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Towards a Green Transformation: Legal Barriers to Onshore Wind Farm Construction

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Abstract: Energy transformation is essential for reducing electricity production costs and building a competitive advantage for each country. Its success relies on balancing environmental goals with the need to maintain secure energy supplies, keep prices at an acceptable level for consumers, and ensure the economy's competitiveness. Although the literature presents various investment constraints for onshore wind farms, little is known about the regulations that were supposed to protect the natural environment, and in practice, they turned out to be legal constraints on the development of onshore wind farms. This research aims to eliminate this research gap, and identify the legal limitations hindering the development of onshore wind farms, using Poland as a case study. It was examined whether legal provisions aimed at ensuring sustainable development could negatively impact the growth of onshore wind farms. The systematic literature study was supplemented by reviewing documents (available in the Polish Parliament and the Government Legislation Centre) relating to the location policy for onshore wind farms. The findings reveal that unfavourable legal solutions introduced in Poland over nearly a decade have severely obstructed the growth of onshore wind energy. This has led to harmful and measurable effects on society and the economy. Therefore, it is suggested that the creation of energy market regulations should be subject to greater stakeholder oversight. This study fits into the research field on legal barriers, classified as any negative phenomena and processes that do not contribute to achieving assumed goals.

Keywords: energy transition; sustainability; onshore wind farm; green transformation; Polish regulations

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1. Introduction

Europe has more than 220 gigawatts (GW) of installed wind farm capacity, produced mainly by onshore wind installation. The wind industry presently employs 370,000 persons across Europe [1]. It contributes EUR 57.2 billion to the European Union's (EU) Gross Domestic Product (GDP) and generates EUR 10 billion in annual tax income [1]. The Polish wind energy generation system seems significantly underdeveloped relative to EU trends [2,3]. Fossil fuels dominate the Polish energy generation portfolio. Hard coal and lignite generate over two-thirds of electricity production in Poland [4]. Nonetheless, the share of renewable energy sources is consistently rising. Data from 2020 [5] suggest that this represents the first occurrence in Poland where coal's share has decreased below 70 per cent. Onshore wind turbines generate the highest volume of clean energy in Poland. In 2020, the installed capacity of onshore wind energy installations reached 6.35 GW [5]. In September 2024, the installed capacity from renewable energy sources amounted to just over 32 GW. Wind farms account for 9.8 GW (30.58 per cent) and photovoltaics for 19.89 GW (62.10 per cent) [6].

Renewable energy can reduce greenhouse gas concentrations in the atmosphere, alleviating the impacts of climate change. The literature contains techno-economic assessments of wind energy potential and other aspects related to wind turbines (e.g., [7–15]). Nonetheless, the employed technologies are not wholly environmentally safe. Wind turbines may generate noise and collide with birds and bats [16,17]. Consequently, the rules and regulations implement preventive measures to mitigate the potential adverse effects of wind farms on the environment. Some studies, e.g., [18–24], indicate the barriers to wind energy production and show that legislative regulations and inadequate financial resources for energy transformation may hinder the development of onshore wind farms.

Although the literature, e.g., [20,25–32], presents legal barriers to the development of wind farms in different countries, the impact of regulations on the installation of wind farms has not yet been fully explored in cases where these regulations were potentially intended to promote sustainable development and, in practice, negatively influenced sustainability. This study demonstrates that adverse regulatory modifications implemented in Poland over the past decade have considerably hindered the development of onshore wind energy, adversely impacting society and the economy. Regulations regarding wind energy production must be transparent and consider the interests of all stakeholders.

The EU policy aims to eliminate greenhouse gas emissions in Europe by the middle of the 21st century. Although the climate goals set by the EU may change with the change of ruling parties in the EU member states, the EU parliament, and the EU commission, they are currently in force and require, among others, Poland to move away from fossil fuels and develop renewable energy. Such are also the social expectations in Poland to reduce air pollution, which negatively affects the health of the country's inhabitants [33–38]. Considering the importance of the development of wind farms in Poland, this article shows the socio-economic effects of the legal constraints on the energy transition. The research aims to answer the following questions: (1) How can legislation harm onshore wind farm development? (2) What are the consequences of blocking the growth of wind farms in Poland?

The structure of this article is as follows: First, we discuss the development of wind farms in the context of social, technological, legal, administrative, political, and economic barriers identified in recent literature. Next, we present the legal framework for the onshore wind farms in the European Union, to which Poland belongs. In the next section, we present the assumption of an Onshore Wind Farm Logframe, which we use. Next, we identify legal barriers to onshore wind farm development in Poland and their consequences. We show the current stage of proposed changes in regulations related to onshore wind farms. Finally, we discuss our findings and formulate conclusions. We point out opportunities for further research.

2. Literature Review: Barriers to Wind Turbine Installation

The literature shows social, technological, legal, administrative, political, and economic barriers to wind turbine installation [8–32,39]. Political barriers result from the programmes of the ruling political parties, which may be more interested in supporting traditional energy production based on fossil fuels than in supporting renewable energy development, guided by political calculations of the number of voters either involved in the production of energy from fossil fuels or using these energy sources. Social hurdles are typically associated with limited societal acceptance during the planning and execution of onshore wind energy initiatives. Consequently, broader dissemination of knowledge may enhance individuals' acceptance and inclination to utilise wind energy sources. The deficiency of knowledge may result in misconceptions and uncertainties concerning the reliability and efficacy of wind energy systems [39]. Transparency International shows that most nations grapple with corruption [40,41]. Bribes must be offered to finalise the project, discouraging stakeholders from engaging in discussions on social issues related to projects with the government [42]. Corruption and conflicts of interest may lead authorities and officials to favour specific projects or enterprises, resulting in inefficient resource allocation and obstructing the execution of economically viable wind energy initiatives. Corruption is frequently associated with a lack of transparency in the decision-making process. Any delays in the investment process require explanation, as ambiguous decision-making procedures hinder investment. Consequently, it is essential to ensure transparent decision-making processes through information dissemination to stakeholders and public discussions before decisions related to onshore wind farm installation [41,43]. Brauers and Oei [44] highlight that political barriers arise from the ownership structures of energy producers. In Poland, as in Spain, a coordinated market economy exists, where the state plays a pivotal role by owning and managing a substantial share of coal assets. The existing literature [45] reveals that, in this scenario, decisions regarding coal phase-out are fundamentally "public decisions" rather than market-driven ones. This decision-making strongly emphasises employment protection concerns over competitiveness, setting Poland apart from liberal market economies and underscoring the need for thoughtful policy strategies that balance economic and social interests. It is the political barrier to onshore wind farm installation.

Technical barriers are often related to geography and the conditions resulting from the terrain [46]. Investments in onshore wind farms in marshy or frequently flooded areas require different solutions than lowland areas without these limitations. This is associated with financial barriers, as securing wind turbine locations on unstable ground involves the implementation of complex and expensive technical solutions. Due to financial limitations, certain countries lack developed research and development (R&D) operations, necessitating reliance on technology transfer from industrialised nations. Research and development are essential to mitigate expenses and address technical challenges. They are also crucial to enhancing wind energy's competitiveness relative to traditional fuels [39]. Tumse et al. [47] comprehensively studied and compared the characteristics and advancements of onshore and offshore wind turbine technologies installed worldwide. They found a global trend toward increasing the rotor diameter of both onshore and offshore wind turbines over time, which requires additional technical security measures. Additionally, in Poland, no broad analyses have been conducted on how offshore wind energy can contribute to stabilising energy production in the power system, particularly compared to other renewable sources. The same remark can be made for onshore wind energy. Therefore, the technical barriers to developing such energy include the transmission and storage network [48].

Capacity remuneration mechanisms are vital for energy sustainability and are currently utilised in many European countries. In 2018, Poland took a step by implementing a centralised capacity market designed to secure adequate funding for existing and new power generation units and enhance long-term energy security. A key promise of this mechanism was that it would stimulate investments in new energy units. It was found that existing units were the primary beneficiaries of the capacity market, comprising over 80% of the contracted capacity obligation volumes for 2021–2025. Those entities that had not already advanced in construction phases, having made investment decisions long before the capacity market's launch, did not benefit from the financial support provided by the capacity market. This means that the government did not create sufficient incentives for investment in new power generation units. It was a legal and financial barrier for new energy investments [49].

Renewable energy systems exhibit lower reliability than conventional energy sources [50]. Furthermore, equilibrium between supply and demand is essential for the reliability and stability of power networks. Wind energy's unstable characteristics complicate this equilibrium significantly when wind conditions fluctuate rapidly [51–53]. As the proportion of wind power rises, the power system wind energy's unstable characteristics complicate this equilibrium, which encounters electrochemical oscillations and frequency fluctuations [39,54]. This issue can be exacerbated during storms due to the continual fluctuations in wind speed [55]. Risk is a crucial factor in the progression of any project, including wind energy initiatives. Wind turbines may encounter many issues, including gearbox malfunction and blade control failures [39,56]. The domestic market may cause another risk. Low domestic demand, fuelled by insufficient tender volumes and planning delays, negatively correlates with competitiveness in wind energy, as a German case proved [57]. These technical and financial barriers significantly influence the advancement of wind energy initiatives. Moreover, in certain nations, subsidies for fossil fuels or energy producers from conventional sources render fossil fuels less expensive than wind energy. Consequently, wind energy cannot compete with traditional sources [58]. This will impede the expansion of wind energy and may dissuade prospective investors from committing resources to it. Moreover, subsidies for fossil fuels can create the public perception that these traditional energy sources are essential and reliable, diminishing public endorsement for wind energy [39].

The increasing share of renewable energy sources in the global energy landscape transforms how people approach energy production and consumption [59–63]. This shift is pivotal for managing the limited resources and crucial for reducing environmental pollution and combating energy poverty through improved energy efficiency. Utilising a taxonomic measure of development based on the Weber median, a study [64] explored the relationship between renewable energy adoption and the incidence of energy poverty among EU Member States. They revealed stark contrasts between the "old" EU countries and those that joined in 2004 and later. These disparities affect both renewable energy usage and the prevalence of energy poverty. The "old" EU Member States found a positive and moderate relationship between renewable energy use and decreased energy poverty; in other words, a greater reliance on renewable energy corresponds to lower levels of energy poverty. On the other hand, the "new" EU countries exhibited either a weak or absent relationship regarding this connection [64]. The abovementioned study does not fully demonstrate the reasons for this state of affairs, which also justifies undertaking this study. The implementation of the Green Deal in the EU means, among other things, the introduction of an Emissions Trading System (ETS) and its modification (ETS2), which in turn will be associated with severe financial consequences for users resulting from the need to pay very high fees for energy obtained from fossil fuels [65–67]. More than policy is needed to ensure the efficient delivery of government services. An administrative system based on precise regulations is critical for reaching the targets [39]. Effective coordination is also key to achieving goals and should be determined by rules. Numerous pieces of legislation predominantly emphasise the environmental impact assessment, primarily linked to constructing onshore wind generators. The location restrictions generally apply to agricultural land, areas protected due to the presence of certain animal species, or, in the US, Native American lands [39,68–70]. Litigation can also be an obstacle to advancing renewable energy. For example, the French courts nearly always challenge wind power project approval [71]. Barriers resulting from the lack of application of law or the ambiguity of law should be linked to political and administrative obstacles. The parliament passes laws, and the government administration prepares, in turn, implementing acts—regulations. The parliament influences the shape of laws regulating the judiciary, which legally verifies the executive power's activities. Any disturbances in the legal system and the separation of powers impact every investment process, including the construction and location of wind farms. Therefore, straightforward and stable regulatory frameworks are crucial to developing the wind energy sector [39].

A procedure for a systematic literature review [72,73] based on Science Direct, Google Scholar, and Scopus databases has ascertained the primary obstacles in wind farm installation. This study used a compilation of a set of keywords including "wind energy", "barriers to wind energy", "legal barriers to wind farms", "the legal and regulatory barriers for the development of wind farms", "barriers to onshore wind farm implementation", barriers to onshore wind energy", barriers to onshore wind farm" "the legal hurdles to developing wind power", "hinders of wind power", "constraints of wind energy", and "sustainable development" in the search process, including the term "Poland".

The literature analysis [2,74–79] did not reveal any financial, technical or social problems that would significantly slow down the construction and location of onshore wind farms in Poland. Previous studies on legal barriers to renewable energy development [24–26,29,31,41,49] did not fully demonstrate how regulations to ensure sustainability by protecting the environment and people can negatively affect the development of onshore wind farms. This allowed us to establish that the effect of the legal environment on investments in onshore wind farms still requires further investigation. The following research problems were formulated: How can legislation harm onshore wind farm development? What are the consequences of blocking the growth of wind farms in Poland?

3. Materials and Methods

The research methodology is based on the theory of change, originating in the 1930s [80]. This theory, commonly known as a "logical framework" or "logframe", is defined by its process-level analysis, which includes inputs, outputs, outcomes, and impacts [81–83]. It is assumed that examining the causal links between the legal environment of onshore wind farm investment and the recognition and achievement of long-term objectives might uncover potential obstacles to realising those goals, thereby facilitating desired changes. Before developing the study design "logframe", as depicted in Figure 1, it was essential to ascertain the primary objective of the framework. The aim is to determine a solution to facilitate onshore wind farm construction in Poland that follows sustainability.

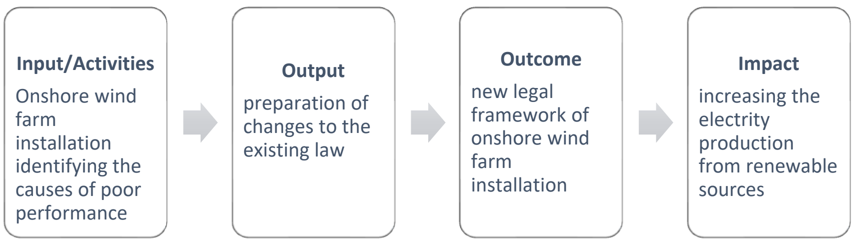

Figure 1. Onshore Wind Farm Logframe. Based on [83].

Usage of the theory of change shows that the input of identifying the causes of poor performance of the onshore wind farm construction plan and adopting the changed legal act is preceded by an analysis of opinions submitted by interested parties (companies producing wind farms, installers, residents, local authorities, owners of properties on which wind farms are to be built, and other stakeholders interested in environment protection), which will lead to increased knowledge of any limitations of onshore wind farm location, including those resulting from the ignorance of residents or lobbying groups, which will in turn lead to the adoption of onshore wind farm regulations satisfactory to all interested parties that contribute to sustainable development manifested by an increased share of onshore wind farms in electricity production while respecting the requirements of environmental protection and various social needs. Using the theory of change enables the identification of obstacles to onshore wind farm development in Poland.

The use of "logframe" means that the period taken for analysis covers the years related to the introduction of the 10H Act in Poland until the end of 2024. However, when conducting research during this period, we do not detail how the power generated from the installed onshore wind farms increased in individual years but focus, following the "logframe", on how the legal environment of onshore wind farms changed.

This research utilises Polish parliamentary documents describing the scope of the proposed changes to the act and the reasons and consequences, the government bill amending the act on investments in wind farms, and the parliamentary bill on investments in wind farms. In addition, we used documents prepared by the Minister of Climate and Environment regarding changes to the regulations concerning wind farms. Only publicly available documents were used. These documents justify the reasons and scope of the proposed changes to the law regarding the location of wind farms [84–94]. Public entities' websites and analyses prepared by different institutions have also been employed. To determine whether and to what extent legal provisions have impacted limiting investments in wind farms, data available from the Polish Energy Regulatory Office regarding the construction of wind farms before and after the introduction of specific legal provisions were compared.

Like any study, this one also has some research limitations. The research was conducted based on data from Parliament and government institutions and organisations specialising in energy market analytics. However, in subsequent studies, interviews with wind farm energy producers and representatives of local government administration are necessary to identify barriers other than those resulting from applying the law.

4. Legal Framework for the Onshore Wind Farms

Various initiatives (presented below) advocating for renewable energy sources have been implemented in the European Union (EU) in recent years. In 2009, EU leaders set targets mandating that by 2020, about 20 per cent of energy consumption within the European Union should derive from renewable sources. Under this directive, all EU Member States formulated strategies to achieve designated targets and submitted action plans regarding utilising renewable energy sources. Every two years, each EU Member State must report progress based on relevant indicators [95–97]. In July 2021, the European Commission implemented the legislative package "Fit for 55: delivering the EU's 2030 Climate Target on the Path to Climate Neutrality" and the Renewable Energy Directive inside the European Green Deal framework to increase renewable energy sources [98,99]. In May 2022, after the Russian invasion of Ukraine, the European Commission decided to accelerate the shift to sustainable energy and reduce dependence on Russian oil. On 9 November 2022, it was established that power stations employing renewable energy sources would be considered a critical public priority. The EU aims to quicken the transition to a low-carbon and sustainable energy system [100]. All activities implemented by the EU seek to attain carbon neutrality by 2050 [101,102].

The primary legal act regulating onshore wind energy development in Poland is the Act of 20 February 2015 on renewable energy sources (Journal of Laws of 2024, item 1361) [103,104]. This act implements into Polish law Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (OJ EU.L.2009.140.16, as amended) [96] and Directive (EU) 2018/2001 of the European Parliament and the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ EU.L.2018.328.82) [105]. From the perspective of onshore wind energy, the Act on Renewable Energy Sources [103,104] regulates, among other things, the principles and conditions for conducting activities in the field of electricity generation from renewable energy sources (RESs), including wind energy. Connection issues, i.e., regulations relating to connecting RES installations to the power grid, are still the domain of the Act of 10 April 1997—Energy Law (Journal of Laws of 2020, item 833, as amended) [106]. Thus, the Act on Renewable Energy Sources, supplemented by the provisions of the Energy Law, together shape the legal framework for the operation of onshore wind energy in Poland [103,104,106]. The Act of 20 May 2016 on investments in wind farms [107], also known as the 10H Act, included regulations for constructing onshore wind farms in Poland. According to the 10H rule, wind turbines could only be built at a distance of ten times their total height (mast with straight blade). In reality, wind turbines could only be built at a distance of 1.5–2 km from residential buildings, agricultural facilities and protected areas.

5. Results and Discussion

5.1. Analysis of Wind Energy Development in Poland to Global and European Union Trends

According to the Global Wind Energy Council, 117 GW of wind power capacity was added globally in 2023, resulting in a total installed capacity of 1021 GW (946 GW of which is onshore), marking a 50 per cent increase from 2022 [108]. In 2021 and 2022, capital expenditure in the onshore wind energy sector totalled USD 140 billion annually. The widespread appeal of this technology is chiefly attributable to its economic benefits. Data from the International Renewable Energy Agency indicate that the cost of generating energy from onshore wind decreased by 69 per cent from 2010 to 2022, with a 13 per cent reduction occurring between 2020 and 2021 [94,108,109].

From a European standpoint, wind energy is a fundamental component of the energy transition and decarbonisation inside the European Union. In 2022, it provided an average of 16 per cent of the electricity consumed in the EU, frequently exceeding 30 per cent daily. In 2023, Europe experienced an augmentation of 18.3 GW of installed wind power capacity, comprising 14.5 GW onshore and 3.6 GW offshore. From 2014 to 2023, Europe's total installed wind power capacity rose from 134 GW (126 GW onshore and 8 GW offshore) to 272 GW (238 GW onshore and 34 GW offshore). The EU aims for a minimum of 42.5 per cent of energy to be derived from renewable sources by 2030. The EU's 2030 objective necessitates an annual increase in wind power of 37 GW per year in the forthcoming years. Only this developmental scenario may logically fulfil the EU's 2030 objectives. The advancement of the wind sector necessitates the evolution of the job market. The wind industry may generate employment for approximately 3.74 million individuals globally by 2030 and up to 6 million by 2050 [94,109].

As pointed out earlier, Directive 2009/28/EC mandated that European Union (EU) Member States secure a designated proportion of energy from renewable sources in gross final energy consumption by 2020. The obligatory national general objectives included the projected 20 per cent proportion of renewable energy in the European Union's gross final energy consumption. Conversely, this objective was established at 15 per cent for Poland [96].

The capacity of installed onshore wind generators in Poland over 2013–2020 was analysed to determine how Poland prepared to meet the abovementioned EU target adopted in 2009. It was found that Poland did not attain the outcome mandated by the EU. In 2020, renewable energy constituted around 14 per cent of Poland's total electricity generation, with wind energy comprising 63.7 per cent of all renewable energy sources, serving as an ecological alternative to fossil fuels [110]. It was found that from 2017 to 2019, there was a significant decline in the growth of the installed capacity of wind generators in Poland (see Table 1).

Table 1. The capacity of installed onshore wind generators in Poland (GW).

Year	Capacity of Installed Onshore Wind Generators	Increase in Installed Onshore Wind Generators (GW)
2013	3.39	-
2014	3.84	0.45
2015	4.58	0.74
2016	5.81	1.23
2017	5.85	0.04
2018	5.86	0.01
2019	5.92	0.06
2020	6.35	0.43
Total	-	2.96

Source: [5].

In determining the causes of this situation, we found that the Act of 20 May 2016 on investments in wind farms [107] introduced the distance principle—the so-called 10H principle, i.e., ten times the height of the wind farm (mast with straightened blade) as the minimum distance of new investment from existing residential buildings and forms of nature conservation. Documents obtained from Parliament and the Ministry of Development and Technology [84–93,111] show that the introduction of this provision was a response by decision-makers to social dissatisfaction in some regions of the country related to the rapid development of wind farms, especially in places where work was carried out without broad consultations on the project.

Considering that most wind farms constructed in Poland have a total height of 180–200 m, their distance from buildings was 1.800–2.000 m. Adopting this solution meant that, in practice, new installations were constructed in areas where wind farms were already standing—built before the introduction of the 10H rule. This was the reason for stopping the development of wind farms in Poland [5] as shown in Table 1.

5.2. Analysis of the New Legal Framework Prepared by the Polish Minister of Climate and Environment

The Minister of Climate and Environment prepared a justification of the planned changes to the Act of 20 May 2016 on investments in wind farms (Journal of Laws of 2024, item 317) and the Act of 20 February 2015 on renewable energy sources (Journal of Laws of 2024, item 1361) [94]. It was stated in this justification that it would create new economic development impulses, especially at the local level, because the amendment to the Wind Act would eliminate the so-called 10H rule, which completely blocked the development of onshore wind energy in Poland for almost a decade [94]. The Minister of Climate and Environment stated that the 2023 amendment of the Act of 20 May 2016 on investments in wind farms allows the municipal council to reduce the 10H distance as part of the adopted local spatial development plan. Still, it cannot be less than 700 m even in such a case [94]. It is still too long a distance; therefore, the Ministry of Climate and Environment, in the justification of continued planned law changes, proposed a reduction in the distance between onshore wind turbines and residential buildings from 700 to 500 m. The Minister of Climate and Environment also stated that according to analyses, even the loudest wind turbines in most cases do not exceed a noise value above 45 decibels (dB) if the residential building is no less than 500 m from the wind turbine. Produced wind turbines also have the technical possibility to reduce sound emissions during their operation (even by 6 dB). Concerning vibrations and oscillations, the justification of planned law changes states that it is doubtful that vibrations transmitted through the ground would be felt by people living at a distance of more than 500 m from wind turbines. However, in each specific case, the local government will prepare a local spatial development plan and decide on the distance of turbines from buildings after familiarising itself with the strategic assessment of the impact on the environment and the demands of local communities [94].

The draft regulations prepared by the Ministry of Climate and Environment also specify the minimum distance of onshore wind turbines from forms of nature protection such as national parks or Natura 2000 areas (areas under special protection, for example, due to bat habitats). According to the draft, the minimum distance of onshore wind turbines from a national park has been set at 1500 m; thus, changes in the law stated that around 1000 regions were created in Poland (864 habitat areas and 145 bird areas). Natura 2000 areas cover around 20 per cent of the country's area. At the same time, the draft legislation assumes the possibility of expressing consent to a smaller minimum distance of a wind farm from nature protection areas if the wind turbine does not negatively affect the implementation of the purpose for which the nature protection area was established [94]. It is assumed that wind farm planning should be carried out per the principles of the Polish Act on Planning and Development. Nevertheless, the Minister of Climate and Environment aims to ensure the empowerment of local communities, which is why it is assumed that an additional provision will be introduced to this act, which states that for the processing of such local plans, the municipal authorities shall organise at least one open meeting at the stage of submitting proposals for the local spatial development plan. This maintains the obligation to hold two discussions, one at the beginning of the local spatial development plan's preparation and the other at the stage of public consultations [94].

The Ministry of Climate and Environment underlines in the justification of the proposed changes that in 2023 alone, the costs of the lack of energy transformation, including extreme weather events, smog and coal import, amounted to nearly PLN 260 billion (about EUR 62 billion). Meanwhile, implementing the transformation scenario is estimated at PLN 158 billion per year (about EUR 37.6 billion) on average for 2026–2030, with a simultaneous GDP growth of 4.13 per cent by 2030 [94].

According to the Minister of Climate and Environment, planned changes in the law will free up 32.5 thousand square kilometres of area. It was added that this means increasing the permissible area for potential investments in onshore wind farms by 44 per cent and may increase the potential capacity of new onshore wind projects by as much as 60–70 per cent. This means a chance to build over 10 GW of new onshore wind turbines by 2030. The change in the minimum distance from 700 to 500 m alone is expected to bring as much as 41 GW by 2040 [94,112,113].

"I am determined to have the bill before the government and sent to parliament this year. So that we can unlock the potential of onshore wind energy, which will become a great symbol and a guarantor of energy transformation in Poland", said Deputy Minister of Climate and Environment Miłosz Motyka [113]. However, the analysis of the Polish Parliament website shows that the planned legal changes had not been adopted by the Polish government and had not been sent to the Parliament for further processing by the time this article was written. From the point of view of the Onshore Wind Farm Logframe, the Polish government is still at the output stage.

We refer to the social theory [114–117] to better understand how legal change affects the investment process. We view the change in the legal environment of investment from the perspective of the concept of "struggle", which is a key category in social theory [114–118]. This concept emphasises that interests are expressed in a legal field—a site of legal struggle—defined by its procedural logic and technical conditions [118]. Our research confirms this concept. As a result of the expectations of particular interest groups, restrictive legal provisions have been introduced, which are currently intended to be radically changed. Meanwhile, the factual situation has not changed, as wind turbines' noise and vibration levels have not improved since the introduction of Law 10H [84–94].

The scientific literature widely presents cases of the influence of informal interest groups on the law-making process [41,119,120]. In the case of the process of changing the law given in this article and following previous studies on corruption and other organisational pathologies [41], several areas of increased risk should be noted. There is a lack of analysis available to the public ensuring that the location of onshore wind farms 500 m from human settlements will not affect human health in any way, as in the case of 700 m. Without such an analysis, it is impossible to exclude the influence of interest groups on the law-making process. Transferring decision-making powers to local government bodies regarding the location of onshore wind farms is consistent with the paradigm of self-government adopted in the EU, which indicates that matters concerning local communities should be handled by local administration [41]. However, the impact of wind farm installations on the natural environment must be reliably determined. Any shortcomings at this stage of the procedure for changes in legal regulations will result in a breach of citizens' trust in the state and its institutions and investors. The literature shows that the lack of investor trust negatively influences investment [121–123]. We underline this issue because previous research has shown that local government administration is at risk of corruption [41,124]. Therefore, all discretionary decisions provided for by law must be described and justified in great detail and verified by bodies independent of public administration. In addition, public discussions on draft solutions concerning local communities have not enjoyed much interest in Poland so far, as the Wiatrak research has thoroughly demonstrated [125]. Therefore, meetings with residents (obligated in the proposed law) must be organised under a non-governmental organisation's supervision and supervised by external public organisations to exclude cases of unreliable or incomprehensible information provided to the local community on matters related to the location of onshore wind farms.

5.3. Analysis of the Economic Consequences of the Introduction of the 10H Act

The average wholesale electricity prices in Europe in Q3 2024 were the following. Prices ranged from a quarterly average of 16 EUR/MWh in Sweden, 51 EUR/MWh in France, and 76 EUR/MWh in Germany to 101 EUR/MWh in Poland and 127 EUR/MWh in Romania and Malta. In Q3 2024, the retail electricity prices for household consumers in European capital cities were the following. The highest average prices were observed in Germany, Czechia, and Ireland (394, 365, and 360 EUR/MWh, respectively). The lowest ones were observed in Hungary, Malta, and Bulgaria (94, 123, and 136 EUR/MWh, respectively). Poland, Austria, and the Netherlands had average prices from 208 to 260 EUR/MWh [126,127].

In Poland, following the principle of the exchange obligation, the electricity produced is sold on the Polish Power Exchange (apart from exceptions provided by law). Producers, trading companies, distribution and transmission network operators, and the most significant industrial recipients meet there. Wholesale trade takes place on two markets: forward and spot. On the latter, prices are set based on the price offered by the most expensive generating unit that meets the demand at a given moment (the marginal price). The energy market is organised so that the first to enter the system is energy produced by units with the lowest variable cost of production. In Poland, these are renewable energy sources (RESs);

producers use brown and hard coal and only, in the end, the most expensive gas units. This is the so-called "merit order" rule. The current market price affects the price offered the next day on the markets and in forward contracts. This directly translates into prices offered by energy sellers to companies, local governments, and public institutions. The level at which the marginal price will be formed depends on two basic factors. The first is the energy demand, i.e., the current market demand (households, companies, institutions). The more energy is consumed, the more expensive the generating unit determines its price to be. The second element is the energy supply from the cheapest sources—the larger the part of demand covered by renewable energy sources, the fewer more expensive units will enter the system, and the lower the energy price on the market will be [127]. From the Ministry of Climate and Environment data, it was established that 60% of the cost of generating electricity in Poland is the cost of CO_2 emission allowances, which is related to energy production mainly using fossil fuels [128].

The European Union's objectives regarding the reduction in greenhouse gases and achieving zero emissions are realised in the EU Emissions Trading System (ETS), the legal framework of which is defined in the following legal acts: (1) Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC; (2) Directive 2023/959, amending Directive 2003/87/EC, establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system; (3) Directive (EU) 2018/410 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814; (4) Directive 2009/29/EC amending Directive 2003/87/EC to improve and extend the greenhouse gas emission allowance trading scheme; (5) Directive 2008/101/EC amending Directive 2003/87/EC to include aviation activities in the scheme for greenhouse gas emission allowance trading; (6) Directive 2004/101/EC amending Directive 2003/87/EC to establish a scheme for greenhouse gas emission allowance trading; (7) Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading and amending Council Directive 96/61/EC [65].

The ETS operates on a "cap and trade" framework. The cap denotes the maximum allowable total greenhouse gas emissions for installations and operators included within the system's scope. Following the EU's climate objectives, this cap is diminished yearly. The diminishing ETS cap causes an enduring shortage of allowances while guaranteeing their market value [65].

The 2023 modifications to the ETS Directive instituted a new emissions trading mechanism, ETS2, separate from the existing ETS. The ETS2 will attain complete operational capability in 2027. This new approach will address carbon dioxide emissions from fuel combustion in buildings, road transport, and other sectors, particularly small enterprises excluded from the current ETS [66]. It will increase the cost of energy produced in fossil fuels in Poland because, as shown earlier in this article, most of the energy is not produced by plants using renewable sources.

6. Conclusions

This study uses the "logframe" to resolve the problems identified and refers to social theory to better understand how legal change affects investment. Our study confirms that the change in the legal environment of investment should be perceived from the perspective of "struggle", which is a key category in social theory. We prove that the regulations which were potentially intended to promote sustainable development, in practice, negatively influenced this development. This means that the study has found a case where the decision-maker used the concept of sustainable development, but the new law limited sustainability. The study also found that transferring decision-making powers to local government bodies regarding the location of onshore wind farms is consistent with the paradigm of self-government adopted in the EU, which indicates that matters concerning local communities should be handled by local administration. However, the impact of wind farm installations on the natural environment must be reliably determined. Any shortcomings at this stage of the procedure for changes in legal regulations will result in a breach of citizens' trust in the state and its institutions and investors. Therefore, we formulate practical remarks on the activation of the local community in preparing development strategies and development plans. Based on these findings, we indicate the avenues of future research. They should include other countries, including those belonging to the EU, to determine whether the legal barriers identified in Poland have also occurred in different countries; it would be valuable to decide on all obstacles to the construction of onshore and offshore wind farms in all EU Member States. This would allow for the development of solutions to counteract these barriers.

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