an important sector,—* adds V. Tsiupa.

This also applies to the offshore wind sector. As DNV points out in its “Maritime Cyber Priority” report on changing attitudes and approaches to cyber security in the energy and offshore sectors. For a glimpse of what cyber attacks on critical infrastructure look like and how the various incidents are interconnected, one need only look at the Russian cyber attack on satellite internet operator ViaSat in early 2022. It affected customers in Ukraine, but also resulted in the shutdown of thousands of wind turbines in Germany. The incident affected, among others, Enecron, a wind turbine manufacturer in Germany. The attack took place in February 2022, at the time of Russian aggression against Ukraine, and resulted in the company losing the ability to remotely control and monitor 5,800 turbines. In contrast, Nordex,

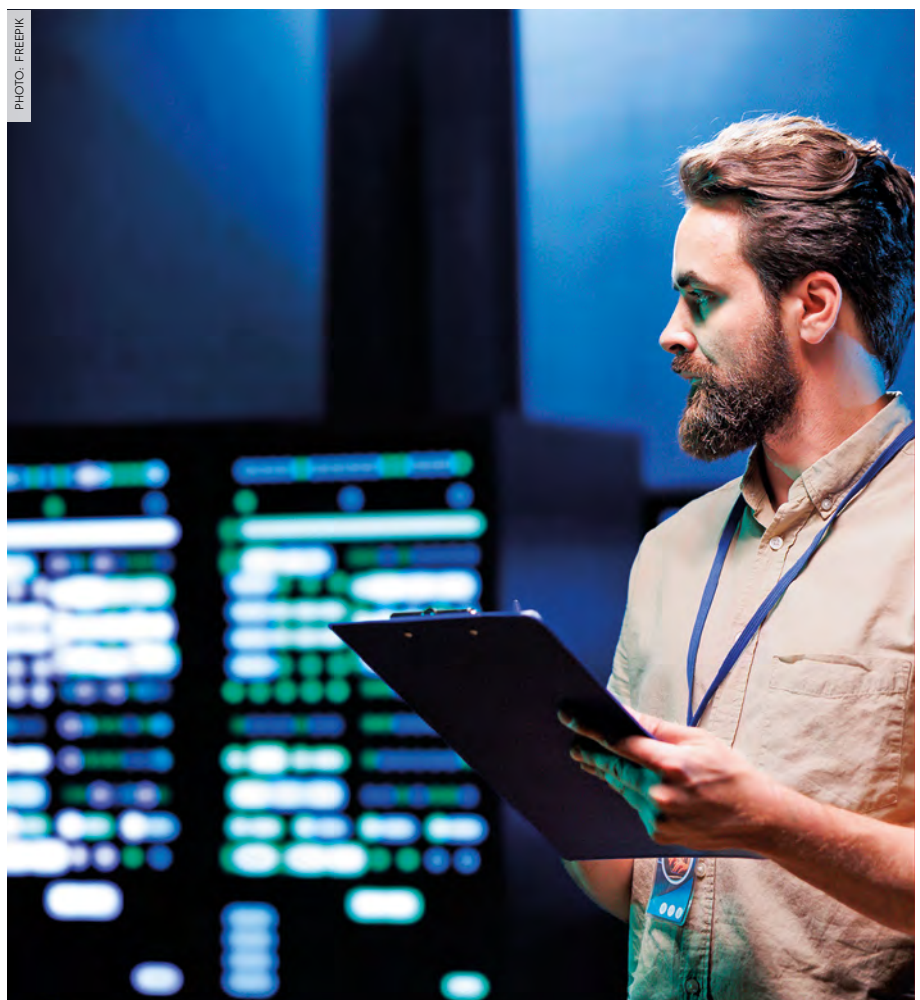
another German wind turbine manufacturer, fell victim to a ransomware attack last March. Its IT system was blocked, but the turbines remained intact.

As for Poland, on the other hand, the most spectacular incidents of recent months were fortunately not attacks on transportation, forwarding and logistics companies, but nevertheless indicative of how big a threat lurks in the network. There was, for example, the ransomware attack on the War Studies University, in July 2023, behind which was the CyberTriad group, linked to Russia. From their X account: “We found a lot of interesting things in WSU networks. The most important military university in Poland is preparing soldiers to die in World War III. Wake up!” And in November 2023, a ransomware attack by hackers from the RA World group, affected ALAB Medical Laboratories and caused the leak of multitude of sensitive information, concerning personal data and customer test results.

Virtual attack with real consequences

Blurring the boundaries between physical security and cyber security is now a challenge

for organizations around the world. The two spheres influence each other. Indeed, a security breach in one area can have direct consequences in the other. Thus, for example, in mid-December last year, Ukraine’s largest telecommunications operator Kyivstar fell victim to a cyberattack that deprived its subscribers, a total of more than 24 million people, of connectivity and internet, as well as the ability to pay with cards. According to the SBU, the incident was allegedly claimed by one of the groups linked to Russia’s GRU military intelligence service. At the same time, PrivatBank, which is Ukraine’s largest commercial bank, reported that its branches and terminals were disrupted due to cyber activity, and Monobank representatives said their institution had become the target of a “massive DDoS attack” (which aims to block access to a server or service by flooding it with a large number of bogus requests). Then again, Ukraine often falls prey to Russian hackers, and the physical consequences were felt by residents especially during the cyberattacks by the Sandworm group targeting energy infrastructure, in 2015-2016, which resulted in blackouts in large parts of the country, lasting for days at a time. The U.S. action against uranium enrichment



facilities in Iran is also an example of such actions. The Stuxnet virus caused about 2,000 centrifuges to be remotely damaged at a facility in the town of Natanz in late 2009 and early 2010, out of the 8,700 units operating there.

As you can see, cyber incidents translate very easily into physical security, and this can also apply to the maritime sector. In 2022, researchers at the Norwegian University of Science and Technology (NTNU) in Trondheim checked 46 cyber incidents in the shipping industry between 2010 and 2020, and noted that the number of incidents increased 7-fold over the period. Incidents were described in which shipping systems were fooled into thinking smuggled drugs were bananas, and GPS systems were hacked or blocked to hide the true location of ships, including on Norway's northern coast. However, things could be even worse.

— *Imagine that hackers take control of an oil tanker, the largest of which can hold more than 2 million barrels of oil, or nearly 320 million liters. If they take control of the ship and open the valves, it spells environmental disaster. And what if the cruise ship's ballast tanks are hacked, causing the vessel to start tilting? I'm not sure if it can be capsized, but it could have huge consequences for the safety of those on board,* — points out **Marie Haugli Larsen**, a doctoral student in maritime cyber security at the Department of Ocean Operations and Civil Engineering at NTNU.

That are also drones to be considered. In their case, ensuring physical security can be fully combined with the cyber security aspect. Only recently, when analyzing such threats, drones have been considered, which can be used to breach network security, steal data or introduce malware, in places where human access is difficult. A hacking attack can also, for example, take the form of taking control of a drone, disrupting the flight

or disrupting the command and control link and using it as a physical attack tool. Notably, research by cyber security experts shows that a hacked drone can be used to take over other objects nearby, theoretically being able to create a swarm of drones heading in one direction, for example. It could also be using drones to take over data. An example is a 2020 incident targeting a U.S. East Coast investment firm, where the goal was to hack into the internal network to seize customer financial data. The attack was thwarted after modified drones equipped with, among other things, a mini laptop and a Pineapple device for hacking Wi-Fi networks were discovered on the roof of the company's headquarters.

NIS2 just around the corner

Cybersecurity of critical infrastructure is therefore to be supported by the EU's NIS2 directive, which came into effect on January 16, 2023, and is to be the basis for the operation of cybersecurity systems in the EU space, including for seaports, shipping, the transport, forwarding and logistics sector, offshore wind energy and the shipbuilding industry. The regulations also apply to all entities that work with them in the supply chain. EU countries have until mid-October this year to implement the new regulations in their own legal systems.

Among the sectors considered key and that must be protected the most were transportation (water, land and air), energy (including RES) or public administration (including maritime administration). In turn, industry, which includes shipyards, was important in the entities sector. What is an important novelty in the NIS2 regulations is the need for companies to self-define whether or not they are subject to EU regulations. It is up to the entity itself to determine

whether its scope of operations qualifies it for implementation of the directive, although the presented range of industries that the regulations will cover seems quite clear.

In addition, according to NIS2, it is of great importance for the security of companies in sectors deemed critical and important to control the supply chain and "take into account the risks arising from the entity's relationships with third parties, such as data storage and processing service providers, security service providers and software providers." In these regulations, the EU emphasizes "supply chain security, including the security aspects of the relationship between each entity and its direct suppliers of products or services."

NIS2 imposes obligations on all companies in key and important sectors, among others, providing risk analysis and security policies for information systems, ensuring security in the acquisition, development and maintenance of information networks and systems, providing procedures to assess the effectiveness of cybersecurity risk management measures, handling incidents, and ensuring business continuity and crisis management. NIS 2, to improve international cooperation, also establishes the EU Cyber Crises Liaison Organization Network (EU-CyCLONE), which will, among other things, support the coordination of large-scale incident management at the EU level.

Incident handling will be particularly sensitive, and thus having its own Security Operation Center (SOC) department. This is because companies will have to provide an "early warning" report within 24 hours of detection, followed by a preliminary assessment within 72 hours, and they also have one month to submit a final report. Failure to do so can result in financial penalties, and they are very severe—up to EUR10 million or 2% of a company's total annual turnover. There is also direct management liability for failures to implement EU regulations such as a temporary ban on holding executive positions, including on management boards and supervisory boards. Especially since NIS2 implies the possibility of inspections, audits and security scans, by the relevant supervisory authorities, and requesting evidence of the implementation of cybersecurity policies from the entity in question.

As a result, it seems optimal to outsource the operation of the SOC and entire cybersecurity to specialized companies. And cybersecurity specialists stress that it is also worth noting the introduction of XDR (extended detection and response) functionality, which is becoming one of the basic requirements in NIS2. It enables faster detection of threats and more efficient work and response. PIF



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