energies

MDPI

Article

Baltic Offshore Wind Energy Development—Poland's Public Policy Tools Analysis and the Geostrategic Implications

Kamila Pronińska [1] and Krzysztof Księżopolski [2,*]

[1] Department of Strategic Studies and International Security, Faculty of Political Science and International Studies, University of Warsaw, 00-927 Warsaw, Poland; k.proninska@uw.edu.pl
[2] Department of Public Policy, Collegium of Socio-Economics, Warsaw School of Economics, 02-554 Warsaw, Poland
* Correspondence: kksiez@sgh.waw.pl

Abstract: A key question for European energy transition is which forms of renewable energy technologies will play a central role in this process. The recent dynamic growth in offshore wind power together with the vast wind energy potential of the European seas, including the Baltic Sea, make this technology an increasingly attractive and viable option. Considering the high installation and connection costs, government support is considered essential for the development of offshore wind power. The aim of this article is to analyze Poland's public policy tools, which govern offshore wind farm development, and to present them from a wider geostrategic perspective. Authors identify, classify, and evaluate individual public policy tools with the use of multi-criteria and multi-dimensional methods while explaining their impact on offshore wind development in Poland. The analysis of the individual tools has shown that the currently applied tools give a high probability of achieving public policy objectives. The characteristics of the applied tools prove that vital decisions on offshore wind energy have been made concerning the need for decarbonization but also regarding wider geostrategic calculations. Given the changing security dynamics in the Baltic Sea region, we highlight potential geostrategic risks to the implementation of offshore wind projects.

Keywords: offshore wind; regulations; public policy tools; energy security; Poland energy policy; energy transition; decarbonization; Baltic Sea offshore wind energy

check for updates

Citation: Pronińska, K.; Księżopolski, K. Baltic Offshore Wind Energy Development—Poland's Public Policy Tools Analysis and the Geostrategic Implications. *Energies* **2021**, *14*, 4883. https://doi.org/10.3390/en14164883

Academic Editor: JongRoul Woo

Received: 30 June 2021
Accepted: 5 August 2021
Published: 10 August 2021

1. Introduction

The pathway toward the transformation of the European energy sector requires continuous investment in advanced and scalable renewable technologies. Wind power is widely considered to be one of the most promising renewable energy options for energy transition, both in Europe and globally. It has the potential to fulfill increasing clean energy needs due to the vast availability of wind power, the relatively high technology maturity in comparison with other renewable energy sources, as well as gradual improvements in wind turbines and general technologies, translates to increased power output efficiency and cost reduction [1,2]. In recent years, there has been growing commitment to the development of offshore wind power systems. This 'marinization' of the wind industry provides access to stronger and more frequent wind and offers significant development potential [3–5]. Although offshore installations still represent only 5% of global wind energy capacity and 10% of annual additions in wind energy worldwide [6], it is a rapidly maturing technology and a scalable industry with huge potential for expansion. International Energy Agency (IEA) projects global offshore wind capacity to increase 15-fold by 2040 with offshore investment to account for 10% of global investment in renewable power plants [7].

In the European Union's efforts to decarbonize the economy by 2050 offshore wind power will play an essential role. Since the world's very first offshore wind farm was installed on the southern coast of Denmark in 1991 [8], the number of offshore wind installations has been steadily growing across Europe, paving the way for Europe's leadership in this field. Scientific studies clearly display the present and future development of offshore wind power capacity in Europe [9,10]. Globally, Europe is a dominant player in the offshore wind supply chain. Despite the global pandemic, all the EU's (and the UK's) offshore wind markets experienced stable growth. In 2020, European offshore capacity increased by 2.9 GW with 356 new offshore turbines connected to the grid [11,12]. This made European countries second only to China in new offshore wind installations. The only new floating offshore capacity in 2020 was also installed in Europe (i.e., Portugal). In global cumulative offshore wind installations, Europe is the unquestionable leader with 25 GW of total installed capacity as of the end of 2020 [11] and a dominant power in terms of offshore technologies and manufacturing. The majority of the wind farm installations and technological progress in European offshore technologies have taken place over the past decade. The EU's Offshore Strategy adopted as a part of the European Green Deal recognized that the vast untapped wind power potential of European seas will be crucial to achieving CO_2 emission reduction targets by 2030 and climate neutrality by 2050 [13]. It is expected that EU countries will have installed a capacity of at least 60 GW of global offshore wind and at least 1 GW of ocean energy by 2030 and these numbers will increase by the middle of this century, up to 300 GW and 40 GW respectively [13].

Considering the existing capacity gap between onshore and offshore installations in Europe, the focus of scientific research has been directed at supply-chain trends and challenges, including the possibilities to transfer knowledge from the onshore to offshore sector [14]. Public policy regulations are widely considered to be one of the determining factors of investment decisions and also the infrastructural shifts related to offshore wind power supply chain. In the new markets, the relevant policy tools which support the emergence of the offshore wind sector coupled with legislative stability are perceived as essential to the development and the long-term growth of this capital-intensive sector. Thus, it is recommended to policymakers to foster market conditions for the growth in the cumulative installed offshore wind capacity by a variety of regulations, including an economic incentive scheme and national bidding procedures [15]. Comparative analysis of a wide variety of case studies has shown that if the policy incentives are weak, they constitute a major barrier for the effective development of offshore wind investments [16]. The risks to investments in offshore wind go far beyond regulatory dimensions and a lack of economic incentives. Various studies explore the risks to wind energy development and show how increasingly complex they are becoming [14–17]. At the same time, in the countries, which lead the way in offshore wind production, like the UK, the risk of rising electricity prices has been perceived as a major social issue and the main barrier to the continued expansion of offshore wind programs [18]. In EU countries, the problem of increasing electricity prices is more often analyzed in correlation with the EU ETS mechanism [19–21], which is a main public policy tool at the EU level with positive consequences for offshore wind development. These economic indicators are of particular interest to policy decision-makers in countries relying on coal in electricity production [14].

Apart from policy incentives, an important driver of offshore wind development is improving technology and reductions in LCOE of offshore wind energy, especially in comparison to onshore installations. Some authors argue that if this trend were to continue, we would see a further reduction in the economic advantage of onshore versus offshore wind energy [22]. Other researchers indicate that the European wind power industry has seen a decoupling process of the offshore supply chain from the onshore, which highlights diverging technological requirements and shall be considered by policymakers in the design of different support mechanisms for onshore and offshore players [14].

From a regional perspective, the North Sea with its widespread potential for offshore wind energy and existing offshore wind farms plays a key role in supplying the European market with offshore wind power. The second most promising European region in terms of potential and planned offshore wind power capacity is the Baltic Sea. It has a high potential to scale up the deployment of offshore wind power due to a relatively short distance from the coast, which lowers the cost for grid connections; the wind power potential, which in this semi-enclosed basin proved to be underestimated [23–25]; and also regional cooperation and national policies aimed at greater development of the Baltic wind energy. Apart from Russia, all the littoral states are EU members and all of them plan to increase the use of offshore wind power by 2030. Four out of eight EU Baltic countries have already deployed some offshore wind farms in their waters. Germany, Denmark, Finland, and Sweden had a combined 2.2 GW of installed offshore wind power capacity in the Baltic sea at the end of 2020 [12]. The remaining four—Estonia, Latvia, Lithuania, and Poland (i.e., the Central-Eastern European states—CEE) have been showing a growing interest in offshore energy development and have launched policies and programs aimed at boosting investments in offshore wind farms.

For the CEE Baltic states, offshore wind is a new direction in energy policy, with successful implementation being dependent on a variety of factors including the national public policy tool design, transparent and clear market conditions, the development and endorsement of standards, and permitting procedures regarding environmental protection as well as geological-geophysical site investigations. Considering that these are new areas for offshore wind development, there have been calls for a coordinated approach in the region to collect technical and environmental data, which would help developers save time and reduce site assessment costs [26]. The need to prepare essential legal foundations, including an integrated maritime spatial plan (MSP) [26], combined with national energy and climate policies as well as detailed regulations on the Baltic offshore wind development has taken on even more significance. For a study of public policy tools regarding Baltic offshore wind development authors choose Poland—a country with the largest energy market and with the most advanced offshore wind projects in the CEE region. An important argument for choosing Poland was also the fact that its electricity mix remains dominated by coal which poses a huge challenge to the decarbonization process.

Apart from the internal policy-making dynamics, the implementation of the offshore wind projects and their later performance depends on additional external factors related to the wider security environment in the Baltic region. The changing security environment in the Baltic Sea, which implies increasing geopolitical tensions and the geostrategic importance of the region in the XXI c., provide an important context and conditions for offshore wind development. Given the distinctive geostrategic setting in the Baltic Sea in contrast to other European key offshore wind energy sites (the North Sea and the Irish Sea), these issues need to be addressed. It is also crucial to understand the perception of threats to energy security in the Baltic CEE countries, which has strongly impacted on their energy policies in recent years. Import dependency on Russian oil and gas and its supply infrastructure together with experiences of how geopolitics interferes with Russia's actions in the energy market (e.g., the exploitation of these dependencies for political ends and as an instrument of exerting Russian power in the region [27,28]), have played an important role in endorsing the diversification strategies and motivating the changes in the overall energy mix. For these reasons, investment in renewable energy—including large-scale offshore wind farms, public policy tools, and regional cooperation on these issues—need to be analyzed from this geostrategic perspective also. Meanwhile, the links between the geostrategic context of public policy measures aimed at building offshore power in the CEE region and their security and geostrategic implications do not seem to be thoroughly examined in scientific literature. While there is wide scientific coverage of how regional geopolitics impacts oil and gas markets, or energy security [29–32], strikingly little attention is paid to the geopolitical risks to the offshore wind industry in the Baltic Sea and other regions. One study, which attempts to include the geopolitical risks to the existing publications on offshore wind energy, regards the Indian Ocean. Authors explore how geopolitical anxieties may deter the Indian Ocean nations from adopting offshore wind technology [33]. A few scientific studies put offshore wind energy in the context of the wider global shift towards renewable energy, and focus on how these trends will impact global power and geopolitics [34,35].

This article aims to identify and analyze the public policy tools in the field of offshore wind development in Poland and to evaluate them. Given that offshore wind energy requires adequate policy measures, with the use of multi-criteria and the four-dimension approach of Lester M. Salamon, the study provides the assessment of the currently applied tools and considers prospects for future instruments, which could induce offshore wind power development in Poland. There are many different approaches to the analysis of public policy and a variety of classifications of public policy tools [36–39]. Some of them perceive public policy as a process of choosing specific tools in order to address policy aims. This article applies Salamon's method of public policy analysis [39,40], which provides the most comprehensive theoretical framework for a qualitative evaluation of certain public policy tools. Authors find it the most useful for the assessment of individual public policy tools due to the application of the multi-criteria approach and the recognition of the multidimensionality of the tools. Salamon's method is the most efficient at explaining the characteristic of individual tools and their respective outcomes. It allows us to see the attitude of the Polish government to offshore wind development and to evaluate the tools in place at the moment, according to the theoretical model.

According to the findings on the investment challenges in the capital-intensive offshore wind sector, especially in very new markets, a special focus is put on the economic incentives provided by the Polish government. The article also recognizes the importance of the legal provisions conditioning the permitting and location of the wind farms. The substantial differences in the regulatory environment between onshore and offshore projects play a special role here. The legal provisions for onshore wind farms in Poland are one of the most restrictive in the EU, which positively affects offshore wind sector development, where legal conditions are much more favorable. Decisions on public policy tools in the field of offshore wind are made under certain geostrategic conditions and the applied tools bring implications to the energy market and regional security. Thus, in this article, we attempt to fill the scientific literature gap by placing Poland's offshore wind policy tools in a wider geostrategic context and by discussing the geostrategic implications of the development of offshore wind power capacity in the Baltic Sea.

2. Method

In the research process of identification and analysis of the public policy tools applied in Poland in the field of offshore wind power, we use Salamon's method [40]. The method starts with the selection and classification of public policy tools (common tools of public action, see: Table 1) and their defining features. It is based on five clear evaluating criteria for the analysis of the public policy tools: effectiveness, efficiency, equity, manageability, and legitimacy. Given the multidimensionality of public policy, the applied method focuses not on one dimension but four different key tool dimensions—coercion, directness, automaticity, and visibility. The diversity of the dimensions in which the tools can be compared enables us to determine their respective strengths in relation to public policy goals.

At the first stage of research, authors define the public policy problems, identify public policy tools regarding offshore wind development and assign the appropriate categories according to the theoretical model. It was important to recognize that any given tool is in fact a complex set of products, actions, delivery vehicles, and other elements, that complicate the classification process (see Table 1). The research has focused on tools already implemented by the Polish government, but it has also addressed the question of new upcoming tools. In the second step authors assessed the consequences of the given tool with the use of the five criteria matrix—effectiveness, efficiency, equity, manageability, and legitimacy—and with regard to four dimensions—coercion, directness, automaticity, and visibility. The impact value (low, moderate, high) of individual tools was specified in accordance with the theoretical model [40]. At the final stage, authors interpreted the results and put them in the wider geostrategic context of the decision-making process. Through qualitative analysis of the changing energy and security environment in the Baltic sea region, authors have examined how the offshore wind development can be impacted by the geostrategic factors and what are the risks, which need to be considered and addressed by policy makers. Data for analysis was obtained from official documents, individual companies and public agencies.

Table 1. Classification of common tools of public policy action according to Salamon (2001) [39].

Tool	Product/Activities	Vehicle	Delivery System
Direct government	Good or service	Direct provision	Public agency
Social regulation	Prohibition	Rule	Public agency/regulatee
Economic regulation	Fair prices	Entry and rate controls	Regulatory commission
Contracting	Good or service	Contract and cash payment	Business, nonprofit organization
Grant	Good or service	Grant award/cash payment	Lower level of government, nonprofit
Direct loan	Cash	Loan	Public agency
Loan guarantee	Cash	Loan	Commercial Bank
Insurance	Protection	Insurance policy	Public agency
Tax expenditure	Cash, incentives	Tax	Tax system
Fees, charges	Financial penalty	Tax	Tax system
Liability law	Social protections	Tort law	Court system
Goverment corporations	Good or service	Direct provision/loan	Quasi-public agency
Vouchers	Good or service	Consumer subsidy	Public agency/consumer

3. Results

3.1. Baltic Sea Offshore Wind Development—Trends in the South Baltic

As of 2020, there were 25 GW of installed offshore wind capacity across Europe. Although 12 European countries had their offshore turbines connected to the grid, five of them—the UK, Germany, Denmark, Belgium, and the Netherlands—accounted for 99% of the existing capacity [12]. The Baltic with 2.2 GW accounted for only 9% of cumulative installed offshore wind capacity [12]. According to the report prepared for the European Commission and for the purpose of identifying the potential of offshore wind with respect to the Baltic Energy Market Interconnection Plan (BEMIP), the potential for Baltic Sea wind power generation is expected to reach 93.5 GW by 2050 [41], which makes it one of the most promising locations for wind farms in Europe. Poland's offshore wind potential is estimated at a capacity of 12 GW and net energy production of 43.2 TWh [41]. This puts Poland in fourth place in the BEMIP countries after Sweden, Denmark, and Latvia [41]. The Polish Wind Energy Association's (PSEW) projections, based on the draft MSP of the Polish Sea Areas and the wind conditions in the South Baltic, were similar—i.e., between 10–12 GW of installed capacity and up to 50 TWh of energy production [42]. Table 2 shows planned installed capacity and current stage of offshore wind energy projects in Poland. For the investment decisions it is particularly important that in comparison to other Baltic locations, the South Baltic proves to be the most attractive in terms of LCOE and market value. In the study prepared for the EC, Germany and Poland's Baltic Sea Exclusive Economic Zones (EEZ) are indicated as the most favorable with regard to criteria (p. 67, [10]).

Table 2. Offshore wind projects in Poland (end of June 2021).

Project Name	Polish Company/Foreign Parner with % Share in the Project	Area	Environmental Approval	Geotechnical Seabed Exploration	Grid Connection Agreement with PSE	Installed Capacity	Support Scheme (the CfD Mechanism [1])	Commissioning Year
Baltica 1	PGE Baltica (PL)	108 km^2	NO	NO	YES	896 MW	NO	after 2030
Baltica 2	PGE Baltica (PL)/ Ørsted (DK) j/v 50/50	189 km^2	YES	In progress	YES	1498 MW	YES	2027
Baltica 3	PGE Baltica (PL)/ Ørsted (DK) j/v 50/50	131 km^2	YES	In progress	YES	1045 MW	YES	2028
MFW Bałtyk I	Polenergia (Pl)/Equinor (NOR) j/v 50/50%	128.5 km^2	NO	NO	YES	1560 MW	NO	ND
MFW Bałtyk II	Polenergia (Pl)/Equinor (NOR) 50/50%	122 km^2	YES	YES	YES	720 MW	YES	2026
MFW Bałtyk III	Polenergia (Pl)/Equinor (NOR) 50/50%	116.6 km^2	YES	YES	YES	720 MW	YES	2026
Baltic Power	PKN Orlen (PL) /Northland (CAN) 51/49%	131 km^2	In progress	YES	YES	1200 MW	YES	2026
MFW Baltic II	RWE Baltic Trade Invest	41 km^2	NO	YES	YES	350 MW	YES	2026
B-Wind	Engie/EDP Renewables	42 km^2	NO	NO	YES	-	NO	ND
C-Wind	Engie/EDP Renewables	49 km^2	NO	NO	YES	Both B-Wind and C-Wind 399MW	NO	ND
Baltex-2	Grupa BALTEX	66 km^2	NO	NO	NO	880 MW	NO	ND
Baltex-5	Grupa BALTEX	111 km^2	NO	NO	NO	1500 MW	NO	ND

[1] Max. CfD in the first phase is 5.9 GW.

Under Polish MSP three areas for wind farm locations have been identified—the Słupsk Bank; the South Middle Bank on the frontier with Sweden's EEZ; and the Bank on the frontier between Polish and Danish EEZs.

3.2. Poland's Public Policy Tools Analysis

3.2.1. Contextualization—Poland's Decarbonization Challenge and Identification of the Public Policy Problem

Attempts to achieve climate neutrality by 2050 require complete transformation of the energy sector in Poland [43]. At the same time the EU ETS mechanism, which is the main public policy tool in the climate-energy field introduced at the EU level, put considerable financial pressure on the economies of countries relying on coal [19,20]. The percentage share of coal in primary energy consumption in Poland remains the highest among EU member states (Figure 1). Analysis of corporative data shows that between 2018–2032 energy companies in Poland plan to commission over 11.9 GW of new generation capacity. At the same time, the number of planned decommissioning of existing power plants amounts to approximately 11.8 GW. Hard coal and lignite plants will account for approximately 93.6% of planned decommissioning operations.

The correlation between EU ETS future prices and an increase in electricity prices in Poland for non-household consumers (regulatory authority in Poland controls tariffs on electricity prices for households) shows the highest dynamics in the EU (Figure 2).

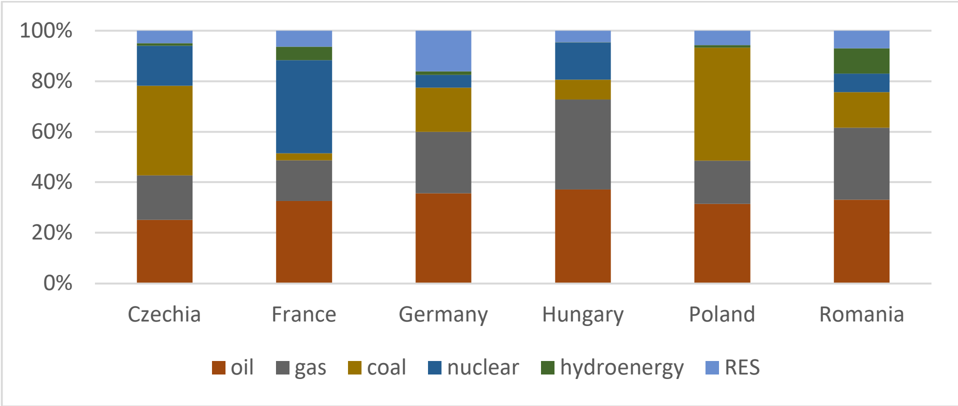

Figure 1. Primary energy consumption by fuels in 2019. Poland in comparison to selected EU countries.

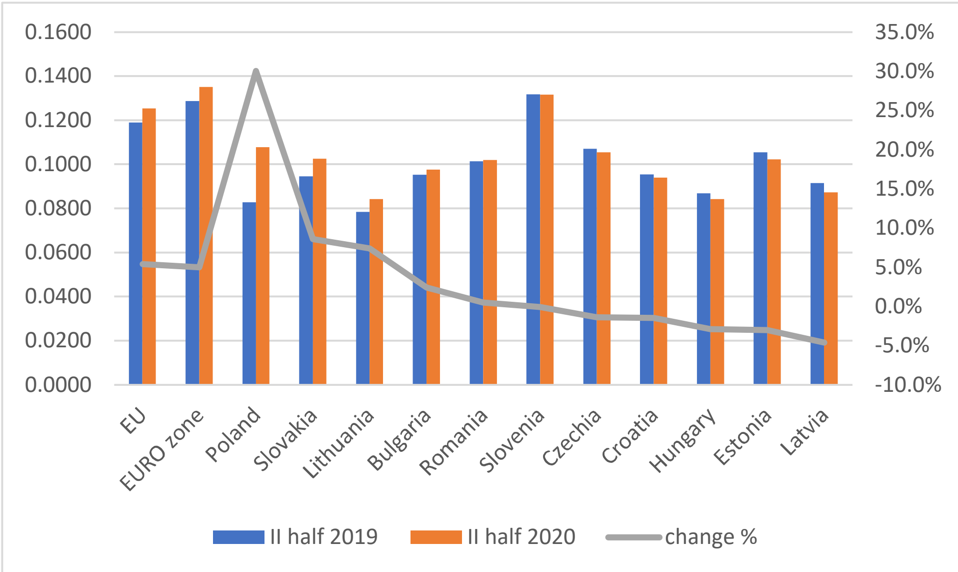

Figure 2. Changes in non-household electricity prices in the second half of 2019, compared with the second half of 2019 (EUR per kWh). Poland in comparison to selected European countries.

Taking into consideration the country's obligations in the framework of the EU climate-energy package and the current conditions of the coal-dependent energy sector, public policy design is to play a crucial role in the process of energy transition. At the same time Poland has strived to decrease its dependency on a single supplier of oil and gas—Russia. The Baltic Sea has played a key role in the search for supply alternatives and thus in Poland's diversification strategy. Energy infrastructure located in the Baltic region became of critical importance regarding energy security. The decarbonization of the energy sector in Poland requires a complete reconstruction of the energy sector [44]. If coal is replaced by natural gas, it would mean a decrease in the self-sufficiency index and creating vulnerabilities related to reliance on foreign supplies. The replacement of domestic coal with renewable energy and nuclear would be a different strategy enabling deeper decarbonization of the energy sector and at the same time enabling to keep a relatively high energy self-sufficiency index. Polish perception of energy security and strategic thinking, levels of energy self-sufficiency, and the respective import dependency (especially concerning dependency on Russia) are important points of reference. The decisions on energy transition options in Poland are based on a set of economic, environmental (climate neutrality target), and security (geostrategic) calculations. This leads to the public policy problem of how to address these issues. In a country with a coal-based energy sector, the social consequences of the transition must also be taken into serious consideration, that in the public discourse is presented as a need for just transition.

The public policy problem regarding offshore wind power in Poland can be described as to what extant public intervention is needed considering both the economic and geostrategic conditions and if current public policy tools are effective enough to induce offshore wind power development.

3.2.2. Legal Framework and Identification of Public Policy Tools

The following documents constitute the legal basis for the development of support mechanisms dedicated to offshore wind energy:

(1) Poland's energy policy up to 2040 (PEP 2040) approved by the Council of Ministers on 2 February 2021 [44] and replacing the previous Energy Policy Act from 2009;
(2) Offshore Wind Act (OWA) from 17 December 2020—the first Polish law on offshore wind energy which came into force on 18 February 2021 [45].

Both documents were adopted in the context of the European Green Deal [46] and the EU Strategy to harness the potential of offshore renewable energy for a climate-neutral future from November 2020 [13] and under conditions of the EU ETS. Another important part of the legal framework for offshore wind development is the MSP for Polish Sea Areas adopted on 14 April 2021 [47], which indicates the boundaries of the zones in the Polish Baltic Sea for permits for the construction and the use of artificial islands, structures, devices, and laying seabed cables.

In the research, we have identified tools falling into seven categories: economic regulation; social regulation; contracting; fees and charges; government corporations; direct loans; grants (Table 3). Some of the tools are grounded in the OWA (economic regulations and contracting), while others can be derived from a wider regulatory and security environment. There are three tools directly related to the EU's public policy regulations and instruments. In this respect, EU ETS, which applies to the whole energy sector falls into the category of fees and charges. The second and third regard KPO grants and loans. This group of tools is attached with the implementation of the National Reconstruction Plan (KPO) and have been included in the first phase of our study, but their application will be dependent on the EU administrative decisions. The KPO sets out public investment projects and reforms in the framework of the EU Found Recovery and Resilience Facility (RRF)—the centerpiece of the NextGeneration EU plan of post-COVID-19 economic recovery. KPO must be assessed by the European Commission before it becomes a legal provision. Thus, the KPO public policy tools have been recognized as the most probable future support mechanism.

Table 3. Public policy tools in the field of offshore wind development in Poland.

Tool Category	Public Policy Tools
Economic regulation	Contracts for Difference
Economic regulation	Auctions
Government corporations	State-controlled corporations
Contracting	Local content provisions
Social regulation	The Distance Act
Fees and charges	EU ETS
Loan	KPO loans
Grant	KPO grants

The economic regulation tools applied by the Polish government include (1) contracts for deference (CfD); (2) auctions. OWA sets the detailed rules and conditions for granting support for the implementation of investments in offshore wind farms.

OWA set the rules and conditions for granting support for the implementation of investments in offshore wind farms. CfD plays a crucial role in this regard. It provides the wind farm operator the right to cover the negative balance over a period of 25 years from the first day of generating and adding the electricity into the grid. In the first phase, investors who submitted applications by 31 March 2021, were granted the right to cover the negative balance by the President of ERO (Polish Regulatory Office) In the second phase, the right to cover the negative balance will be given to the investors who win the auction. The responsibility to set a maximum price lies on the minister responsible for climate matters, after the respective opinion of the minister competent for state assets. That will constitute the basis for the settlement of the right to cover the negative balance.

According to OWA the total installed capacity for which President of ERO could issue a decision granting CfD in the first phase cannot exceed 5900 MW. As regards the applications in the second phase, auctions will be conducted in the years 2025 (max. 2.5 GW) and 2027 (max. 2.5 GW). However, the Council of Ministers, by a way of regulation, may change the maximum level of electricity from offshore wind farms, which can be granted the right to cover negative balances by way of auction.

In its decisions regarding the auctions, the Council of Ministers takes into consideration energy security of the state and strategic directions of state activity in the energy sector.

Apart from economic regulation, OWA also provides a soft regulation on the supply chain and the respective local content development. The contractor who applies for CfD is to present a plan on the materials and services supply chain. The plan is to indicate what actions will be taken in order to develop human resources required for building and exploitation of wind farms and to characterize and estimate the number of jobs the contractor (and its service and materials suppliers) are going to create. The Polish government has not decided on restrictive local content rules, which shall be considered as an important decision—overly ambitious local content could slow the deployment of offshore wind projects. Yet, the Polish Offshore Wind Sectoral Deal has been negotiated with the stakeholders. The local content rules are classified as contracting tools.

Economic regulatory tools work with public policy tools applied at the European level, i.e., EU ETS. EU ETS increases the costs of electricity from conventional sources. In the given classification of public policy tools EU ETS falls into the category of fees and charges.

Apart from the mechanisms at European level, there are certain national regulations which encourage development of offshore wind by impacting electricity prices. The Polish regulatory environment in this context is specifically governed by the Distance Act, as it is known-an amendment to the Wind Turbine Act, which came into force on 16 July 2016, banning the construction of wind farms within a distance of less than 10 times the wind turbine tip height away from the residential buildings (the 10H rule). By introducing these regulations, The Distance Act significantly restricted increase in new onshore wind capacity and contributed to an increase in wholesale electricity prices in Poland. The 10H rule is a social regulation, which has put additional pressure on electricity prices. By excluding approximately 99% of Poland’s territory for new onshore wind installations, many have turned their attention towards offshore options.

The last of the applied tools so far is particularly important from a geostrategic perspective. The government corporations tool is used to provide control over the majority of the offshore wind strategic assets. Companies implementing offshore wind projects in the Baltic sea are state-controlled. PGE is the largest energy producer in Poland and PKN Orlen is a major oil company with the highest market value in Central-Eastern Europe. The financial capabilities of the two companies coupled with state support facilitates the realization of offshore wind projects.

KPO is a new instrument, introducing a new set of tools, which can be classified as: grants and direct loans. These tools, if KPO is approved by the EC, will encourage the development of offshore wind by offering considerable financial assistance for companies. Of the planned cumulative expenditure in the framework of the EU RRF, 37% is to be dedicated to green investments and reforms. This way Poland can be granted approximately EUR 8.84 billion for this purpose. In the framework of KPO, financial support will be dedicated to the development of necessary port infrastructure for offshore wind power expansion. This includes grants (of EUR 0.437 billion) for the facilities to support construction and maintenance of offshore wind farms in the port of Gdynia (an area of 30 ha for the installation terminal) and two service ports for wind farms in Łeba and Ustka. The infrastructure is to be built between the second quarter of 2021 and the third quarter of 2026. The KPO loan will amount to a maximum of 3.25 billion euro and will be used to support the most advanced strategic projects in the offshore wind sector [48].

The KPO grants and loans tools will play a supportive role for the local content development in the offshore wind sector as well as providing additional financial support mechanisms for companies, which already have a license to produce electricity from offshore wind farms and which have been granted the CfD in the first phase by administrative decision (see Table 2).

3.3. Evaluation of the Public Policy Tools

The evaluation of public policy tools concerning effectiveness, efficiency, equity, manageability, and political support [40] enables us to assess the consequences of each tool separately and their combined effect. On this basis, it is possible to recognize which of the tools are most important for the development of offshore wind farms in Poland. To understand the full matrix of choices in the decision-making process as well as the motivation for policymakers, the tools are measures and comparable in four dimensions—i.e., coercion, directness, automaticity, visibility.

Analysis of the applied public policy tools shows that moderate and highly coercive measures have been used (see Table 4). The highest degree of coerciveness is exhibited in the Distance Act and the CfD/Auctions. According to theoretical assumptions, it means that the government chooses the tools, which provide the maximum certainty that the goals it set would be achieved (p. 26, [22]). The effectiveness of the economic regulation (CfD/Auctions), which is the basic criterion for assessment of both the chances for success of the public interventions and the determination of the government in achieving its intended goals, is high. However, in terms of efficiency which balances results against costs, the financial costs of the applied tools may be very high. This confirms that less coercive tools are more market oriented and provide a better balance of costs and results.

At the same time, it is important that the coercive tools are "difficult to implement through an indirect delivery system" (p. 29, [22]). Our research confirms this correlation—the applied tools are of high and medium degree of directness (see Table 5). The consequences of coercive and direct public interventions are to be found also in the third dimension—the level of automaticity the policy tools embody. In contrast to the tools, which utilize the market, or the existing administrative structure are highly automatic, the tools applied in Poland can be characterized as of low and medium degree automaticity (see Table 6). As a result, the market is not mobilized enough to carry out development of offshore wind power as yet. As regards the fourth dimension, which measures the degree to which a tool is visible in the normal government budgeting and policy process, it is interesting that the most coercive measures (CfD and 10H Distance Act) were least visible (see Table 7). This can be explained with the principle that the tools, which are less visible are easier to pass in the political decision-making process. It is particularly important when the need to assess the security and financial issues is at stake. Security can be the reason for concealing the true costs, especially if they impose a serious burden on the economy (see Table 8). The case of the 10H rule, which restricted most of the territory from onshore wind installations increased the cost of electricity. As a parliamentary draft amendment, it was not proceeded with economic impact analyses and passed as an invisible tool creating a greater space for offshore projects.

Table 4. Degree of coerciveness.

Degree of Coerciveness	Tools	Effectiveness	Efficiency	Equity	Manageability	Political Support
Medium	State controlled companies	Moderate	High	Moderate	Moderate	Moderate
	Local content	Moderate	High	Moderate	Moderate	Moderate
High	The Distance Act	High	High/Low	High	Low	High/low
	CfD/Auctions	High	High/Low	Moderate	Low	High/low

Table 5. Degree of directness.

Degree of Directness	Tools	Effectiveness	Efficiency	Equity	Manageability	Political Support
Medium	The Distance Act	Low/Moderate	Moderate	Low	Low	High
	Local content	Low/Moderate	Moderate	Low	Low	High
High	State controlled companies	High	Moderate	High	High	Low
	CfD/Auctions	High	Moderate	High	High	Low

Table 6. Degree of automaticity.

Degree of Automaticity	Tools	Effectiveness	Efficiency	Equity	Manageability	Political Support
Low	State controlled companies	High	Low	High	Moderate/Low	High
	CfD/Auctions	High	Low	High	Moderate/Low	High
	The Distance Act	High	Low	High	Moderate/Low	High
Medium	Local content	Moderate	High	Moderate	Low	Moderate

Table 7. Degree of visibility.

Degree of Visibility	Tools	Effectiveness	Efficiency	Equity	Manageability	Political Support
Low	The Distance Act	N	Low	Low	Low	High
	CfD/Auctions	N	Low	Low	Low	High
Medium	Local content	N	Moderate	Moderate	Moderate	Moderate
	State controlled companies	N	High	High	Low	Low

Table 8. Number of tools by degree of public intervention.

Area	Law	Medium	High
Coerciveness	0	2	2
Directness	0	2	2
Automaticity	3	1	0
Visibility	2	1	1

4. Geostrategic Considerations of Offshore Wind Development in the Baltic Sea

In the scientific discussion on how the Baltic region can contribute to the implementation of the European Green Deal and long-term transition of the energy sector, the development of offshore wind potential is considered a crucial element. The awareness of the existing vast potential as well as economic, energy, and environmental benefits of investment, has led to more intense recent cooperation of the Baltic states on these issues. Although the degree of offshore projects advancement varies across the region and the Baltic states have introduced different public policy tools, we can observe how international cooperation becomes an additional supportive measure for offshore wind power in the region. Certain EU's public policy tools have played an important role in encouraging Baltic cooperation in this field (among others BEMIP, MSP Directive, multi-use pilot projects like BalticLINes Interreg project or EU Strategy for the Baltic Region) [13,41,49].

Focus on economic, energy, or environmental aspects of the changing energy landscape in the Baltic region has overshadowed other important issues of a geostrategic nature. While debates on traditional energy infrastructure (i.e., pipelines, oil, and LNG terminals) are quite often rooted in a geopolitical context, the geostrategic considerations seem to be absent from the debate on offshore wind development. Given the distinctive geostrategic nature of the Baltic sea, it is important to put offshore wind policy formulation in this wider perspective.

From a historical perspective, the Baltic sea was perceived as the region where there was a struggle for geopolitical dominance between Russia and Germany [50]. However, during the Cold War, it was not perceived as a region of high geopolitical tension due to the so-called Nordic balance [51]. The end of rivalry, which enabled NATO's and the EU's expansion to the Baltic countries, radically changed the regional balance of power. In institutional terms, the region came under Western domination. For Russia, increasing Western influence and NATO presence, in particular, have been perceived as a threat to its national security. Despite EU efforts to expand the security community and include some of Russia's former Baltic regions, Russia has chosen a different path [52].

Today the Baltic Sea is a region of great geostrategic value. From an energy security perspective, it provides access to oil and gas supplies enabling the littoral states a wider diversification of suppliers, import routes, and transportation technologies. Thus, critical energy infrastructures such as oil and LNG terminals, underwater pipelines, storage facilities, refineries, etc., are located in the region. For Russia, the Baltic sea has become an important route for its oil and gas supplies to the European market. Tankers from Primorsk and Ust-Luga deliver Russian oil to western and northern Europe, while Nord Stream 1 pipeline is the only option for Russian gas deliveries to Western Europe, which bypasses the transit states altogether. Together with the second line—Nord Stream 2 (NS2) this will be a major route for Russian gas supplies to the EU. The Baltic has also become the main route to transport Russian LNG to European markets. The region's strategic and energy importance has been increasing also due to growing rivalry over new gas pipelines and the development of gas hubs and LNG terminals. New infrastructural projects have a major impact on the balance of power in the regional energy market. Political tensions around NS2 and American sanctions are a good example of how these issues are geopolitically sensitive and of huge importance. On one side. Russia struggling to keep its dominant gas supplier position in the EU market, on the other the US trying to block these efforts and provide its LNG greater access to the European gas market. Geopolitical risks related to the opening of the NS2 pipeline are widely discussed in scientific literature and were presented as the official arguments for sanctions [53–55]. This is only one example of how individual energy infrastructural projects implemented in the Baltic Sea can change the security environment and increase geopolitical tensions.

The Baltic offshore wind infrastructure will become an important element of critical energy infrastructure in the integrated EU market. At individual Baltic state level, the larger the share of offshore wind farms in a country's electricity balance, the more critical these energy infrastructure become. Critical infrastructure by definition requires special protection. From a geostrategic perspective it is additionally important to emphasize that future changes in the energy mix of individual Baltic states will occur in the wider context of the geopolitically sensitive region and the power struggle between Russia and NATO. The changing of the traditional security environment in the Baltic Sea, including the predicted changes in material and relational elements of power and influence in Russia-EU or Russia-NATO relations, should be taken into considerations in the strategic planning of offshore wind development in Poland and other Baltic states. Similarly, geostrategic elements should not be disregarded or downsized in scientific research on Baltic offshore wind projects. Does cooperation between the Baltic states reflect the long-term strategic vision of the region's energy market development? How will offshore wind energy change the power and influence patterns in the region? How would the region's major oil and gas supplier react to these changes? What are the geostrategic risks related to offshore wind development in the Baltic region? Will the geostrategic significance of the Baltic Sea continue to increase? To what extent will wind power improve an individual country's position in the energy market? These questions need to be present in the debate and research into energy transformation and future threats to energy security (including offshore wind development) in the region.

For Poland and other three CEE Baltic states, strong security considerations have always been present in their energy policy formulas. The past experiences of exploitation of energy dependency by Russia for political purposes [27,28] made it clear that a long-term supply diversification strategy would be a key tool in reducing this dependency and the associated risks. In the case of Poland, offshore wind energy is perceived as an important element of obtaining energy independence in the era of decarbonization of its coal-dominated electricity mix. The planned offshore wind capacity in Poland of 2.6 GW by 2026 and 11 GW by 2040 [44] corresponds with 7% and 30% respectively, of the currently installed coal plant capacities. In regard to decreasing import dependence. the correlation will be stronger under a scenario with nuclear energy than with natural gas. Wind energy only partially replaces coal plants, which dominate Poland's electricity mix. If natural gas is to take the role of a transitional fuel and contribute to the replacement of domestic coal, this will lead to an increase of overall import dependency. However, the diversification strategy still reduces dependence on Russian supplies. The nuclear energy and wind energy scenario gives a lower import dependency index. The analysis of public policy tools, which showed that coercive, direct, and low visible measures (especially in terms of hidden costs) were applied, confirmed that security issues played an important role in public policy design. The economic incentives are rooted in the strategic vision and perception of offshore wind energy as an element of energy self-sufficiency and security. If there is an understanding of the strategic importance of Baltic wind development, the next question concerns the geostrategic risks regarding the foreseen decrease in Russia's power in the region and the escalation of Russia-NATO tensions.

Considering the size of the Polish electricity market and the planned additions to wind energy capacity, offshore wind energy alone does not have a great impact on the relative power of Poland in international relations in the Baltic Sea. However, there are two factors that view Polish offshore wind developments as contributing to wider changes in the region's power and influence patterns. Firstly, internationalization of the projects—i.e., all the offshore wind projects are in cooperation with foreign partners, usually in j/v formula. This increases interdependencies and places the projects in the context of a wider European strategy of Baltic offshore development. Secondly, Poland's offshore wind projects, when combined with other Baltic states offshore developments contribute to building new clean energy assets of significant size in the integrated European energy market. Together, they make the Baltic Sea a region of much greater strategic importance in terms of energy security and challenge the position and influences of the region's current biggest energy power—Russia.

New offshore wind farms will play their role in changing parameters of power and influences in the Baltic region energy market, but also in wider regional security. For all Baltic countries, which have been net importers of hydrocarbons, offshore wind capacity will serve the growing clean energy needs of the region. Under conditions of the integrated energy market, this will be an important new source of energy contributing to the decarbonization of the Baltic states' power system. In a geostrategic sense, offshore wind increases the cooperative elements of energy security. In most cases, international cooperation is necessary from the outset regarding project organization and implementation. International strategic alliances are integrated into the idea of the Baltic offshore wind development. At the later stage—i.e., production and distribution, these new partnerships will help to meet integrated energy market needs. In the long run, one of the most important security implications of the growing use of offshore wind energy in the Baltic region will be a decrease of import dependencies on foreign suppliers. For traditional exporters, it means loss of markets and the respective loss of influence. In the assessment of geopolitical risks, the behavior of the losing powers will be a crucial factor. In theory, the geopolitical risks are defined as "associated with wars, terrorist acts, and tensions between states that affect the normal and peaceful course of international relations" [56]. In the XXI c. they can be more often associated with the use of nontraditional warfare, including cyber, information, and economic conflict. The use of hybrid warfare poses a threat to critical energy infrastructure located in the Baltic Sea. In the global energy market, the geopolitical risks had been materializing in the forms of wars in oil or gas producing regions or political actions taken by exporters and importers. In fact, the biggest disruption in oil or gas supplies to the global market were the result of political events. Thus, in any measurement of energy security the geostrategic risk—i.e., foreign country-related risk—shall not be underestimated. In the Baltic Sea region, the geostrategic risks are associated with Russia's politics and the struggle over being the dominant regional power [57]. If in the past the EU attempted to extend its security community in the Baltic region beyond its borders, recent geopolitics, including Russia's aggression on Ukraine, cyber-attacks in the CEE region, proved to undermine these efforts. Businesses and policymakers need to take into consideration the wide variety of geostrategic risks. Before any offshore wind project is finalized, there are many geostrategic challenges and hybrid warfare activities which can arise.

As shown in Table 2, foreign companies, which participate in offshore wind projects in Poland have a range of attributes. These are one of the major players in the European offshore wind industry, which provides the technology and know-how and greater market power. Apart from the economic and technological benefit, the geographic key in the selection of partners for j/v is worth noticing. Denmark and Norway are active NATO members, and both are involved in geopolitical disputes with Russia over the Arctic region. Both countries will also play a greater role in gas supplies to the Polish market in the near future, especially after implementation of the Baltic Pipe project. In the changing security environment in the Baltic Sea, new threats to the critical energy infrastructure in the region can be expected. Russia has already used hybrid warfare towards its neighbors [51,58]. If its relative power and influence decreases among others due to decarbonization efforts in the Baltic region, Russia will be even more determined to use all means to protect its interests and spheres of influence [57]. Even if the relationship between renewable energy and the decline of the rentier states like Russia is not clear and requires studies [34], these future risks need to be considered in the strategic planning of the offshore Baltic wind development including in concerned companies individual business strategies. Physical and cyber protection of new energy infrastructure in the Baltic Sea will require wider cooperation with NATO, and in particular the Baltic states and other countries involved in certain projects.

5. Conclusions

The article has proved that the complex conditions for the development of offshore wind in Poland highlight the need for a multi-faceted analysis of public policy tools. The use of the multi-dimensional and multi-criteria analysis enabled identification and classification of the individual tools and to better understand their respective functions concerning public policy goals.

The analysis of the individual tools has shown that the measures used by the Polish government in offshore wind power development give a high probability of achieving the assumed public policy objectives. Moreover, the currently applied and future tools are divergent—i.e., falling into several theoretical categories, which enhances their final effect.

The characteristic of the applied tools, which imply high public intervention, indicates that achieving the public policy goal of decarbonization with the use of offshore wind energy shows that the government prefers results over costs. From an economic perspective, EU ETS—which put a considerable burden on the coal-based Polish energy sector—was not effective enough in promoting offshore wind development. Additional economic incentives were needed.

By placing Poland's public policy tools on offshore wind development in a wider geostrategic context of the Baltic Sea and energy security, we see the new facets, which can explain why coercive, direct and low visible tools have been applied. Energy transition is a high politics issue in Poland. Offshore wind energy provides energy self-sufficiency and introduces new patterns for technological, industrial, and energy cooperation in the region. This creates new regional interdependencies. As a renewable energy source, offshore wind power decreases not only the reliance on traditional fossil fuels but also dependencies on foreign supplies of hydrocarbons. These changes in the energy market bring geostrategic implications. The development of offshore wind farms, being one of the most scalable clean energy technologies in the Baltic Sea, will impact the region's energy balance and further the parameters of influence and power on the energy market. Given the already growing geopolitical tensions across the Baltic Sea (between NATO-Russia and EU-Russia), including the use of hybrid warfare, the implementation of offshore wind projects may face the challenges of a geostrategic nature. Thus, these risks should not be overlooked.

Author Contributions: Conceptualization, K.P. and K.K.; Methodology, K.K. and K.P.; Formal analysis, K.P. and K.K.; Investigation, K.K.; Resources, K.P. and K.K.; Writing—original draft preparation, K.P. and K.K.; Writing—review and editing, K.K.; Visualization, K.K. and K.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Publicly available datasets were analyzed in this study. This data can be found here: https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html and https://ec.europa.eu/eurostat (accessed on 31 July 2021).

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

BEMIP	Baltic Energy Market Interconnection Plan
CEE	Central Eastern Europe
CfD	Contract for Difference
EEZ	Exclusive Economic Zone
ERO	Polish Regulatory Office
EU ETS	European Union Emission Trading System
IEA	International Energy Agency
j/v	joint venture
LCOE	levelized cost of energy
LNG	liquified natural gas
KPO	National Reconstruction Plan
MSP	Maritime Spatial Plan
NS2	Nord Stream 2
OWA	Offshore Wind Act
PEP 2040	Polish Energy Policy up to 2040
PSEW	Polish Wind Energy Association
RRF	EU Found Recovery and Resilience Facility

References

1. Kumar, Y.; Ringenberg, J.; Depuru, S.S.; Devabhaktuni, V.K.; Lee, J.W.; Nikolaidis, E.; Andersen, B.; Afjeh, A. Wind Energy: Trends and Enabling Technologies. *Renew. Sustain. Energy Rev.* **2016**, *53*, 209–224. [CrossRef]
2. Esteban, M.D.; Diez, J.J.; López, J.S.; Negro, V. Why Offshore Wind Energy? *Renew. Energy* **2011**, *36*, 444–450. [CrossRef]
3. Kaldellis, J.K.; Kapsali, M. Shifting towards Offshore Wind Energy—Recent Activity and Future Development. *Energy Policy* **2013**, *53*, 136–148. [CrossRef]
4. Bilgili, M.; Yasar, A.; Simsek, E. Offshore Wind Power Development in Europe and Its Comparison with Onshore Counterpart. *Renew. Sustain. Energy Rev.* **2011**, *15*, 905–915. [CrossRef]

5. Farkas, A.; Degiuli, N.; Martić, I. Assessment of Offshore Wave Energy Potential in the Croatian Part of the Adriatic Sea and Comparison with Wind Energy Potential. *Energies* **2019**, *12*, 2357. [CrossRef]
6. GWEC. *Global Wind Report 2019*; Global Wind Energy Council: Brussels, Belgium, 2020.
7. IEA. *Offshore Wind Outlook 2019: World Energy Outlook Special Report*; International Energy Agency: Paris, France, 2019.
8. Olsen, F.; Dyre, K. Vindeby Off-Shore Wind Farm—Construction and Operation. *Wind Eng.* **1993**, *17*, 120–128.
9. Rodrigues, S.; Restrepo, C.; Kontos, E.; Teixeira Pinto, R.; Bauer, P. Trends of Offshore Wind Projects. *Renew. Sustain. Energy Rev.* **2015**, *49*, 1114–1135. [CrossRef]
10. Soares-Ramos, E.P.P.; de Oliveira-Assis, L.; Sarrias-Mena, R.; Fernández-Ramírez, L.M. Current Status and Future Trends of Offshore Wind Power in Europe. *Energy* **2020**, *202*, 117787. [CrossRef]
11. China Installed Half of New Global Offshore Wind Capacity during 2020 in Record Year. Available online: https://gwec.net/china-installed-half-of-new-global-offshore-wind-capacity-during-2020-in-record-year/ (accessed on 22 April 2021).
12. Wind Europe. *Offshore Wind in Europe Key Trends and Statistics 2020*, 2021st ed.; Wind Europe: Brussels, Belgium, 2021.
13. European Commission. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. An EU Strategy to Harness the Potential of Offshore Renewable Energy for a Climate Neutral Future*; European Commission: Brussels, Belgium, 2020.
14. Wüstemeyer, C.; Madlener, R.; Bunn, D.W. A Stakeholder Analysis of Divergent Supply-Chain Trends for the European Onshore and Offshore Wind Installations. *Energy Policy* **2015**, *80*, 36–44. [CrossRef]
15. Varela-Vázquez, P.; del Carmen Sánchez-Carreira, M. Estimation of the Potential Effects of Offshore Wind on the Spanish Economy. *Renew. Energy* **2017**, *111*, 815–824. [CrossRef]
16. Söderholm, P.; Pettersson, M. Offshore Wind Power Policy and Planning in Sweden. *Energy Policy* **2011**, *39*, 518–525. [CrossRef]
17. Biniek, P. The Risk of Social Conflicts in the South Baltic Area in Light of the Location of Factors of Offshore Wind Farms. *J. Geogr. Politics Soc.* **2021**, *11*, 6–15. [CrossRef]
18. Toke, D. The UK Offshore Wind Power Programme: A Sea-Change in UK Energy Policy? *Energy Policy* **2011**, *39*, 526–534. [CrossRef]
19. Lise, W.; Sijm, J.; Hobbs, B.F. The Impact of the EU ETS on Prices, Profits and Emissions in the Power Sector: Simulation Results with the COMPETES EU20 Model. *Env. Resour. Econ.* **2010**, *47*, 23–44. [CrossRef]
20. Pietzcker, R.C.; Osorio, S.; Rodrigues, R. Tightening EU ETS Targets in Line with the European Green Deal: Impacts on the Decarbonization of the EU Power Sector. *Appl. Energy* **2021**, *293*, 116914. [CrossRef]
21. Sijm, J.; Chen, Y.; Hobbs, B.F. The Impact of Power Market Structure on CO2 Cost Pass-through to Electricity Prices under Quantity Competition—A Theoretical Approach. *Energy Econ.* **2012**, *34*, 1143–1152. [CrossRef]
22. Hevia-Koch, P.; Klinge Jacobsen, H. Comparing Offshore and Onshore Wind Development Considering Acceptance Costs. *Energy Policy* **2019**, *125*, 9–19. [CrossRef]
23. Hallgren, C.; Arnqvist, J.; Ivanell, S.; Körnich, H.; Vakkari, V.; Sahlée, E. Looking for an Offshore Low-Level Jet Champion among Recent Reanalyses: A Tight Race over the Baltic Sea. *Energies* **2020**, *13*, 3670. [CrossRef]
24. Hallgren, C.; Sahlée, E.; Ivanell, S.; Körnich, H.; Vakkari, V. Wind Conditions over the Baltic Sea—Comparing Reanalysis Data Sets with Observations. In Proceedings of the EGU General Assembly Conference Abstracts, Vienna, Austria, 6 May 2020; p. 21897.
25. Rusu, E. An Evaluation of the Wind Energy Dynamics in the Baltic Sea, Past and Future Projections. *Renew. Energy* **2020**, *160*, 350–362. [CrossRef]
26. Blažauskas, N.; Wlodarski, M.; Paulauskas, S. *Perspectives for Offshore Wind Energy Development in the South-East Baltics*; Klaipeda University: Klaipeda, Lithuania, 2013; ISBN 978-9955-18-723-3.
27. Grigas, A. *The Politics of Energy and Memory between the Baltic States and Russia*; Routledge: London, UK; New York, NY, USA, 2014; ISBN 978-1-4724-5136-1.
28. Orban, A. *Power, Energy, and the New Russian Imperialism*; Conn: Westport, CT, USA, 2008; ISBN 978-0-313-35222-5.
29. Yergin, D. *The Prize: The Epic Quest for Oil, Money, and Power*; Simon & Schuster: New York, NY, USA, 1991; ISBN 978-0-671-50248-5.
30. Yergin, D. *The Quest: Energy, Security and the Remaking of the Modern World*; Penguin Press: New York, NY, USA, 2011; ISBN 978-1-59420-283-4.
31. Klare, M.T. Geopolitics Reborn: The Global Struggle over Oil and Gas Pipelines. *Curr. Hist.* **2005**, *103*, 428–433. [CrossRef]
32. Moran, D.; Russell, J.A. *Energy Security, and Global Politics: The Militarization of Resource Management*; Routledge: London, UK, 2008; ISBN 978-1-134-00200-9.
33. Aswani, R.; Sajith, S.; Bhat, M.Y. Is Geopolitics a Threat for Offshore Wind Energy? A Case of Indian Ocean Region. *Environ. Sci. Pollut. Res.* **2021**, *28*, 32683–32694. [CrossRef] [PubMed]
34. O'Sullivan, M.; Overland, I.; Sandalow, D. *The Geopolitics of Renewable Energy*; Harvard Kennedy School Facukty Research Working Papers; Center on Global Energy Policy Columbia University | SIPA: New York, NY, USA, 2017.
35. Criekemans, D. Geopolitics of the Renewable Energy Game and Its Potential Impact upon Global Power Relations. In *The Geopolitics of Renewables*; Scholten, D., Ed.; Lecture Notes in Energy; Springer: Cham, Switzerland, 2018; pp. 37–73. ISBN 978-3-319-67855-9.
36. Hood, C. *The Tools of Government*; Chatham House Pub: Chatham, UK, 1986; ISBN 978-0-934540-52-0.
37. *Carrots, Sticks & Sermons: Policy Instruments and Their Evaluation*; Bemelmans-Videc, M.-L.; Rist, R.C.; Vedung, E. (Eds.) Comparative Policy Analysis Series; Transaction Publishers: New Brunswick, NJ, USA, 1998; ISBN 978-1-56000-338-0.

38. Phidd, G.B.D. *Canadian Public Policy: Ideas, Structure, Process—2ed*, 2nd ed.; Nelson Thomson Learning: Scarborough, UK, 1992; ISBN 978-0-17-603530-3.
39. Salaman, L. The New Governance and the Tools of Public Action: An Introduction. *Fordham Urban Law J.* **2011**, *28*, 1611.
40. Salamon, L.M.; Elliott, O.V. (Eds.) . *The Tools of Government: A Guide to the New Governance*; Oxford University Press: New York, NY, USA, 2002; ISBN 978-0-19-513665-4.
41. COWI; Directorate-General for Energy (European Commission); Ea Energy Analyses; THEMA Consulting Group. *Study on Baltic Offshore Wind Energy Cooperation under BEMIP: Final Report*; Publications Office of the European Union: Luxembourg, 2019; ISBN 978-92-76-09690-0.
42. Polskie Towarzystwo Energetyki Wiatrowej/Polish Association of Wind Energy. *Przyszłość Morskiej Energetyki Wiatrowej w Polsce/the Future of Offshore Wind in Poland*; PSEW Report, PSEW: Warsaw, Poland, 2019.
43. Księżopolski, K.; Maśloch, G. Time Delay Approach to Renewable Energy in the Visegrad Group. *Energies* **2021**, *14*, 1928. [CrossRef]
44. Ministry of Climate and Environment. *Energy Policy of Poland until 2040*; Ministry of Climate and Environment: Warsaw, Poland, 2021.
45. Ustawa z dnia 17 grudnia 2020 r. o promowaniu wytwarzania energii elektrycznej w morskich farmach wiatrowych/Act of 17 December 2020 on promoting electricity generation in offshore wind farms 2020. Available online: http://orka.sejm.gov.pl/proc9.nsf/ustawy/809_u.htm (accessed on 31 July 2021).
46. European Commission. *Communication on The European Green Deal*; European Commission: Brussels, Belgium, 2019.
47. Rozporządzenie Rady Ministrów z dnia 14 Kwietnia 2021 r. w Sprawie Przyjęcia Planu Zagospodarowania Przestrzennego Morskich Wód Wewnętrznych, Morza Terytorialnego i Wyłącznej Strefy Ekonomicznej w Skali 1:200 000/The Regulation of the Council of Ministers of April 14, 2021 on the adoption of a spatial development plan for internal sea waters, territorial sea and the exclusive economic zone on a scale of 1: 200,000. *J. Laws* **2021**, *935*, 732.
48. Ministerstwo Funduszy i Polityki Regionalnej. Krajowy Plan Odbudowy i Zwiększania Odporności. Projekt; Warsaw, April 2021. Available online: https://www.gov.pl/web/planodbudowy/czym-jest-kpo2 (accessed on 1 June 2021).
49. Göke, C.; Dahl, K.; Mohn, C. Maritime Spatial Planning Supported by Systematic Site Selection: Applying Marxan for Offshore Wind Power in the Western Baltic Sea. *PLoS ONE* **2018**, *13*, e0194362. [CrossRef]
50. Roucek, J.S. The Geopolitics of the Baltic States. *Am. J. Econ. Sociol.* **1949**, *8*, 171–175. [CrossRef]
51. Martin, M.; Hoffman, F.G.; Schaub, G. *Hybrid Maritime Warfare and the Baltic Sea Region*; Centre for Military Studies, University of Copenhagen: Copenhagen, Denmark, 2016.
52. Ekengren, M. A Return to Geopolitics? The Future of the Security Community in the Baltic Sea Region. *Glob. Aff.* **2018**, *4*, 503–519. [CrossRef]
53. Riley, A. *Nord. Stream 2: Understanding the Potential Consequences*; Atlantic Council: Washington, DC, USA, 2018.
54. Assenova, M. Mitigating the Nord Stream Two Impact on Ukraine. *Eurasia Dly. Monit.* **2021**, *18*, 93.
55. Sziklai, B.R.; Koczy, L.A.; Csercsik, D. *The Geopolitical Impact of Nord. Stream 2*; Social Science Research Network: Rochester, NY, USA, 2019.
56. Caldara, D.; Iacoviello, M. Measuring Geopolitical Risk. *Int. Finance Discuss. Pap.* **2018**, *2018*, 1–66. [CrossRef]
57. Prońińska, K. The Energy Policy of Russia or Energy Basis of Geopolitical Supremacy. In *Fuel for Dominance*; Peter Lang: Bern, Switzerland, 2019; pp. 261–302. ISBN 978-3-631-82463-4.
58. Chivvis, C. *Understanding Russian "Hybrid. Warfare": And What Can. Be Done About It*; RAND Corporation: Santa Monica, CA, USA, 2017.