GREEN DEAL OR MIRAGE OF TRANSFORMATION?

- POLES ON THE EUROPEAN GREEN DEAL
- THE SCALE OF DEVASTATION OF POLISH SOCIETY AND ECONOMY DUE TO THE IMPLEMENTATION OF THE IDEOLOGY OF CLIMATISM
- CRITICAL ANALYSIS OF THE COSTS OF IMPLEMENTING THE GREEN DEAL POLICIES IN POLAND
- THE NEED TO REVOKE THE EU'S CLIMATE POLICY

Expert report edited by Artur Bartoszewicz, Ph.D.

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NSZZ Solidarność

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FOREWORD

From its inception, "Solidarność" has always stood on the side of the weak, for their well-being and freedom. In August 1980, it stood up for them against the powerful machine of communism, which was never supposed to fall. But in the end, it did, although we are still struggling with the effects of its fall to this day. Who would have expected, that forty-four years after those events, our trade union would once again have to stand up for the weak, their welfare and freedom.

Yes, Ladies and Gentlemen, today we face powerful threats. Threats to security, threats to democracy, but one of the greatest calamities that threatens us is the so-called European Green Deal. A mechanism in the name of which the poor are to be made even poorer and the rich even richer. A mechanism that, under the guise of noble ideals, attempts to put the interests of some countries above those of other countries. A mechanism whose engineers claim that if we economically destroy Poland and Europe, "the planet will breathe." A mechanism whose criticism does not take place within the framework of scientific discussion, but is instead stigmatized and eradicated from the public space like the dogmas of Marxism-Leninism of the years justly past.

But "Solidarność" is not afraid of such criticism. It has never been afraid. That's why we present to you the first report of its kind on the effects of the Green Deal. A report prepared by experts recognized in their fields whom we also thank for having the courage to take part in this discussion.

A discussion which – we hope – is only in its early stages.

Piotr Duda

President of the National Commission of NSZZ „Solidarność"

KEY FINDINGS

For years, the European Commission has been encroaching on the domain of nation-states – stripping them of their prerogatives and changing (unlawfully limiting) their roles towards citizens and market participants. It effectively pursues a policy of violence. A clear example of such manipulation is the **European Green Deal.** It is no longer just an ideology, but primarily a pretext and a tool for taking control of the societies and economies of nation-states, even to the point of their colonization.

#2 Allocating public expenditure to **goals that are unnecessary and non-essential for security limits development potential.** This showcases the European Green Deal as a dimension of subversive actions and aligns with the model of hybrid warfare, in which states are burdened with unnecessary costs.

#3 The imposition of expensive energy production standards, unjustified by national and international competition requirements, translates into high socio-economic costs and ultimately **impoverishment of households**, as well as market participants themselves, particularly micro, small and medium-sized enterprises, where the share of energy in production or service costs is high. This results in the **deterioration of their market condition and even mass bankruptcy**. Expenditure on protective and compensatory mechanisms, borne by nation-states from their budgets, results in growing debt and demoralizes the economy.

#4 A nation, hysterical about the narrative of climatism, makes false consumer choices. Guided by total propaganda, subjected to financial coercion, impoverished by the results of erroneous decisions – it seeks products and services that fit into the framework of an imaginary zero-carbon economy. The speed of implementation of changes forces the purchase of technologies and ready-made products from other economic areas. Domestic entrepreneurs become mere distributors and installers of solutions primarily produced in China.

#5 Our continent is transforming into a space that absorbs products **whose future disposal is impossible**. It exports environmental pollution on a scale that falsifies the ambitious goals it has set. Europe pretends to undergo climate transformation, but in fact, it destroys the environment in other regions of the globe.

#6 A financial pyramid of naivety is being created, as it assumes the success of the ideology while this zero-emission perspective is to be financed from public funds (in fact, various types of taxes). The mirage of transformation justifies the expenditure of public funds. Politicians and activists, possessed by the ideology of the Green Deal, **give permission for massive state intervention in all markets and sectors, and even demand it**. In Poland, the full budget for the energy transformation has not yet been estimated. The amounts that may need to be spent by 2030 on investments related to the energy transformation, including the transformation of the energy market, are estimated to be as high as several hundred billion PLN.

Katarzyna Obłąkowska, Ph.D.

#7 **Poles do not support the European Green Deal** in its shape as of April 2024. They reject most of the 21 solutions of this policy. This is evidence of autocratic, rather than democratic, actions of the European authorities.

#8 **A decisive majority of Poles advocate for significant changes in the European Green Deal** (42.9%) or its complete rejection (34.9%). A small part (19.0%) believes that only minor changes should be introduced. It receives uncritical support from only 3.3% of Polish society. This indicates that the implementation of this policy is autocratic rather than democratic. .

#9 **Poles are in favor of holding a nationwide referendum** on rejecting the European Green Deal (56.5%). Only 26.4% of adults are against the referendum. Poles want democracy. Only autocratic rulers do not give the sovereign the right to express their opinion in a referendum. What awaits next is an all-powerful state, holding a sword over the head of the subject, punishing for every word spoken against the rulers' will.

#10 Between April and May 2024, **euroscepticism in Poland increased, but the majority of Poles still support Poland remaining in the EU** (63.1%). Poles affirm the EU as a Europe of sovereign states (62.2%), a small part supports its federalization (11.5%), and an even smaller part supports its unification (3.2%). Declared opponents of the EU constitute 12.0% of Polish society.

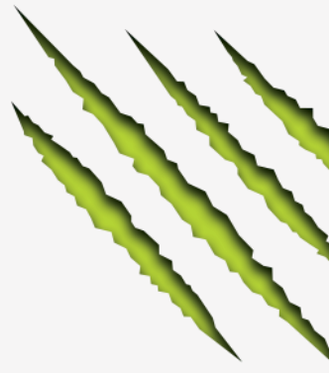
Ryszard Piotrowski, Ph.D., D.L.Sc., Assoc. Prof.

#11 Both the concept of the European Green Deal and the key specific solutions are **incompatible with the provisions of the Constitution of the Republic of Poland**.

#12 **The concept of an imposed, top-down, and non-alternative, scientifically based reconstruction of society and the economy is also irreconcilable with Article 1** of the Polish Constitution especially in relation to Article 30. Key provisions of the European Green Deal are inconsistent with Articles 2 and 5. The concept **also conflicts with the principle of a social market economy** expressed in Article 20. Replacing market rules with **climate correctness rules** in the process of transforming the EU results in accepting as the main the criterion for competitive advantage not manufacturing capacity, but low emissions. It is also **inconsistent with the principle of property protection** established in Article 21 and the **principles of limiting the exercise of constitutional freedoms and rights** set forth in Article 31(3). Additionally, it poses a potential **threat to the right to protection of private and family life** ensured in Article 47 of the Constitution of the Republic of Poland. Its implementation will also violate Article 76.

#13 The regulations of the European Green Deal **exceed the scope of competences** subject to transfer under Article 90(1). The delegation of powers of state authorities in certain matters, as provided for in this provision, does not imply transferring to an "international organization or international body" the competence to decide on the way of life of citizens without giving them the possibility of a choice.

#14 **The arbitrary nature, disproportionality and lack of alternatives of the rules** comprising the European Green Deal **mean relinquishing the ability to determine the fate of the inhabitants of Poland** to the extent that the planned transformation of the EU is to take place, which is **tantamount to the constitutionally precluded abandonment of the ability to determine the fate of Poland.**



Witold Modzelewski, Ph.D., D.L.Sc., Professor, Katarzyna Wawrzonkiewicz, M.L.A.

#15 The Polish tax system is not ready for the implementation of the Green Deal and Climate Pact within the timeframe set by the EU. The introduction of the described restrictions and mandates will result in a **drastic increase in budget expenditure, while simultaneously impoverishing society and taxpayers engaged in economic activities** (both agricultural and non-agricultural), and **most importantly, causing a decrease in revenues from major taxes**. Implementing these solutions will directly affect the increase in the prices of consumer goods, as well as may contribute to a decrease in the competitiveness of Polish companies in international markets. A significant reduction in the consumption of carbon-intensive goods and services (especially motor fuels) will result in a permanent decline in budget revenue. The introduction of such momentous changes **requires time and unimaginable financial outlays**, which Poland – both as a state and its citizens – is currently unable to bear.

#16 **It should also be emphasized that** without a global agreement, however, reducing the EU's CO_2 emissions into the atmosphere will have little effect, because in the meantime other countries are likely to increase their emissions, potentially even leading to an increase in global CO_2 emissions **(the EU is responsible for only 7.0% of global greenhouse gas emissions)**.

The introduction of the Green Deal and the Climate Pact will result in:

- a decline in budget revenues (state budget and local government budgets) from indirect taxation of carbon-intensive sectors and the trade of goods and services discriminated against by new mandates and prohibitions (estimated at approximately 30.0-35.0% annually in the initial period; later the decline will be even deeper);
- a decrease in income tax revenues due to increased costs in the corporate sector and a decline in employment in the carbon-intensive sector (up to 50.0-55.0%);
- a decline in the revenues of the Social Insurance Fund and the National Health Fund (social and health insurance contributions) due to reduced employment in the high-emission sector (conservative estimates – up to 25.0-30.0%).

Władysław Mielczarski, B.Eng., Ph.D., D.Sc., Professor

#17 The implementation of the Green Deal as part of the EU policy entails significant costs for the economy and society. Although the full achievement of the Green Deal's objectives is not feasible, attempting to implement it **will cause stagnation in European economies**, which we are already observing, and will result in **enormous costs for society**.

#18 The study presents information on the four main directions of the Green Deal's implementation and its effects on the economies and societies of EU member states, particularly Poland, i.e. information on:

- energy performance of building;
- CO_2 emissions trading schemes: ETS 1 and ETS2;
- development of alternative means of transportation; and
- electricity costs for consumers.

#19 The conducted analyses indicate that even after accounting for the cost of purchasing CO_2 emission permits (ETS tax), **the total production costs of electricity by wind farms and photovoltaic farms are higher than the production cost of coal-based electricity**, and amount to respectively:

- lignite power plants – 535 PLN/MWh;
- hard coal power plants – 610 PLN/MWh;
- onshore wind farms – 754 PLN/MWh;
- photovoltaic farms – 819 PLN/MWh.

Maciej Chorowski, B.Eng., Ph.D., D.Sc., Professor and Ziemowit Malecha, B.Eng., Ph.D., D.Sc., Professor

#20 The European Green Deal is a complex set of interrelated regulations and directives that are being justified by the necessity to reduce greenhouse gas emissions to prevent climate change. Indiscriminate implementation of all these legal acts, especially those related to energy in the context of Poland's energy mix, will **lead to the collapse of the energy sector, loss of competitiveness of the Polish economy and the impoverishment of a significant portion of the Polish population**.

#21 The analysis determines the upper limits of saturation of the Polish power system with intermittent RES. The analysis took into account:

- the dependence of the EROI *(energy return on investment)* ratio con energy generation technology;
- the necessity of additional investments to stabilize RES during periods of low wind and lack of sunshine;
- Poland's potential for building large-scale energy storage facilities in the form of pumped-storage power plants.

The analysis shows that the energy produced by intermittent RES should not exceed 30.0% of total electricity generation.

#22 Ultimately, nuclear power plants should be installed at the base of the Polish power system, and until they are operational, modernized coal units should remain in operation. **The proposed solutions do not imply a postponement of the transformation of the Polish power sector**; on the contrary, they highlight the urgent need for actions such as modernizing old coal units, building large-scale energy storage facilities in the form of pumped-storage plants, and implementing a nuclear energy development program in Poland.

#23 An important aspect of the energy transformation will be the **modernization of heating systems, particularly the development of cogeneration systems with the ability to store heat and cold**. When constructing new wind farms, it is necessary to consider the required distances between turbines and other structures to maintain the proper airflow profile. Overestimating the share of RES due to their very low energy density will lead occupying even several percent of the country's area for energy installations, which may actually block the development of industry and residential construction.

Iwona Jelonek, Ph.D, D.Sc., Assoc. Prof.

#24 The European Green Deal, energy transition, decarbonization of the mining, construction, transportation and mobility sectors, and most of all, ecological transformation are issues that **cannot be assessed due to the lack of a mine closure scenario. It is also difficult to estimate the costs that Poland will incur**, which faces many challenges but also opportunities related to the Green Deal and Fit for 55.

Under the Cohesion Policy and the Recovery and Resilience Facility, our country may receive around EUR 170 billion between 2021 and 2027, and around EUR 250 billion by 2030. Poland and Polish companies will also be able to benefit from other sources of funding. However, money alone is not enough to carry out the energy transition. **A strategy and appropriate reforms, regulations in the energy sector are needed, but the most important thing is to decide how to fill the carbon gap that will arise from the abandonment of coal.**

#25 It is estimated that by 2030, the cost of adapting the Polish economy to the goals of Green Deal and Fit for 55 may amount to EUR 527 billion. Additional costs beyond the normal level of investments could amount to approximately PLN 60 billion annually, totaling around PLN 500 billion by 2030. It should be emphasized that the costs will depend on many factors, including the pace of the transformation and the availability of low-emission technologies. **Moving away from fossil fuels, however, leads us into a new dependencies**, for example, on rare earth metals, which are essential for the development of a new ecological and digital society.

Tomasz Cukiernik, M.L.A., M.Sc.

#26 The implementation of the European Green Deal for Poland primarily means enormous costs. The French Institut Rousseau calculated that the total public and private "investments" for this purpose will amount to EUR 2.4 trillion, or more than PLN 10 trillion. In addition, numerous climate-related Euro-taxes are imposed:

- EU ETS (the deficit of CO_2 emission allowances in 2021-2030 will cost as much as PLN 141 billion) and ETS2 (the cost for an average family will range from PLN 1,600 to PLN 8,600;
- excise taxes on coal and coke;
- carbon border tax (CBAM – *Carbon Border Adjustment Mechanism*);
- tax on non-recycled plastic (in 2021-2024 we will contribute from this title to the EU budget PLN 8.6 billion);
- CO_2 emissions fee for combustion engine cars (cars prices will rise by tens of thousands of PLN);
- tolls on highways and express roads, as well as a registration tax for combustion engine cars and the so-called environmental fee for combustion vehicles.

All these measures will increasingly impact Polish companies and individuals, leading to the impoverishment of society.

#27 **A significant limitation of freedom is associated with various harmful Euro-regulations**, such as the ban on registering combustion engine cars after 2035, Directive 2010/31/EU, ESG or the Directive on Corporate Sustainability Due Diligence. Furthermore, as a result of the further implementation of the EU's decarbonization policy and the European Green Deal, our country **may completely lose its energy security** (energy shortages), **energy sovereignty** (because it will phase out coal-based energy generation, despite having coal reserves), as well as **food security** (due to the collapse of agricultural), and food sovereignty (due to food imports), and thus becoming dependent on external factors. All of this will not only lead to the devastation of the economy, but even threaten **the very biological existence of the nation.**

Cezary Wincenciak, M.Sc.

#28 The agricultural and agri-food sector will undergo significant changes that will impact the entire sector of this economy and consumers, who are directly connected as recipients of food from the production and processing sector. This will also have a substantial effect on all agricultural households in Poland, regardless of their size. It is important to remember that regulations themselves do not directly affect the consumer, but **they shape consumer habits** – in this case, dietary habits. In such an interconnected system, through specific laws and regulations, it is possible **to influence consumer habits.**

#29 The assumptions of the Green Deal have indicated from the very beginning that the production and keeping of ruminants, including primarily dairy and beef cattle herds, generate a huge negative impact on the process of global warming, because cattle is presented as a source of methane emissions into the atmosphere. It is evident that all the European Commission's work in this area up-to-date is heading toward passing the so-called Methane Directive and balancing the carbon footprint by establishing various types of indicators and conversion factors for cattle herds. In such a situation, **the cattle farming sector becomes climate enemy number one.**

#30 The Green Deal policy also entails a significant energy reform, which will result in increased prices for all agricultural production inputs, particularly those produced in Poland by domestic enterprises, as well as those produced in other EU countries. Consequently, in every sector of agricultural production, including meat, milk and dairy products, and grain products, **production costs per hectare or per kilogram of produced goods will rise.**

#31 Products from non-EU countries, where the same regulatory regime as in the EU does not apply, will become even more competitive compared to products from EU member states than before. It is known that the European Commission has clearly stated that there will be no consistent pressure to cooperate with third countries, but there will be attempts encourage them to implement similar reforms. Ultimately, this will mean that **companies producing finished and semi-finished products according to their existing practices, including maintaining current production costs, will have access to Europe, including Poland.** On store shelves, consumers will have a choice within a single product group of goods produced under the stringent regime in the EU, also imposed on Polish producers, as well as goods imported from countries that have not introduced or do not comply with similar regulations.

#32 **Green light will likely be given to substitute products**, such as various types of insects, produced in Europe for indirect and direct consumption. Statements from the EC and other EU officials clearly indicate that actions, including marketing efforts, will be undertaken to transform consumer habits. **Consequently, there will be a departure from the principles of the free market**, where until now, the consumer decided whether, for example, to be a vegetarian, to eat meat once a week, or every day, and how to manage their diet.

Marek Lachowicz, M.Sc.

#33 The EU ETS is the European CO_2 emissions trading system. **Accounting for emissions through allowances** (European Union Allowance, EUA) is mandatory **for companies that emit CO_2 in the course of their operations** (Installations). These are often companies in the energy and heating industries, steel plants or cement producers.

#34 A country's Installations demand for allowances is covered from three sources. Part of the EUAs is received by companies Another part is allocated to member states and then sold to domestic economic entities. Revenues from these sales constitute off-budget profit. Any shortfall in allowances must be supplemented by Installations on the open market at the current price.

#35 Installations have no alternative to the ETS system. At the same time, **allowances are also purchased by Investors from the financial sector, who are focused on maximizing profits.** In conditions of decreasing supply, this results in – what has turned out to be abnormal – pressure to appreciate EUA prices.

#36 Statistical tests appropriate for commodity instruments indicate that from May 1, 2017 to April 30, 2023 **price bubbles** repeatedly **formed** in EUA prices. The applied methodology has never been questioned.

#37 Starting in 2027, a new ETS2 system will be in effect in the EU, covering CO_2 emissions from heating buildings (excluding network heating) and road transport.

#38 If three scenarios are created for the year 2030: positive (EUA price = EUR 120, ETS2 price = EUR 45), baseline (EUA price = EUR 160, ETS2 price = EUR 75) and pessimistic (EUA price = EUR 200, ETS2 price = EUR 100), the total costs of both systems for Polish households can be estimated. In the positive scenario, they will amount to PLN 64 billion, in the baseline scenario – PLN 91 billion, and in the pessimistic scenario –PLN 116 billion.

Alina Landowska, Ph.D.

#39 The European Green Deal is **an attempt at significant transformation of the European economy and consumption patterns.** It involves a fundamental overhaul of the European energy system and restructuring of relations between the EU and its trading partners. It requires setting new priorities for Europe's international economic policy.

#40 More than 30 million jobs in the EU that depend on foreign trade are facing major changes. Initiatives such as the CO_2 Border Adjustment Mechanism (CBAM) **could affect the competitiveness of European companies and global markets**. The introduction of CBAM could reduce Asian exports to the EU, thereby increasing prices and decreasing the availability of certain goods.

#41 Asia, increasingly less dependent on exports to Europe, is already looking for alternative markets. CBAM is triggering trade disputes with countries outside the EU, which see the mechanism as a trade barrier. **This could lead to further complications in international trade cooperation**. The EU faces numerous challenges in adapting its trade policies to changing global realities, and the additional "green burden" will have **widespread geopolitical and economic repercussions**, including a serious weakening of European economies.

01

IMPLICATIONS OF THE EUROPEAN GREEN DEAL IDEOLOGY ON SOCIO-ECONOMIC POLICY

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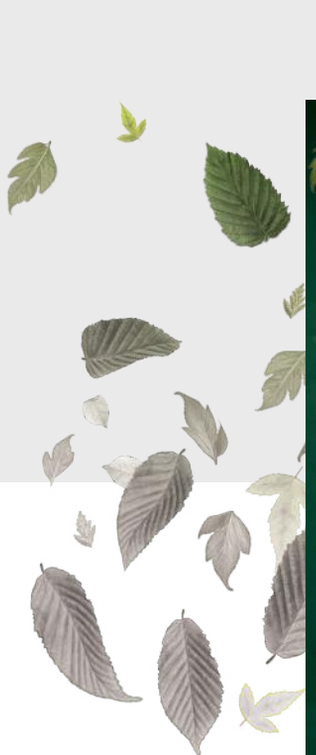


01.1

RATIONALITY VS. IDEOLOGY

For years, the European Commission (hereafter: EC) has been assuming the role of a savior, therapist, and judge all in one. Without any anchor in the Treaties[1], and even consciously going beyond the agreements therein, it is **encroaching on the domain of nation-states – stripping them of their prerogatives and changing (unlawfully limiting) their roles towards citizens and market participants.** The EC appropriates, restricts and demolishes. The EC has become a **cancer on the organism of the sovereign states** of Europe and the Community, a disease that takes

1 See: consolidated versions of the Treaty on European Union (Official Journal of the EU C 202 of 07.06.2016, p. 13) and the Treaty on the Functioning of the European Union (Official Journal of the EU C 202 of 07.06.2016, p. 47, hereinafter: TFEU). The Treaties do not describe the prerogatives of the European Commission, which are derived from the interpretation of individual articles rather than from a list of tasks enumerated in relation to other bodies and the Member States of the European Union (hereinafter: EU). Currently, EU law is defined as a set of acts that make up the EU legal system. It encompasses the entirety of the so-called acquis communautaire (the legal heritage of the European Community, now the EU), including, for example, the judgments of the Court of Justice of the European Union. This approach leads to a situation where law affecting EU citizens is created in many decision-making centers without a coordination mechanism and, above all, without the consent of the citizens and market participants themselves. The EU has become a volcano, from which the lava of law flows, destroying, smothering, and inundating member states – the nation-states.

It effectively pursues a **policy of violence** based on seven steps:

#1 It defines a false problem based on analyses of lobbying groups and ideological activists, proving that the member states are underperforming, and asserting its ability to guide changes that it will ensure the achievement of so-called ambitious goals **(the enchantment stage).**

#2 It creates a message to the citizens of the member states (effectively directed to the European Parliament, the European Council, the Council, the Economic and Social Committee, and the Committee of the Regions), introducing newspeak – a language that induces guilt, fear, hope, and post-truth. It invents an exclusionary dialect, using words that are new, important, and essential, which confine the ideologically committed within their own beliefs **(the enlightenment stage).**

#3 At the EU and national levels, working groups are created to develop solutions that enable implementation of policies adopted at the general level in the communication. This is a creative stage, where the expectations of the ideological followers and economic groups formed to carry the new idea are met. During this time, social and economic programs are created, and sectoral and horizontal policies are shaped, in which the requirements for implementing the imaginations, lies, and half-truths from the communication are recorded **(the stage of creating neo-truths).**

#4 Through a widespread campaign of fear and financial bribery, the ideology is spread. To enter the EU structures, one must affirm the "truths of faith" by engaging in the propagation of accepted assumptions. Then, it is possible to get a job in the EC structures or be elected to the executive bodies of the EC from a nation-state delegation – this is a modern Arcadia, where salaries are very generous, taxes non-existent, and retirement guarantees a prosperous further life even at a young age **(the stage of confirming neo-truths).**

#5 A new EU law is created that forces citizens and member states (even the resistant ones, which automatically become illegitimate) to join in the implementation of the ideology. This involves a system of incentives and penalties, a carrot and a stick approach. Subsidy mechanisms will convince even the most resistant to participate in the ideology. Refusing the money means you are considered foolish. Give up your doubts and opposition in exchange for a subsidy (compensation for moral pain or incurred costs of compliance). Demoralization becomes the key to the success of ideology **(the stage of financial violence).**

#6 At the level of the EC and member states, for example, a taxonomy is being created, a classification system that establishes criteria that must be met within economic activities to align them with ideology. The broad implementation of newspeak and rejection of dissenters enable subordination of national state structures and citizens to the requirements of achieving abstract (but still ambitious) goals adopted in the communication **(the stage of colonizing minds).**

#7 Developing stable sources of financing in the form of, for example, EU taxes (assumption of state prerogatives) and financial obligations imposed on nation-states for funding the ideology on a permanent basis (including huge penalties for delays and non-compliance). Freely shaping the scope and dimension of the ideology by multiplying the tools necessary for implementation and the extent of adaptation required from citizens and market participants (businesses). The state, becoming less and less national, becomes a kind of policeman who, on behalf of the magnanimous and infallible EC, coerces everyone to guarantee peace and compliance with the ideology **(the stage of colonizing the nation-state).**

An obvious example of such manipulation is the European Green Deal[2]. It is no longer just an ideology, but primarily a pretext and a tool for capturing the societies and economies of nation-states, even to the point of their colonization, because:

- The claims included in the assumptions are not based on scientific grounds – the language of fear and apprehension is used ("The atmosphere is warming and the climate is changing with each passing year. One million of the eight million species on the planet are at risk of being lost. Forests and oceans are being polluted and destroyed"[3]), in response to which ambitious goals are set ("to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use"[4]). This way, the hysteria of the younger generation is created and exploited, which, when stimulated, has become the basis for changing social and political behavior, and public decisions. Any criticism is ignored, including scientific evidence of the lack of impact of carbon dioxide (hereinafter: CO_2) emissions on climate change or even challenging the recognition of CO_2 as a greenhouse gas. Scientific conferences to challenge the foundations of ideology are impossible to organize. The corrupt world of science is wallowing in lies and manipulation in exchange for funds to conduct research on the truths of the ideology.

- There is no practical and economic justification in socio-economic effects for the solutions proposed in the Green Deal. The presented directions of intervention have the character of postulates, without indicating effective methods of achieving the expected results.

  The implementation system being built is postulatory:
  - "Increasing the EU's climate ambition for 2030 and 2050";
  - "Supplying clean, affordable and secure energy";
  - "Mobilizing industry for a clean and circular economy";
  - "Building and renovating in an energy and resource efficient way";
  - "Accelerating the shift to sustainable and smart mobility";
  - "From 'Farm to Fork': designing a fair, healthy and environmentally-friendly food system";
  - "Preserving and restoring ecosystems and biodiversity";
  - "A zero pollution ambition for a toxic-free environment"[5].

  It assumes the logic of a self-fulfilling prophecy that a **lie repeated a thousand times will become the truth, especially as it is dressed up in an attractive, modern social-market product**. Intervention tools are invented and created on the fly. Public funds that already had a different purpose are being engaged, but are now being rebranded to meet the investment needs of the ideology.

- There are no methodically set goals (such a goal should be specific, measurable, achievable, relevant and time-bound[6]). The adopted target of "at least 50% and towards 55% compared with 1990 levels, of the EU's greenhouse gas emission reductions target for 2030" is unrealistic, thus based on faith rather than practical potential[7]. In order for the target to be achievable, it must be demonstrated that the necessary (financial, material, human, and legal) resources needed to achieve it are in place. No such potential was demonstrated, there was only a statement that: "The Commission will, by June 2021, review and propose to revise where necessary, all relevant climate-related policy instruments. This will comprise the Emissions Trading System (ETS), including a possible extension of European emissions trading to new sectors, member state targets to reduce emissions in sectors outside the ETS, and the regulation on land use, land use change and forestry. The Commission will propose to amend the Climate Law to update it accordingly"[8]. This confirms the **unrealistic nature of the assumptions** at the time of setting this abstract (ambitious) target, as well as the scale of uncertainty communicated to potential participants in the process. This uncertainty generates excessive costs for market participants and significantly reduces the competitiveness of member states' economies and the single European market vis-à-vis major global market players. The development of countries associated in the BRICS structure (Brazil, Russia, India, China, South Africa) is gaining strength, as it is fueled by ideological European consumption.

2 Communication from the Commission to the European Parliament, the European Council, the Council, the Economic and Social Committee and the Committee of the Regions – The European Green Deal, Brussels, 11.12.2019, COM(2019) 640 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640, accessed 11.07.2024.

3 Ibid, p. 2.

4 Ibid.

5 Ibid, p. 4.

6 According to the SMART principle, as a universally recognized (also by the EC) method of defining goals that increases the chance of achieving them. SMART stands for Specific, Measurable, Achievable, Relevant and Time-bound. This method requires a thorough analysis of the goal and its specification. See SMART Principle, in Encyclopedia of Management, https://mfiles.pl/pl/index.php/Zasada_SMART, accessed 02.07.2024, [Polish only].

7 Communication from the Commission to the European Parliament, the European Council, the Council, the Economic and Social Committee and the Committee of the Regions – The European Green Deal, op. cit., p. 5.

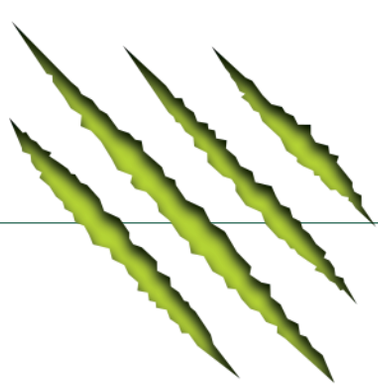
8 Ibid, p. 5.

Europe is **losing its competitive advantage** as a result of the implementation of non-economic ideology.

- There is no comprehensive description of the scope (only directional actions are indicated), tools (they are revealed in the form of directives or regulations without assessing their impact on citizens' budgets and market participants' costs, taking market participants by surprise and causing uncertainty in business operations), and the total costs of implementing the Green Deal ("To achieve the ambition set by the European Green Deal, there are significant investment needs. The Commission has estimated that achieving the current 2030 climate and energy targets will require EUR 260 billion of additional annual investment, about 1.5% of 2018 GDP. This flow of investment will need to be sustained over time. The magnitude of the investment challenge requires mobilizing both the public and private sector"[9].) At the same time, the Green Deal communication reads: "These estimates are conservative, as they do not consider, for instance, the investment needs for climate adaptation or for other environmental challenges, such as biodiversity. They also exclude the public investment needed to address the social costs of the transition and the costs of inaction"[10]. This confirms the socio-economic irresponsibility of decision-makers (guided by ideological rather than rational premises) who decided to launch – as they call it – a *just transition* without a full cost analysis, thereby leading to a situation where the adopted assumptions are **economically unfeasible**. Their ultimate cost – unknown and unlimited – **cannot be borne by member states and their citizens**. This also excludes the rationality of the adopted assumptions, as without estimating the costs, they cannot be compared with the potential, even the most desirable benefits.

- There is no identification, evaluation, and demonstration of the cause-and-effect relationships between the adopted goals and the implementation tools, which are created based on arbitrarily defined goal values, with no indication of the sources of funding, or only a mention at a general level. The Green Deal Communication appropriates funding originally (as part of decisions previously taken by nation-states) earmarked for other purposes, without assessing the economic impacts and costs of such actions ("The Commission will present a Sustainable Europe Investment Plan to help meet the additional funding needs. It will combine dedicated financing to support sustainable investments, and proposals for an improved enabling framework that is conducive to green investment. At the same time, it will be essential to prepare a pipeline of sustainable projects. Technical assistance and advisory services will help project promoters to identify and prepare projects and to access sources of finance. [...] The Commission has proposed a 25% target for climate mainstreaming across all EU programs. [...] At least 30% of the InvestEU Fund will contribute to fighting climate change. [...] As part of the Sustainable Europe Investment Plan, the Commission will propose a Just Transition Mechanism, including a Just Transition Fund, to leave no one behind"[11]. **Other areas of non-ideological state activity are deteriorating**. Societies are being subjected to the process of pauperization.

- There has been no public debate and no social consent has been obtained for the implementation of the Green Deal. There have been no referendums in the member states to confirm their readiness to implement the adopted assumptions and bear the costs associated with it. Especially since these **costs burden several generations, thereby depriving them of their development potential**. No debate was conducted on the legitimacy of implementing the Green Deal assumptions because it was assumed that this is a "naturally" enforced process and a right to impose on others a worldview created by a narrow social group and a hysterical younger generation.



9 *Ibid, p. 18.*
10 *Ibid, p. 18, footnote 28.*
11 *Ibid, pp. 18-19.*

01.2

OVERVIEW OF THE SOCIO-ECONOMIC IMPACTS AND COSTS OF THE FORCED IMPLEMENTATION OF THE GREEN DEAL IDEOLOGY

Although at first glance this ideology (as is usually the case with false ideologies) seems righteous (protecting the Earth, climate, environment, saving life on Earth, etc.), and thus extremely compelling in its narrative, it creates threats and even **becomes a source of socio-economic catastrophe for member states and the EU itself**. This ideology carries the only "correct" narrative and a **new language used to shape nations** into subjugated and newly formed socialist masses, while for the economy, it generates uncontrolled consequences manifested in the state of public finances (fiscal policy area), the condition of purchasing power of money (monetary policy area), as well as the uncertainty, deterioration, and loss of competitiveness of a significant part of enterprises (sectoral policies area).

EU membership forces the nation-state to conform to the requirements of the adopted horizontal and sectoral policies. The result is the de facto **shaping of the budget structure and allocations in individual budget headings according to EU criteria**. This not only includes funds to cover the national contribution to the implementation of programs and projects co-financed from the sources of the EU structural and investment funds but also the allocations required by the national commitment to the EU budget. Additional costs encompass the need to implement EU horizontal and sectoral policies without financial allocations, as well as burdens resulting from **penalties imposed on the member state for any insubordination**.

Additionally, **EU policies force the allocation of expenditures not on objectives crucial for the socio-economic development of the state**, but on goals desired from the perspective of those very policies. This results in a deviation from national paths of decisions and development goals, abandonment in areas of state activity that do not fall within the scope of common EU policies. An example of this is the financing of national defense or social, economic and humanitarian aid (see: costs of aid to Ukraine), which impact the state's budget deficit and public debt. This is manifested in **the deterioration of the state's public finances**, while is simultaneously forced to bear all the costs associated with EU policies (e.g., climate policy and the Green Deal). Expenses for energy transition, electromobility, or renewable energy sources (hereafter: RES) not only deteriorate the state budget but even contradict the basic needs of ensuring security, state stability, and defense, exposing the nation and the economy to a huge risk of losing independence and sovereignty. Allocating public expenditure to goals that are unnecessary and non-essential for security limits the potential or completely prevents preparation for a possible armed conflict. This **showcases the Green Deal as a dimension of subversive actions and aligns with the model of hybrid warfare**, in which states are burdened with unnecessary costs to prevent them from preparing for real and current challenges, including the defense of the nation.

Under such circumstances, it is bizarre that the EC launches excessive deficit procedures against member states (as is the case with Poland and other EU countries), and thus limits the growth potential of their societies and economies. On the one hand, the EC forces the incurrence of ideologically justified, strictly defined, targeted, yet ultimately unlimited expenditures, while on the other hand, it penalizes for excessive spending from the state budget. Such a policy leads to the **schizophrenia of public finances** and the uncontrolled accumulation of public debt or – in the case of adopting austerity policies – to significant pauperization, particularly of citizens most vulnerable to the cost effects of EU policies, including the poorest social groups.

The imposition of expensive energy production standards, unjustified by national and international competition requirements, translates into high socio-economic costs and ultimately impoverishment of households, as well as market participants themselves, particularly micro, small and medium-sized enterprises, where the share of energy in production or service costs is high. This results in the deterioration of their market condition and even mass bankruptcy. **Expenditure on protective and compensatory mechanisms, borne by nation-states from their budgets, results in growing debt and demoralizes the economy**. Market participants expect constant support, not only in projects implemented under subsequent EU financial perspectives but also in covering excessively rising costs. This creates a **zombie company effect,** where certain companies operate on the market only thanks to subsidies, compensations, and social cost-cutting programs. This devastates economic competitiveness, increases costs (ultimately creating a strong inflationary impulse), and results in a significant reduction in tax revenues. Fiscal policy bears the direct consequences of defectively designed interventions within ideologically shaped EU policies.

An extremely dangerous consequence for fiscal policy is the decision to impose European taxes for the purpose of implementing the Green Deal ideology. This undermines the basic prerogative of the state associated with levying taxes and will ultimately result in the financial draining of market participants, thereby undermining their ability to meet the development needs of businesses and the fiscal needs of the nation-state. Additional fiscal burdens on market participants reduce their competitiveness in the international market, which will also reduce the fiscal base. Examples of such burdens imposed in 2024 include: the ESG reporting[12], single-use plastic tax, extended producer responsibility (an annual fee to cover the costs of collecting waste generated from products of the same kind, including subsequent transport and treatment), and the need to finance public awareness campaigns.

01.2.1.
ESTIMATED COST OF IMPLEMENTING THE GREEN DEAL – *CASE STUDY*

What is known in Poland as the so-called plastic tax was introduced by an EU Directive[13], which aims to phase out the use of certain single-use products made of plastic and consequently reduce the use of plastic. It was intended to motivate manufacturers and importers to seek alternative materials from which single-use products and food packaging can be made. However, the short transition period associated with the implementation of the Directive meant that businesses covered by the new obligations were forced to introduce sometimes very radical changes to their businesses. This generated enormous costs, which were ultimately passed on to consumers and business partners.

The Regulatory Impact Assessment (RIA) for the act implementing the Directive provides the following estimates[14]:

- Revenue from fees for introducing products such as beverage cups with covers and lids, as well as meal containers, with or without lids (according to estimates by PlasticsEurope Polska, around 15 thousand megagrams of such products are introduced to the market annually) could amount to approximately PLN 21 million annually;

- Fees for waste management of tobacco products discarded in public collection systems will amount to PLN 23.1 million annually.

These revenues should be considered as a cost to the company, which – if the market allows – Is passed on to the consumer, but if there is no market space, it reduces business profitability.

12 *An ESG report is a report published by a company or organization about environmental, social, and governance (ESG) impacts.*

13 *Act of April 14, 2023, amending the Act on the obligations of entrepreneurs with respect to the management of certain waste and on the product fee, and certain other acts (Journal of Laws, item 877). This Act implements into Polish law the provisions of Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment (OJ L 155 of 12.06.2019, pp. 1-19, hereinafter: Directive 2019/904; the so-called SUP [single-use plastics] Directive).*

14 *Ministry of Climate and Environment, Draft Act amending the Act on the obligations of entrepreneurs with respect to the management of certain waste and the product fee, and certain other acts – Regulatory Impact Assessment, 19.03.2021, No. UC73 in the Ministry's register, https://legislacja.rcl.gov.pl/docs//2/12345305/12777259/12777260/dokument497237.pdf 12.07.2024 [Polish only].*

Extended Producer Responsibility (EPR) - in 2018, the so-called "Waste Package" was adopted, i.e. the amendment of 6 directives key for waste management, within the framework of the idea of circular economy. An important element of the system is extended producer responsibility. Producers will be required to take responsibility for the entire life cycle of their packaging – from design to production to waste management. Companies will have to share the costs of separate collection, recycling and disposal of the waste generated from their products[15]. An avalanche of legislation was provided to enable the implementation of solutions; the implementation, which has significantly distorted competition, as it affects all businesses – regardless of their size. A small and medium-sized entrepreneur is burdened with the same load as a large one. And the scale of law inflation at the EU level is enormous:

- Directive 2008/98/EC of the European Parliament and of the Council of November 19, 2008 on waste and repealing certain directives (the so-called Waste Directive)[16];
- Directive 2019/904 of the European Parliament and of the Council (EU) of June 5, 2019 on reducing the environmental impact of certain plastic products on the environment (the so-called SUP Directive);
- Commission Implementing Regulation (EU) 2020/2151 of 17 December 2020 laying down rules on harmonized marking specifications on single-use plastic products listed in Part D of the Annex to Directive (EU) 2019/904 of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment[17];
- Commission Implementing Decision (EU) 2021/1752 of 1 October 2021 laying down rules for the application of Directive (EU) 2019/904 of the European Parliament and of the Council as regards the calculation, verification and reporting of data on the separate collection of waste single-use plastic beverage bottles (C/2021/6995[18];
- Commission notice — Commission guidelines on single-use plastic products in accordance with Directive (EU) 2019/904 of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment (2021/C 216/01)[19];
- Commission Implementing Decision (EU) 2023/1060 of 30 May 2023 on a harmonized standard for test methods and requirements to demonstrate that plastic caps and lids remain attached to beverage containers drafted in support of Directive (EU) 2019/904 of the European Parliament and of the Council[20];
- Commission Implementing Decision (EU) 2023/2683 of 30 November 2023 laying down rules for the application of Directive (EU) 2019/904 of the European Parliament and of the Council as regards the calculation, verification and reporting of data on recycled plastic content in single-use plastic beverage bottles[21].

Polish Recycling Association [Stowarzyszenie Polski Recykling] has estimated that companies placing packaged products on the market should pay between PLN 5 and 13 billion annually to Poland's waste management system under extended producer responsibility[22]. These costs will translate into the prices of final products and services, and thus into inflation, resulting in further pauperization of households.

The Directive is causing outrage because of the disproportionate and selective burden. The cosmetics and pharmaceutical industries claim that they are the only ones who will bear the cost of implementing the extended producer responsibility mechanism to finance upgrades to wastewater treatment plants[23]. Voices of outrage from businesses continue: "As of 2021, we have already paid PLN 6.5 billion in fines for non-recycled plastic," stressed Szymon Dziak-Czekan from the Polish Recycling Association. – We pay more than PLN 6 million in fines every single day"[24].

15 *Ekowiedza, Tworzywa sztuczne a rozszerzona odpowiedzialność producenta [Plastics and Extended Producer Responsibility], https://ekowiedza.com/wp-content/uploads/2023/12/tworzywa-sztuczne-a-rozszerzona-odpowiedzialnosc-producenta.pdf, accessed 01.07.2024 [Polish only].*

16 *OJ L 312 of 22.11.2008, pp. 3-30.*

17 *OJ L 428 of 18.12.2020, pp. 57-67.*

18 *OJ L 349 of 04.10.2021, pp. 19-30.*

19 *OJ C 216 of 07.06.2021, pp. 1-46.*

20 *OJ L 142 of 01.06.2023, pp. 34-35.*

21 *OJ L of 01.12.2023.*

22 *Chemia i Biznes, Ile ma kosztować rozszerzona odpowiedzialność producenta? [How much should extended producer responsibility cost?], published 11.06.2021, https://www.chemiaibiznes.com.pl/artykuly/ile-ma-kosztowac-rozszerzona-odpowiedzialnosc-producenta, accessed 1.07.2024 [Polish only].*

23 *Portalsamorządowy.pl, ROP w branży wodociągowej. Kto poniesie koszty? [Extended Producer Responsibility in the water supply industry. Who will bear the costs?], published 10.02.2023, https://www.portalsamorzadowy.pl/gospodarka-komunalna/rop-w-branzy-wodociagowej-kto-poniesie-koszty,439799.html, accessed 01.07.2024 [Polish only].*

24 *Odpady.net.pl, Apel o sprawiedliwy ROP [Appeal for a fair Extended Producer Responsibility], published 26.03.2024, https://odpady.net.pl/2024/03/26/apel-o-sprawiedliwy-rop/, accessed 01.07.2024 [Polish only].*

Polish companies directly covered by the CSRD (*Corporate Sustainability Reporting Directive*)[25] will incur an annual cost of PLN 1.4 to 2.6 billion. High costs of up to PLN 8 billion will also be incurred on an annual basis by companies not directly covered by the directive, but cooperating as contractors with entities bound by ESG reporting obligations, the Warsaw Enterprise Institute calculates[26].

The Ministry of Finance has prepared a draft law implementing Directive 2022/2464 and Commission Delegated Directive (EU) 2023/2775 of 17 October 2023 amending Directive 2013/34/EU of the European Parliament and of the Council as regards the adjustments of the size criteria for micro, small, medium-sized and large undertakings or groups[27]. The Ministry of Finance estimates that in 2024 the cost of companies subject to ESG reporting will be PLN 152 million, next year it will rise to PLN 1 billion, and within 10 years it will be up to PLN 8.7 billion. "The companies affected by the project will face an overall increase in costs related to the obligation to present sustainability information," – stated the Ministry in the regulatory impact assessment for the aforementioned draft[28].

25 *Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting, OJ L322 of 16.12.2022, pp. 15-80, hereinafter: Directive 2022/2464.*

26 *D. Olko, Pod ciężarem ESG. Koszty raportowania ESG dla małych i średnich firm w Polsce [Under the burden of ESG. ESG reporting costs for small and medium-sized companies in Poland], Warsaw Enterprise Institute, Report, April 2023, https://wei.org.pl/2023/aktualnosci/damian-olko/raport-pod-ciezarem-esg-koszty-raportowania-esg-dla-malych-i-srednich-firm-w-polsce/, accessed 02.07.2024 [Polish only].*

27 *OJ L of 21.12.2023.*

28 *Infor.pl, MF przygotowało ustawę o obowiązkowym raportowaniu ESG, implementującą dyrektywę UE [MF prepared law on mandatory ESG reporting, implementing EU directive], published 19.04.2024, https://ksiegowosc.infor.pl/wiadomosci/6587071,mf-przygotowalo-ustawe-o-obowiazkowym-raportowaniu-esg-implementujaca.html, accessed 02.07.2024 [Polish only].*

Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU[29], known as AFIR (Alternative Fuels Infrastructure Regulation), came into force on April 13, 2024. It requires EU member states to significantly increase the capacity of recharging points. In Poland, infrastructure capacity must increase from the current 230 megawatts (hereafter: MW) to more than 342 MW by the end of 2025, and by 2030 to 1515 MW. One of the key elements of the regulation is the requirement to install regarding points across the TEN-T core network[30] every 60 kilometers in each direction of travel. Every recharging pool should have a power output of at least 400 kilowatts (hereafter: kW), and by 2027 – of at least 600 kW. Achieving the goals of the aforementioned regulation requires not only the construction of new stations, but also intensive cooperation between the public and private sectors. The administration must actively support charging infrastructure initiatives, and the industry should invest in cutting-edge technologies that will make these ambitious goals possible.

Maciej Mazur, managing director of the Polish Alternative Fuels Association [Polskie Stowarzyszenie Paliw Alternatywnych], points to the goals of charging infrastructure for eLDV[31] (passenger) and eHDV[32] (truck) vehicles: "There are huge challenges ahead of us. The minimum total capacity of all recharging stations for eLDVs along the TEN-T network in 2025 should be more than 50 MW, while in 2035 it should already be more than 150 MW. We are talking about different infrastructure than that installed in locations such as MOPs[33] or locations along the TEN-T. In this case, the challenges are way more serious. In 2025, taking into account estimates of the development of BEVs[34] and PHEVs[35], we will have a requirement of 412 MW. As of today, we have more than 100 MW of installed capacity. In 2030, we should already have 1690 MW"[36].

He also stressed that: "The power of publicly available recharging stations proportional to the number of registered electric cars should be 1.3 kW of power for each electric car and 0.8 kW of power for each hybrid vehicle charged from an external power source. There is a possibility of abolishing this requirement, but only if the fleet of electric cars exceeds 15 percent. Currently in our country it is less than 0.5 percent"[37].

In addition, M. Mazur noted that it will also be a major challenge for Poland to meet the charging infrastructure requirements for eHDVs. Poland is one of the key transit countries in the EU and has a road infrastructure that is used by thousands of eHDVs every day. The minimum total capacity of all recharging stations for this type of vehicles in 2025 should be 28 MW, and in 2030 more than 571 MW[38].

The proposal for the distribution of charging infrastructure for passenger vehicles on the TEN-T core network by 2030 includes 166 locations, of which 145 are rest areas, including 8 still under construction, and 25 are parking areas that are not managed by the GDDKiA. As for charging infrastructure for trucks, in 2025 drivers will be able to use recharging stations at 29 locations (HDV zone capacity – 1,400 kW), in 2027 it will already be 77 locations (HDV zone capacity – 2,800 kW), and in 2030 166 locations (HDV zone power – 3600 kW).

It is not only the issuance of conditions for connection that is key in the development of recharging stations for electric cars. Above all, significant investments by distribution system operators are necessary for the development of this network in a perspective of 5-10 years. After all, in a dozen years or so, the distribution network will have to handle considerably higher capacities.

29 *OJ L 234 of 22.09.2023, pp. 1-47.*

30 *TEN-T network – trans-European transport network. "TEN-T core network" means a core network within the meaning of Article 38 of Regulation (EU) No. 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010/EU (OJ L 348, 20.12.2013, pp. 1-128).*

31 *eLDV – electric light duty vehicle.*

32 *eHDV – electric heavy-duty vehicle.*

33 *MOP – Miejsce Obsługi Podróżnych [rest area].*

34 *BEV – battery electric vehicle*

35 *PHEV – plug-in hybrid electric vehicles*

36 *Generalna Dyrekcja Dróg Krajowych i Autostrad, hereinafter GDDKiA [General Directorate for National Roads and Highways], Założenia AFIR. Jak unijne rozporządzenie wpłynie na rozwój elektromobilności w Polsce? [AFIR Assumptions. How will the EU regulation affect the development of electromobility in Poland?], published 06.11.2023, https://www.gov.pl/web/gddkia/zalozenia-afir-jak-unijne-rozporzadzenie-wplynie-na-rozwoj-elektromobilnosci-w-polsce, accessed 2.07.2024 [Polish only].*

37 *bid.*

38 *Ibid.*

Public financing for AFIR implementation is planned by the National Fund for Environmental Protection and Water Management [Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej, NFOŚiGW] at PLN 870 million. The program finances projects consisting of:

- construction of a recharging station with capacity of at least 22 kW, other than a public recharging station,
- construction or remodeling of a public recharging station with capacity of not less than 50 kW and
- construction or remodeling of a publicly accessible hydrogen refueling station.

The second program by the NFOŚiGW – "Development of electric power infrastructure for the development of electric vehicle recharging stations" – with a value of PLN 1 billion, is directed to distribution system operators[39].

The draft regulation implementing the Energy Performance of Buildings Directive (EPBD)[40], published by the Ministry of Development and Technology, proposes an energy class division for residential buildings. It will come into force as of beginning of 2026. According to the proposed regulations, in Poland there will be 8 classes – from the highest A+ to the lowest G. The division is made based on the PE index value (primary energy factor) – the demand for non-renewable primary energy expressed in kilowatt-hours (hereinafter: kWh) per square meter (hereinafter: m^2) per year.

The division into energy classes will include the following buildings: single-family, multi-family, group residence buildings (hotels, motels etc.), public utility – healthcare facilities, as well as agricultural/outbuildings, warehouse, and industrial buildings. Buildings with a negative value of this indicator, that is, discharging more energy into the electricity grid or heating system than they take from it, will be categorized as Class A+. Class A will be given to single-family and multi-family residential buildings with PE ratios respectively below 63 and 59 kWh per m^2 per year. Buildings in these two classes must have zero CO_2 on-site emissions from fossil fuels. Single- and multi-family buildings with PE ratings above 150 and 140 kWh per m^2 per year, respectively, will be categorized in the lowest class G.

Estimates by Renovation Wave Group [Fala Renowacji][41] indicate that approximately 70% of Poland's roughly 6.9 million residential buildings require modernization, and about 16% of them, or around 1 million, are so-called energy vampires, responsible for consuming 1/3 of the total energy used in all buildings. At the same time, 30% of the most energy-intensive residential buildings, or about 2 million, account for more than half of this consumption[42].

Only one in three property owners has heard of the Energy Performance of Buildings Directive, adopted in March 2024 by the European Parliament. 62% of Poles questioned about thermal modernization rate their knowledge of the subject as low, although most have encountered the term. According to ING Bank Śląski's assessment, housing utility costs of apartments or houses using fossil fuels as heating sources will increase over the next 3-5 years. This could lead to an increase in the price of top-performing apartments and possibly a decrease in the price of so-called energy vampire buildings. Provided that the market will appropriately differentiate the increase in maintenance costs and investment needs in the various energy classes of buildings. Poles are concerned that thermal upgrading investments will benefit only a few, the wealthiest, and that the cost will probably never be recouped (this was the answer of more than half of respondents). Four in five believe that investments require a loan or other additional financing. Among the expected sources of financing, the vast majority point to funds from grants and public programs, thus shifting the burden from the consumer to the legislature[43].

39 *Ibid.*

40 *Ministry of Development and Technology, Dyrektywa w sprawie charakterystyki energetycznej budynków [Energy Performance of Buildings Directive], https://www.gov.pl/web/rozwoj-technologia/dyrektywa-w-sprawie-charakterystyki-energetycznej-budynkow-epbd, accessed 06.07.2024 [Polish only]. See Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency, OJ L 156 of 19.06.2018, pp. 75-91.*

41 *Renovation Wave [Fala Renowacji] – cross-sectoral expert group dealing with issues related to energy performance of buildings (translator's note).*

42 *Money.pl, Podział budynków na klasy energetyczne. Ministerstwo wskazuje termin [Division of buildings into energy classes. Ministry indicates deadline], published 06.07.2024, https://www.money.pl/gospodarka/podzial-budynkow-na-klasy-energetyczne-ministerstwo-wskazuje-termin-7046110749707168a.html, accessed 06.07.2024 [Polish only].*

43 *Money.pl, Dyrektywa budynkowa niepokoi Polaków. Problemem brak planu i wydatki [EPB Directive worries Poles. The main problem is lack of a plan and high expenses], published 06.06.2024, https://www.money.pl/gospodarka/dyrektywa-budynkowa-niepokoi-polakow-problemem-brak-planu-i-wydatki-7035486755191552a.html, accessed 06.07.2024 [Polish only].*

The implementation of ideological expectations towards society and economy – of unlimited scope and unbounded effects – leads to the formation of new economic conditions, i.e. ever-higher production costs affecting the prices of final products and services. Particularly, rising energy and heating prices due to the rejection of the right to produce them from fossil fuels in favor of so-called RES (renewable energy sources, which are renewable only from a narrative point of view, as the disposal of technical solutions used to produce energy from renewable sources – wind turbines and photovoltaics – is either impossible or extremely costly, a fact not currently communicated to the public) **cause uncontrollable and ultimately unpredictable inflationary pressure**, both on the supply side as well as on demand side. Increasing production costs, combined with subsidized purchases (of electric cars and bicycles, RES installations), compensations (covering part of the costs resulting from the increase in energy prices), additional fiscal burdens (the ETS system and public levies imposed on substandard products and services) create a conglomerate of interdependent factors, **disrupting the purchasing power of money**.

Current pressures and uncertainty regarding future economic governance rules affect the actions of the central bank (in Poland, the Monetary Policy Council), which is forced to incorporate these expectations into decisions on interest rates. The multiplication of debt securities, bonds, and loans related to energy and environmental themes leads to significant, ultimately unlimited money creation. It becomes particularly important for monetary policy to contain the effects of the wave of spending on the so-called energy transformation. The enforcement of private and public demand through changing environmental norms and standards causes enormous waste, multiple expenditures on the same goals and constant purchasing pressure, especially on products from other economic areas (China and other BRICS countries). This significantly affects the shape of the balance of payments and **drains foreign exchange reserves**. All these factors combined result in increased money costs and a constant loss of household purchasing power. It translates into a reduction, or even a decline, in savings and a loss of investment potential for the national economy.

A nation, hysterical about the narrative of climatism, makes false consumer choices. Guided by total propaganda, subjected to financial coercion, impoverished by the results of erroneous decisions – it seeks products and services that fit into the framework of **an imaginary zero-carbon economy**. The speed of implementation of changes forces the purchase of technologies and ready-made products from other economic areas. Domestic entrepreneurs become mere distributors and installers of solutions primarily produced in China. Domestic production is disappearing, and sectors deemed unnecessary and climatically undesirable by the ideology's proponents are being destroyed and shut down.

The hard coal and lignite production sector, the fossil fuel-based thermal power sector, the steel sector, the chemical sector, and even the agricultural sector are becoming ideologically stigmatized in the EU. Coal fighters, absorbed in their ideology, fail to realize that this element (C, Latin *carboneum*) is essential in the chemical, pharmaceutical, food sectors, and many others. Ultimately, the European economy will be doomed to import raw materials from other economic areas or purchase finished products. **Europe is becoming a greedy, devastating, morally bankrupt consumer that pretends to be a climate activist but, in reality, shifts environmental costs to other economies.**

Our continent is transforming into a space that absorbs products whose future disposal is impossible. **It is exports environmental pollution on a scale that falsifies the ambitious goals it has set.** Europe pretends to undergo climate transformation, but in fact, it destroys the environment in other regions of the globe. The so-called RES need rare earth metals, the extraction of which devastates vast areas of South America, Asia and Africa.

Germany, which decided to abandon "non-ecological" nuclear energy, imports coal from Colombia as well as from other countries. Local activists have appealed to Annalena Baerbock, the German Minister of Foreign Affairs (Greens), to examine the consequences of local mining and the price that indigenous people are paying for Berlin's climate policy during her visit to South America, according to the portal "Welt". Coal mining in El Cerrejon "is contrary to the fundamental beliefs of many, especially the Green Party slogans, such as respect for the rights of indigenous peoples, decarbonization, and a socially fairer distribution of profits"[44]. The El Cerrejon mine uses a lot of water for production, and thus causes water shortages in the semi-desert region. However, according to data from the Association of Coal Importers, about 6% of German coal

44 *Citation: Forsal.pl, "Welt" Za transformację energetyczną Niemiec płacą rdzenni Kolumbijczycy i tamtejsze środowisko naturalne [The cost of Germany's energy transition is borne by indigenous Colombians and the local environment], published 09.06.2023, https://forsal.pl/biznes/energetyka/artykuly/8730830,welt-za-transformacje-energetyczna-niemiec-placa-rdzenni-kolumbijczycy-i-tamtejsze-srodowisko-naturalne.html, accessed 02.07.2024 [Polish only].*

imports came from Colombia in 2021, and by 2022,this has increased to over 16%.

"Water shortages threaten people's lives; without it, it is impossible to grow food for daily needs or to water animals. In the last decade, over 7,000 children in La Guajira province have died from malnutrition or related diseases," emphasizes "Welt"[45]. Colombian environmental activists point out that coal exports are increasing, the profits of mines are growing, but nature and people suffer[46].

The EC, through environmental requirements imposed on all sectors of the economy (the cost of which increases year by year with no defined limit), including ESG reporting, excludes the profitability of production (especially in the food sector), leading to growing expectations for subsidies and grants. This fits into the ideology of the Green Deal, which involves financial coercion and bribery in the form of an endless array of compensations for investing, choosing a particular type of product, or increasing costs for households or businesses. The source of funding for these actions is the member states, which are burdened with the obligation to build support systems for the transformation, as well as penalties for delays. Therefore, the state budget seeks funds and, as a result, imposes additional public levies on market participants and consumers.

A financial pyramid of naivety is being created, as it assumes the success of the ideology while this zero-emission perspective is financed from public funds (in fact, various types of taxes). However, **this is only possible with the complete elimination of economic activity and consumption.** Within this financial pyramid of naivety, **it is the market participants and consumers themselves who pay for the destruction of the economy and society.**

Who benefits? Providers of technologies, products, and services from other economic areas. The financial pyramid of naivety will lead to the bankruptcy of nation-states and their complete colonization by the EU's largest economy, which directs these processes – the German economy. Germany, through the Chinese economy that supplies technologies, products, and raw materials, ultimately dictates the terms on the European market. The experiences of dependence on raw materials from the Russian market have not influenced the change in thinking of the EC (de facto in Brussels, Berlin, and Paris). On the contrary – they have accelerated the dependence of EU countries on subsequent markets.

The European economy is becoming a shell that is being inflated with public funds. This presents a huge opportunity for larger economies (Germany, France, Denmark, the Netherlands) to remodel their economies with public funds at the expense of smaller EU economies, which are unable to subsidize their sectors on a scale that allows them to remain competitive. Interestingly, this happens within the constraints of Article 107 of the TFEU, which prohibits state aid to market participants. However, to serve the ideology, **the loosening of the system of restrictions on the transfer of public funds to market participants proceeds exponentially**. The scale of pumping public funds into the economy, justified by transformation, is unimaginable.

During the energy crisis, Germany spent more on subsidies for companies than all the remaining 26 member states combined. Figures provided by the Directorate General for Competition (DG COMP) show that out of more than EUR 140 billion approved by the EC between March 2022 and June 2023, as much as EUR 72.8 billion (52%) went to Germany. Of these funds, 85% flowed to two energy companies – Uniper, Germany's largest gas importer, and Securing Energy for Europe GmbH (SEFE), a nationalized company that once operated as Gazprom Germania, a subsidiary of Gazprom. Italy ranked second in terms of the amount of aid granted, with its government providing EUR 39.2 billion to Italian companies. Third on the podium was Spain (EUR 12 billion). This financial aid was granted under the Temporary Crisis and Transition Framework, which stipulates that sectors crucial to the transition to a zero-carbon economy should be particularly supported. The race for subsidies has already become a reality, and Germany is clearly in the lead. It is exactly this argument against loosening state aid rules that smaller EU countries have used most often. They emphasized that they would not be able to subsidize their companies as generously as the largest economies. "Some countries will be able to provide significantly more money than others," Margrethe Vestager, the former EC Vice-President in charge of competition, acknowledged at the time. At the same time, she denied that this would constitute a distortion of fair competition[47].

45 *Ibid.*
46 *Ibid.*
47 *S. Otfinowska, EURACTIV.pl, Niemcy deklasują resztę Unii w dotacjach dla firm [Germany outclasses the rest of the EU in subsidies for companies], published 09.02.2024, https://www.euractiv.pl/section/energia-i-srodowisko/news/niemcy-deklasuja-reszte-unii-w-dotacjach-dla-firm/, accessed 02.07.2024 [Polish only].*

01.3

SIPHONING OF PUBLIC FUNDS BY IDEOLOGY

The total budget of the Just Transition Fund for 2021-2027 is EUR 17.5 billion. An amount of EUR 7.5 billion is financed from the Multiannual Financial Framework, and an additional EUR 10 billion is provided under NextGenerationEU[48]. A significant portion of these funds will go to companies in various sectors of the European economy, which condition their operations on receiving public support (state aid theoretically prohibited in the EU).

However, the scale of the necessary outlay for the climatism-based energy transition is illustrated by the cost estimated in the EU's largest industrialized economy – Germany. Energy expert André Thess believes that these costs would amount to approximately **EUR 10 trillion, or about EUR 100,000 per capita**. Germany would have to spend about 10% of its economic output annually on climate neutrality over the next 20 years. This demonstrates the irrationality of the Green Deal and the unrealistic nature of its goals. Despite this, the German government, possessed by this ideology, continues to declare that the country will achieve climate neutrality by 2045[49].

The aforementioned A. Thess cites the example of El Hierro, an island belonging to Spain. This Canary Island attempted to completely do without fossil fuels. It managed to reach the level of 50% of electricity from renewable sources at a cost of EUR 85 million, or approximately EUR 15,000 per capita. The cost of the second half would be significantly higher, but the project has stalled. It is worth noting that this island is small, sparsely industrialized, and has excellent wind conditions, better than those of mainland Europe[50].

Interestingly, even in such a wealthy and ideologically driven economy, entrepreneurs cannot handle the costs of the energy transition. Berlin has insisted resigning from coal (although it is simultaneously developing lignite mining) and is closing its nuclear power plants. As a result of these transformations efforts, Europe's leading economy has run into severe turbulence. A report by the German Chamber of Industry and Commerce[51] indicates that **50% of surveyed companies believe that the current form of the energy transition has a negative or very negative impact on their competitiveness.** Even 32% of manufacturers, twice as many as during the 2022 energy crisis, are considering or have already begun relocating production abroad. A total of over 3,500 German companies from all regions of the country participated in the survey. Only 13% of respondents believe that the implemented energy transition will have a positive or very positive impact on the economy. Among those considering transferring production abroad for this reason (32% of respondents), 5.2% have already taken such actions, 10.5% are underway, and 16% have such plans. According to the DIHK, this fear within the industry stems from the fact that the phasing out of nuclear, coal, and gas power, as well as rising charges for electricity grid, has concrete consequences[52].

"The confidence of the German economy in energy policy has fallen to an all-time low. Concerns about its own competitiveness have never been greater," says Achim Dercks, Deputy Director General of DIHK, quoted in Bloomberg. "While companies used to see opportunities in the energy transition, the overall economy now views risk as prevailing over these opportunities. A large part of our economy is concerned about the lack of energy supplies in the medium and long term"[53].

The mirage of transformation, or rather transformational fog, justifies the expenditure of public funds. Politicians and activists, possessed by the ideology of the Green Deal, give permission for massive state intervention in all markets and sectors, and even demand it. **In Poland, the full budget for the energy transformation has not yet been estimated.** The amounts that may need to be spent by 2030 on investments related to energy transformation, including the transformation

48 *European Parliament, Just Transition Fund, https://www.europarl.europa.eu/factsheets/en/sheet/214/just-transition-fund, accessed 02.07.2024.*
49 *A. Fedorska, Die Welt, Business Alert, Transformacja energetyczna Niemiec może kosztować prawie 10 bilionów euro [Germany's energy transition could cost nearly EUR 10 trillion], published 04.04.2024, https://biznesalert.pl/transformacja-energetyczna-niemcy-finanse-energetyka/, accessed 02.07.2024 [Polish only].*
50 *Ibid.*
51 *Deutsche Industrie- und Handelskammer – DIHK.*
52 *M. Tabaka, Niemiecki biznes chce uciec za granicę. Decyzje Berlina to dla nich za duże ryzyko [German business wants to flee abroad. Berlin's decisions are too big a risk for them], published 02.09.2023, https://bizblog.spidersweb.pl/niemcy-przemysl-cena-energii, accessed 02.07.2024 [Polish only].*
53 *Ibid.*

of the energy market, **are estimated to be as high as several hundred billion PLN**. The Ministry of Climate and Environment estimates that a total of PLN 260 billion will be allocated to Poland's green transition by 2030 from both EU and national funds[54]. However, many so-called "ideology experts" argue that both EU and national investments to achieve net CO_2 emission balance should be increased. **They advocate for such an assessment, taking advantage of the climatism frenzy observed in individual EU member states**. In light of this further increases in public spending are likely[55].

All these costs are ultimately passed on to consumers, leading them to exit many sectors or reduce the scale of their market participation. **An expensive economy, relying heavily on the provision of public funds, pauperized households, the customer and the entrepreneur, both burdened by the environmental requirements – this is the picture of tomorrow's economy, a socialist, or even communist, economy of Altiero Spinelli's Europe**[56], with the façade of a successful implementation of the Green Deal ideology. Next in line is another Deal, this time the European Blue Deal, yet another comprehensive plan by the EC, which focuses on sustainable management of water resources, increasing resilience to climate change and promoting innovative solutions in the renewable energy sector[57], the implementation costs of which are also not specified. However, the European Economic and Social Committee "urges the EU institutions and Member States to take these principles and proposals into account and to consider water as a **strategic priority for the 2028-2034 programming period and beyond**, integrated into all EU policies"[58]. **There is no end to the madness of climatism ideology.**

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54 *The amount includes support from various sources, including the Cohesion Policy, as well as priority programs of the National Environmental Protection and Water Management Fund, the Common Agricultural Policy and national earmarked funds.*

55 *Kierunekenergetyka.pl, Finansowanie transformacji energetycznej [Financing the energy transition], published 29.04.2024, https://www.kierunekenergetyka.pl/artykul,104099,finansowanie-transformacji-energetycznej.html, accessed 02.07.2024 [Polish only].*

56 *An Italian communist politician and advocate of the federal concept of European unification, regarded by Eurofanatics and green-leaders ("Green-Dealers") as one of the founding fathers of European integration. His Ventotene Manifesto is considered one of the first documents promoting the idea of European unification and a European constitution. See: European Union, Altiero Spinelli: an unrelenting federalist, https://european-union.europa.eu/principles-countries-history/history-eu/eu-pioneers/altiero-spinelli_en, accessed 02.07.2024.*

57 *European Economic and Social Committee, Declaration for an EU Blue Deal, Brussels 2023, https://www.eesc.europa.eu/sites/default/files/2024-02/qe-04-23-852-en-n.pdf, accessed 02.07.2024.*

58 *Ibid, p. 1.*

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02

POLISH VIEWS ON THE EUROPEAN GREEN DEAL AND THE FUTURE OF THE REPUBLIC OF POLAND

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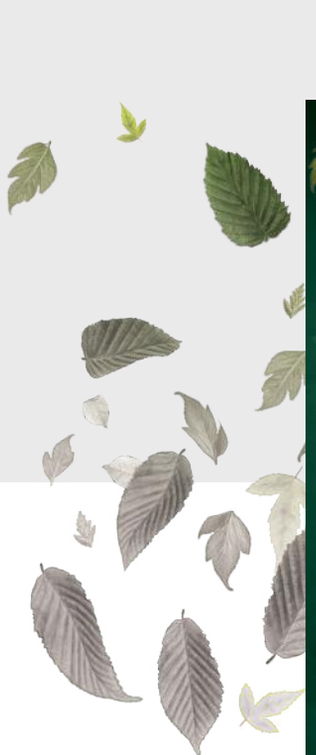


This study presents the results of a social survey representative of Polish society. It was a primary survey, conducted especially for the purposes of this publication. A social survey that allows us to ascertain public opinion, empowers citizens and aligns with the substantive understanding of democracy, which suggests that democracy is a set of procedures that are not an end in themselves but a means to effectively realize the will of the people (the sovereign, the public) and the common good (the general interest, the public interest, the social interest)[59].

The survey determined the opinion of the Polish public on the following issues regarding the European Union (hereinafter: EU) policy called the European Green Deal:

- knowledge about the European Green Deal;
- knowledge and opinions on climate neutrality as an EU goal;
- opinion of the impact of the European Green Deal on the quality of life and labor market;
- support for European Green Deal policies;
- support for the farmers' protest against the European Green Deal;
- support for a referendum on rejecting the European Green Deal.

59 *M. Kuniński, Czy demokracja jest samowystarczalna, czy też potrzebuje przeddemokratycznych, a nawet transcendentnych podstaw? [Is democracy self-sustaining or does it need a pre-democratic or even transcendent basis?], "Diametros" 2005, No. 5, p. 134. [Polish only].*

Other topics that were taken under scrutiny were the questions of how Poles view Poland's future in the EU and what model of the EU they support: whether they favor a Europe of Nations, federalization of the EU, or perhaps its transformation into a unitary organism, or whether they reject the EU altogether. In further part of this chapter the European Green Deal will be referred to as the Green Deal.

The main finding of the conducted survey is that Poles do not support the Green Deal in its current form. They advocate for introducing significant changes to the policy or its complete rejection. They are in favor of holding a nationwide referendum on rejecting the policy. They support farmers' protests against the Green Deal. Poles affirm the EU as a Europe of sovereign states, with a small portion supporting the process of its federalization. Between April and May 2024, the level of euroscepticism in Poland increased, but the majority of Poles still support Poland remaining in the EU.

02.1

SOCIAL SURVEY METHODOLOGY

The social survey entitled "Poles on the Green Deal" was conducted under the direction of Katarzyna Agnieszka Obłąkowska, Ph.D. The research tool was developed by Katarzyna Agnieszka Obłąkowska, Ph.D. and Artur Bartoszewicz, Ph.D. Fieldwork, sample selection, and statistics were conducted by PBS Sp. z o. o.[60] The field survey was carried out from April 22 to May 6, 2024. A representative sample, survey method and triangulation of data collection techniques were used, i.e. 402 CATI (computer-assisted telephone interviewing), 611 CAWI (computer-assisted web interviewing), and 200 CAPI (computer assisted personal interviewing).

The representative sample consisted of 1,213 people, with a maximum statistical error of ±3.7%. A quota-random sampling was used, and the sample is representative of the citizens of the Republic of Poland (hereinafter: RP) in terms of controlled significant characteristics, as it is identical to the structure of these characteristics in the population. The sample reflects the structure of the population of Polish citizens with regard to the following characteristics:

- **gender** (female, male);
- **age** (18-29, 30-44, 45-64, 65+);
- **education** (primary/vocational, secondary, higher);
- **category of residence** (village, town up to 20 thousand inhabitants, town 20-100 thousand inhabitants, city 200-400 thousand inhabitants, city over 400 thousand inhabitants);
- **voivoideships of residence** (all voivoideships);
- **employment status** (gainfully employed, unemployed);
- **among the employed** – employment sector (public, industry, agriculture, construction, transport, services, and trade).

Oversampling was also conducted in the areas of employment in industry, agriculture, and construction in order to provide the opinion of individuals employed in these sectors. For the purposes of developing statistics for the entire population, a weighting procedure was applied based on the most recent data from the Local Data Bank of the Statistics Poland (GUS), the National Population and Housing Census 2021, and the Yearbook of Labor Statistics 2023. A multi-stage, iterative algorithm was used, based on cross-sectional distributions (when the data source and distribution allow) and marginal distributions, following the RIM weighting (RAKING) scheme.

Additionally, in the demographic section, the following aspects were examined among the employed: job position (business owner, management [CEO, director, manager, supervisor], specialist [non-managerial], office worker, manual laborer) and employment sector (public, private). Among the unemployed, their status was examined (pupil, student, retiree, pensioner, unemployed, economically inactive, on maternity/paternity/parental leave, on sick leave).

60 *PBS Sp. z o.o. is a Polish research agency, one of the leading on the Polish market, which has been conducting research for 34 years (since 1990). It is the only research company in Poland that holds certificates for the Polish Standards of Quality Implementation in Market and Public Opinion Research program (PKJPA), awarded by the Organization of Market and Opinion Research Firms (OFBOR), in all 8 categories of research. PBS has experience in carrying out multi-module, EU, high-budget, and long-term projects.*

02.2

POLES' KNOWLEDGE OF THE GREEN DEAL

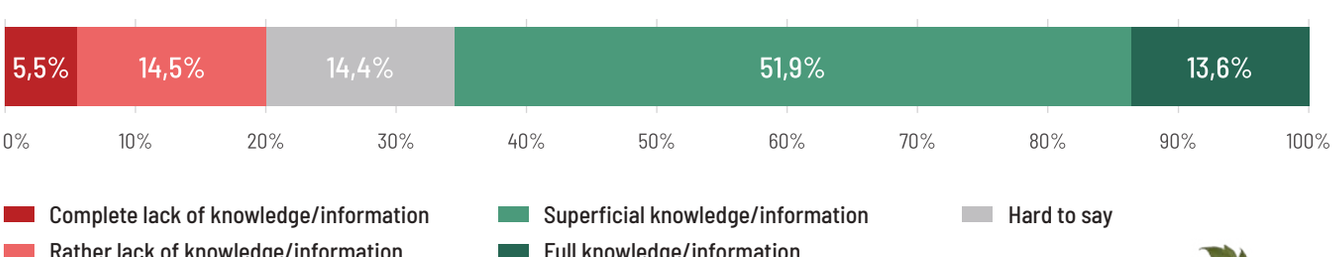
The prevailing opinion of Poles (52%) about the EU policy called the Green Deal, its principles and impact on the Polish economy and Polish society is that their knowledge/information about it is superficial. Nearly 14.0% of adults report having full knowledge, while 20.0% declare having no or rather no knowledge on the subject (5.5% and 14.5%, respectively) (see Chart 1). It was not verified whether these declarations match the actual state of knowledge. Full knowledge is more frequently declared by individuals in mature adulthood (45-64) (17.9%). Superficial or full knowledge is most often declared by seniors (65 years and older) (80.3%). The youngest adults (ages 18–30) are the least likely to declare both full knowledge (7.9%) and either full or superficial knowledge (56.1%), and they more often than other age groups indicate a lack of knowledge (27.3%) (6.4% complete lack; 20.9% rather no knowledge). Farmers (26.4%), managers (23.9%), and business owners (21.4%) are the most likely to indicate having full knowledge. Full or superficial knowledge is also most often reported by management (83.2%), retirees (79.5%), farmers (78.5%), and business owners (71.6%).

The majority of the adult population (69%) indicates that the number of regulations, prohibitions, and mandates of the Green Deal will be considerable, which is in line with the facts. According to nearly 1/10 (9.3%) of Poles, the number of these regulations will be small. More than 1/5 (22.1%) of the public communicates that they have no knowledge on this issue (see Chart 2).

More than half of Poles (56.5%) are not familiar with the timeline of regulations, prohibitions, and mandates that will be introduced in Poland and other EU countries in connection with the Green Deal. However, 25% of the adult population indicate that they are aware of the timelines (see Chart 3).

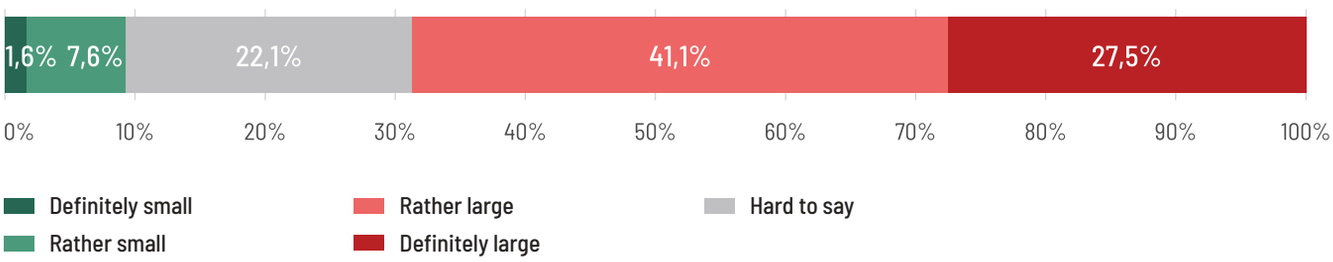
In a democratic system, it is a principle of public policy to calculate and publicly disclose the costs of implementing a proposed public solution. The benefits of its implementation should also be provided, and only when the benefits outweigh the costs is it an argument in favor of and justification for the public decision to implement the proposed solution into socio-economic life. Meanwhile, in the case of the Green Deal, over 1/3 of the Polish public (38%) does not know how much the implementation of all the assumptions of this policy (private and public spending combined) will cost Poland, and over 1/3 (35.4%) believes that there is currently no cost estimate of this policy, but that the costs will be well over PLN 500 billion. The remaining 1/4 of the society has varied estimations of how much the policy will cost Poles, i.e. over PLN 500 billion (8.3%), from PLN 100 billion to PLN 500 billion (7.3%), from PLN 1 billion to PLN 100 billion (7.6%), from PLN 100 million to PLN 1 billion (2.3%), and up to PLN 100 million (1.2%) (see Chart 4).

Chart 1. Distribution of answers to the question:
How do you assess your knowledge and information about the European Union's policy called the Green Deal, its principles and effects on the Polish economy and society?



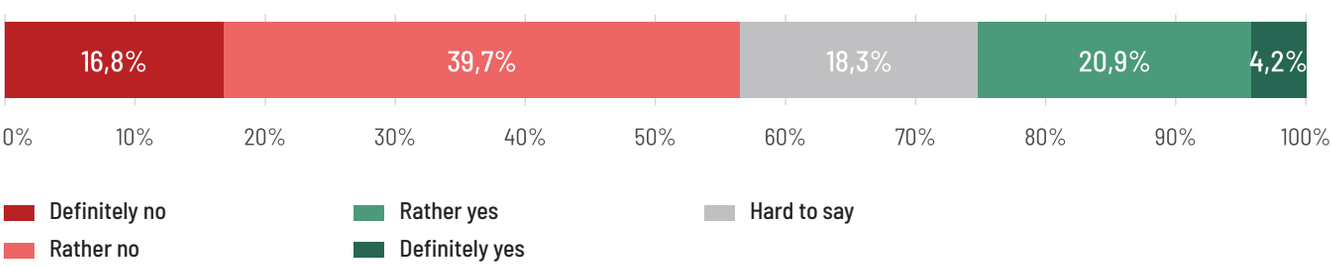
Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 2. Distribution of answers to the question:
To your knowledge, will the number of regulations, prohibitions, and mandates that will be introduced in Poland and other European Union countries in connection with the Green Deal policy be large or small?



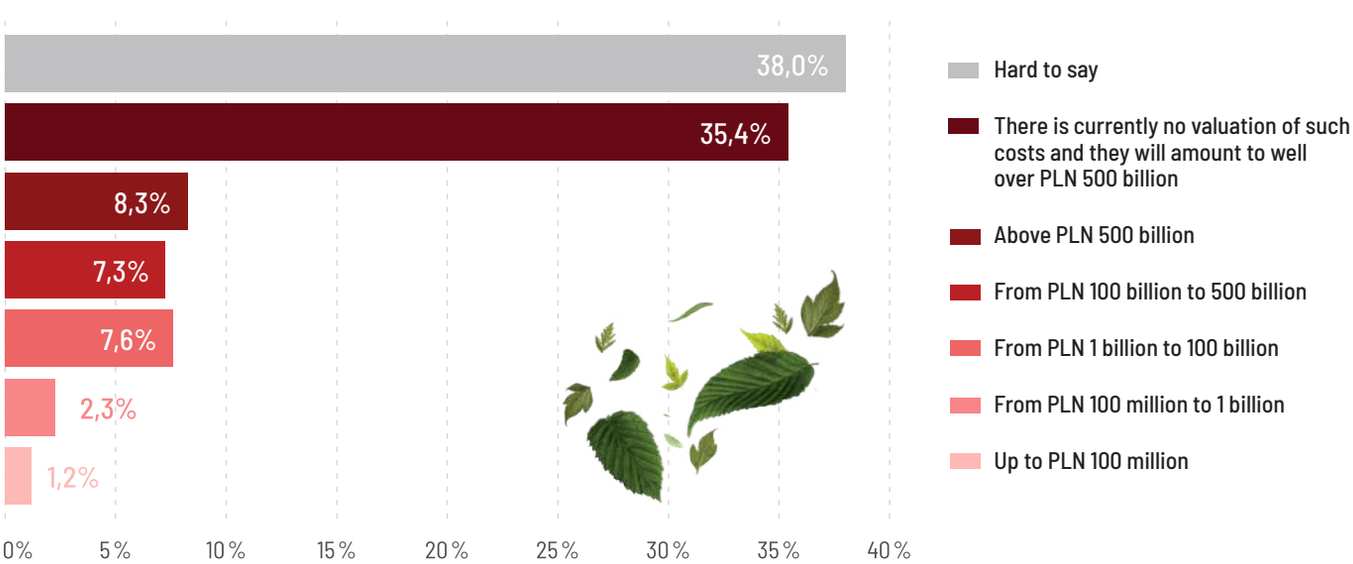
Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 3. Distribution of answers to the question:
Are you familiar with the timeline of regulations, prohibitions, and mandates that will be introduced in Poland and other European Union countries in connection with the Green Deal policy?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 4. Distribution of answers to the question
How much do you think it will cost Poland to implement all of the assumptions of the Green Deal? (private and public spending combined)

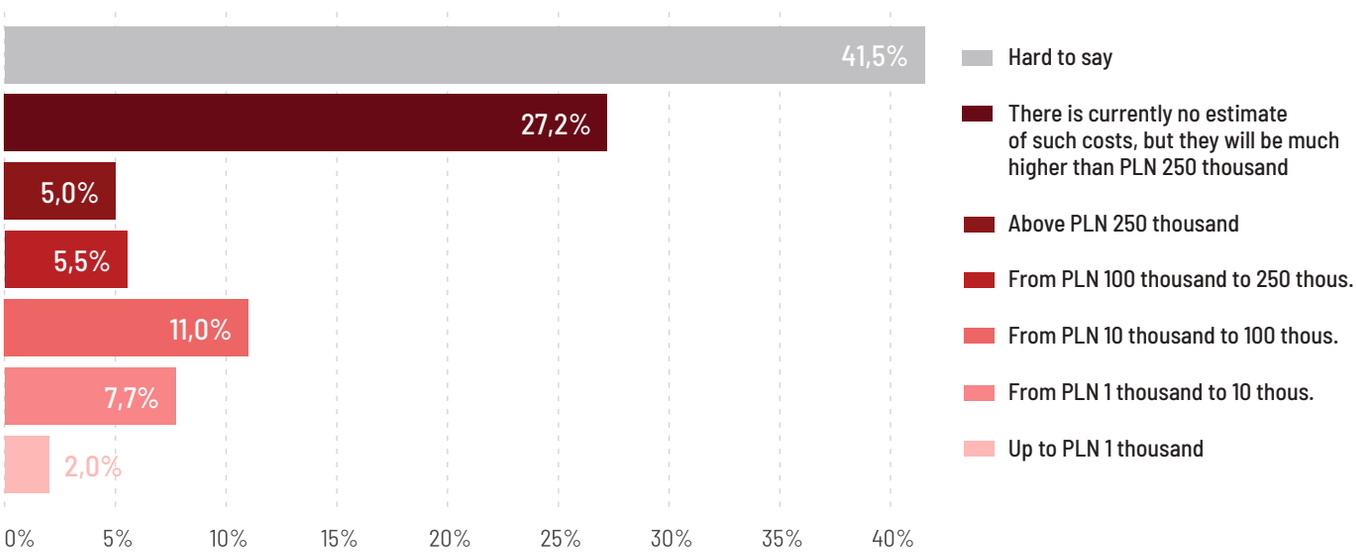


Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

The public has not been effectively informed by politicians and officials about the cost it will have to bear in the name of implementing the Green Deal policy. Analyses and information from the Polish Ministry of State Assets and Bank Pekao SA from January 2022 indicated that the cost of the climate policy under the Fit for 55 package by 2030 would entail a cost for Poland of PLN 2.4-2.5 trillion, which would mean an annual cost per Polish citizen in the years 2021-2030 of approximately PLN 6.4 thousand. When calculating total costs per capita, the annual cost per citizen should be multiplied by the number of years. It was emphasized that if the package were adopted, all resources available to the Polish banking sector would have to be directed towards related investments, which is impossible[61]. In March 2024, the media reported that the modernization of buildings in Poland alone, according to the Green Deal assumptions, would cost Polish households about PLN 1.5 trillion[62].

The largest portion of adult Poles (41.5%) does not know the cost of implementing the Green Deal that each citizen of the Republic of Poland will have to bear (private and public expenses combined), and over ¼ (27.2%) believes that there is currently no estimate of such costs, but that they will be significantly higher than PLN 250 thousand. The rest have varying projections, i.e. above PLN 250 thousand (5%), from PLN 100 thousand to PLN 250 thousand (5.5%), from PLN 10 thousand to PLN 100 thousand (11%), from PLN 1,000 to PLN 10 thousand (7.7%), up to PLN 1,000 (2%) (see Chart 5).

Chart 5. Distribution of responses to the question
: In your opinion, what will be the cost of implementing the EU Green Deal policy that every citizen of the Republic of Poland will have to bear? (private and public expenses combined)



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

61 *K. Obłąkowska, "Transformacja energetyczna Polski w perspektywie idei, ramy prawnych krajowych i międzynarodowych oraz opinii społecznej" [Energy Transformation of Poland in the Perspective of Ideas, National and International Legal Frameworks and Social Opinion], in: Finansowe i legislacyjne aspekty transformacji energetycznej w Polsce [Financial and Legislative Aspects of Energy Transformation in Poland], ed. K. Obłąkowska, Warsaw 2023, p. 17 [Polish only]; after: "Dziennik Gazeta Prawna," Pakiet Fit for 55 najbardziej obciąży kieszenie Polaków [Fit for 55 package will burden Poles the most], published 19.01.2022, https://finanse.gazetaprawna.pl/artykuly/8337026,pakiet-fit-for-55-najbardziej-obciazy-kieszenie-polakow.html, accessed 25.05.2024 [Polish only]; M. Puzyr, Fit for 55. Jacek Sasin: To koszt nie do udźwignięcia dla Polski [The cost for Poland is unaffordable], published 11.01.2022, https://polskatimes.pl/fit-for-55-jacek-sasin-to-koszt-nie-do-udzwigniecia-dla-polski/ar/c1-15991261, accessed: 27.06.2022 [Polish only]; Money.pl, Pakiet Fit for 55. Sasin: Polska będzie musiała zapłacić porażającą cenę [Fit for 55 Package. Sasin: Poland will have to pay a staggering price], published 11.01.2022, money.pl/gospodarka/pakiet-fit-for-55-sasin-polska-bedzie-musiala-zaplacic-porazajaca-cene-6725160091974496a.html, accessed: 27.06.2022 [Polish only].*

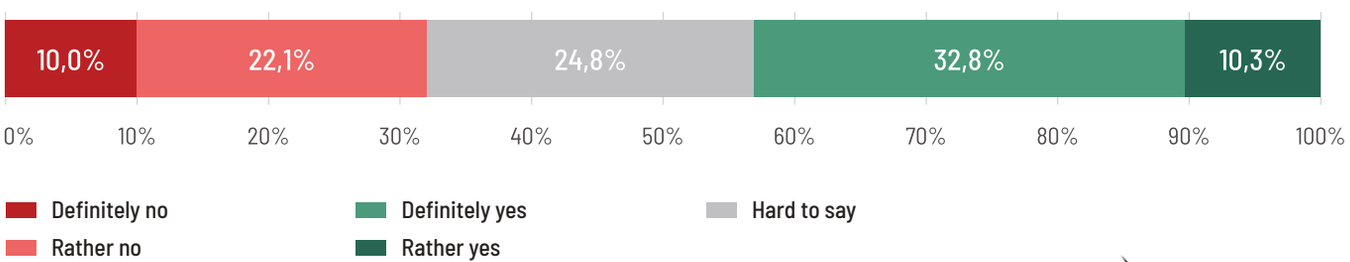
62 *S. Tałach, Masowe renowacje budynków w Zielonym Ładzie. Koszty poniosą właściciele [Massive renovations of buildings in the Green Deal. Costs will be borne by owners], Interia Business, published 02.03.2024, https://biznes.interia.pl/gospodarka/news-masowe-renowacje-budynkow-w-zielonym-ladzie-koszty-poniosa-w,nId,7361581, accessed 27.05.2024 [Polish only].*

02.3

KNOWLEDGE AND OPINIONS OF POLES ABOUT CLIMATE NEUTRALITY AS AN EU GOAL

More than half of the Polish public (56.9%) communicates that they do not know what climate neutrality means, which the European Commission (hereafter: EC), the European Parliament and the heads of government of the member states have set as a goal for all EU countries by 2050. Specifically, 10% of the respondents definitely do not know, 22.1% rather do not know, and 24.8% find it difficult to say whether they know what climate neutrality means. Only 43.1% of the Polish public indicates that they know how the term should be understood (see Chart 6). Thus, a goal has been top-down set and imposed on society; a goal that is abstract to majority of its members.

Chart 6. Distribution of responses to the question:
Do you know what is meant by climate neutrality, which the European Commission, the European Parliament, and the heads of government of the Member States have set as a goal for all European Union countries by 2050?

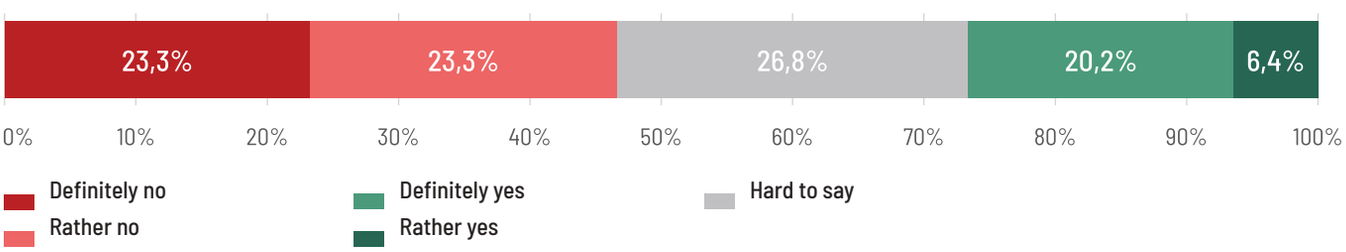


Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Nearly half of the adult Polish population (46.6%) believes that achieving climate neutrality by the EU by 2050 will not contribute to changes in Earth's climate. Only 26.6% of Poles are convinced that it will contribute to these changes, while 26.8% have no opinion on the issue (see Chart 7). However, most of us (69.2%) believe that we should strive to achieve this goal but at our own pace (46.3%), ensuring the safety of socio-economic development, even if it means that we achieving it after 2050. Only 22.8% of Poles agree with the pace set by the EU, i.e. aiming to achieve climate neutrality by 2050 at the latest. Currently, 15.5% of respondents completely reject this goal, believing that Poland should not strive to make this goal a reality at all (see Chart 8).

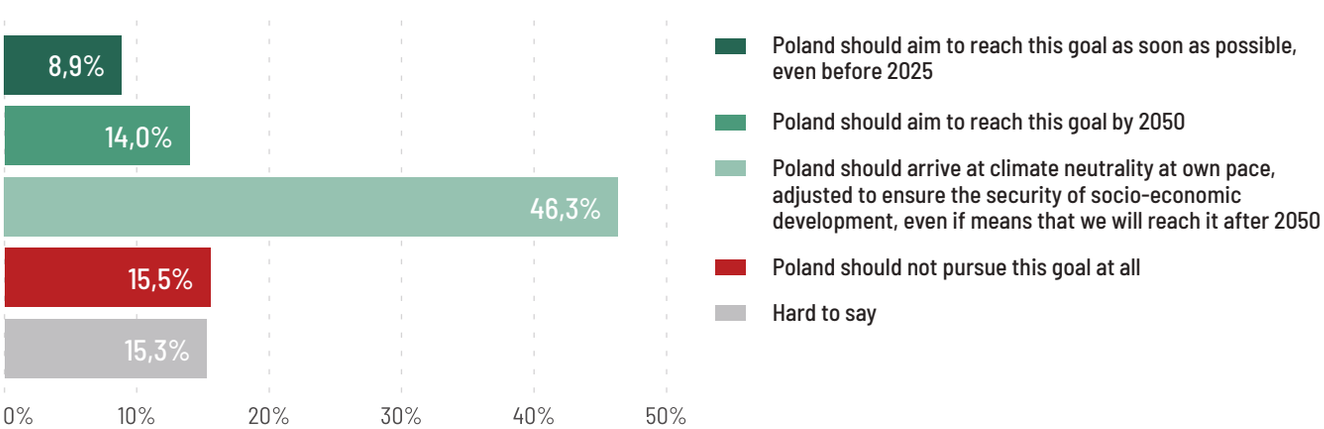
In the public opinion polls conducted so far on the EU's policy goal of achieving climate neutrality, Poles were not asked at all whether they supported this goal and the policy aimed at it or not. They were only asked when Poland should achieve this goal[63]. In the survey conducted for the purposes of this report, knowledge on this topic was obtained for the first time by adding an indicative response. Chart 9 shows that currently only 9% of Polish citizens support our country achieving climate neutrality before 2050, which represents a significant decline compared to previous surveys. Achieving this goal by 2050 is supported by 14% of the public, while 46% believe that Poland should achieve climate neutrality at its own pace, even if this means achieving it after 2050. Over 15% of the public believes that Poland should not pursue this goal at all. The youngest adults (18-29)

Chart 7. Distribution of responses to the question:
In your opinion, will the European Union's achievement of climate neutrality by 2050 contribute to changing Earth's climate?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

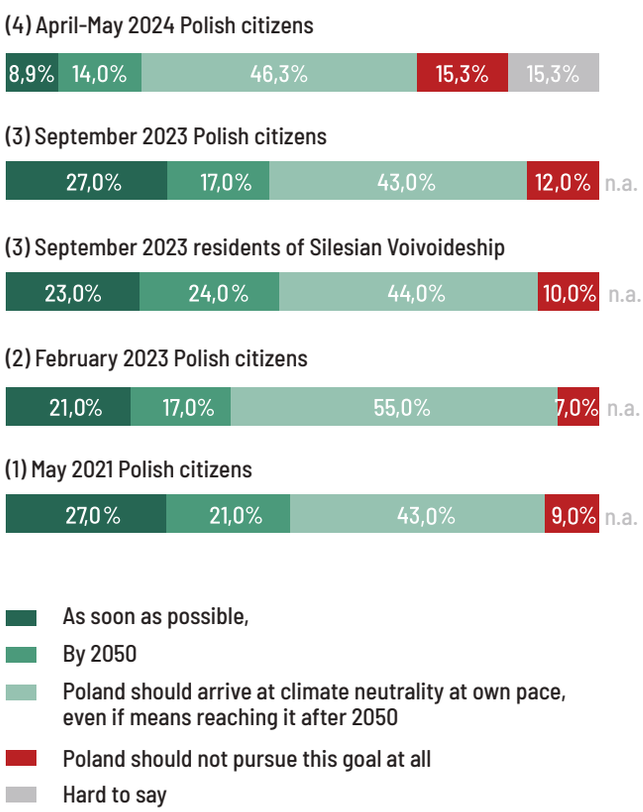
Chart 8.
Opinion of Poles on Poland's pursuit of climate neutrality



63 *Compare: CBOS (Public Opinion Research Center), Transformacja energetyczna – oczekiwania i postulaty, Komunikat z badań nr 70/2021 [Energy Transformation – Expectations and Demands], Research Report No. 70/2021, https://www.cbos.pl/SPISKOM.POL/2021/K_070_21.PDF, accessed 25.05.2024, p. 4 [Polish only]; CBOS, Postawy wobec transformacji energetycznej [Attitudes towards Energy Transformation], Research Report No. 30/2023, https://www.cbos.pl/SPISKOM.POL/2023/K_030_23.PDF, accessed 18.06.2024, p. 2 [Polish only]; K. Obłąkowska, A. Bartoszewicz, "Znaczenie sektora górnictwa węgla kamiennego dla krajowego oraz regionalnego rynku. Badanie opinii publicznej dotyczące polityki klimatycznej UE oraz programu wygaszania górnictwa węgla kamiennego w Polsce" [Importance of the hard coal mining sector for the national and regional market. Public opinion poll on the EU climate policy and the program of phasing-out coal mining sector in Poland], in: Wojna gospodarcza w Europie – ryzyka utraty bezpieczeństwa energetycznego Polski [Economic war in Europe – the risks of Poland's losing energy security], ed. A. Bartoszewicz, Katowice 2023, p. 141 [Polish only].*

are more likely (15.8%) to support the earliest realization of this goal. Seniors (65 and older), on the other hand, are more likely to believe that Poland should pursue this goal at its own pace (58.3%). Rejection of this goal is a more common response among those in mature adulthood (45-64) (19.8%), those with higher education (20%), management staff (19.5%), industrial workers (22.2%), business owners (29.9%) and very frequently farmers (39.3%).

Chart 9.
Opinions of Poles on Poland's pursuit of climate neutrality from 2021 to 2024



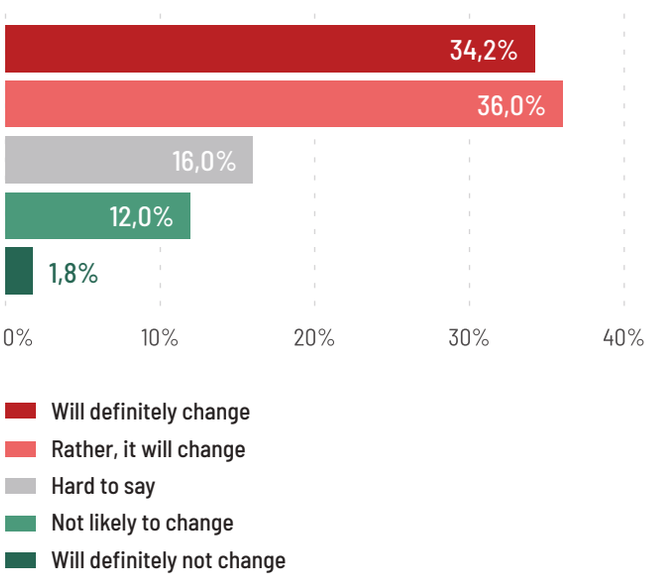
Source: own compilation based on: CBOS (Public Opinion Research Center), Transformacja energetyczna... [Energy Transformation...], op. cit. p. 4; CBOS, Postawy wobec transformacji energetycznej [Attitudes Toward Energy Transformation], op. cit. p. 2; K. Obłąkowska, A. Bartoszewicz, op. cit. p. 141; Obłąkowska&Bartoszewicz&PBS, April-May 2024 survey.

02.4

POLES' OPINION ON THE EFFECTS OF THE GREEN DEAL

The majority of adult Polish citizens (70.2%) believe that the life of the average Polish citizen will change due to the regulations, prohibitions, and mandates that will be introduced in connection with the Green Deal. However, there is a portion of society (13.8%) that claims it will not change. A sizable group is unsure whether this policy will affect the lives of people in Poland. Farmers are particularly convinced about the changes, with 90% indicating that the Green Deal will change the life of the average Pole (including 42.6% who believe it will change it radically) (see Chart 10).

Chart 10. Distribution of answers to the question:
Will the life of the average Polish citizen change significantly or not at all under the influence of regulations, prohibitions, and mandates introduced in connection with the Green Deal?



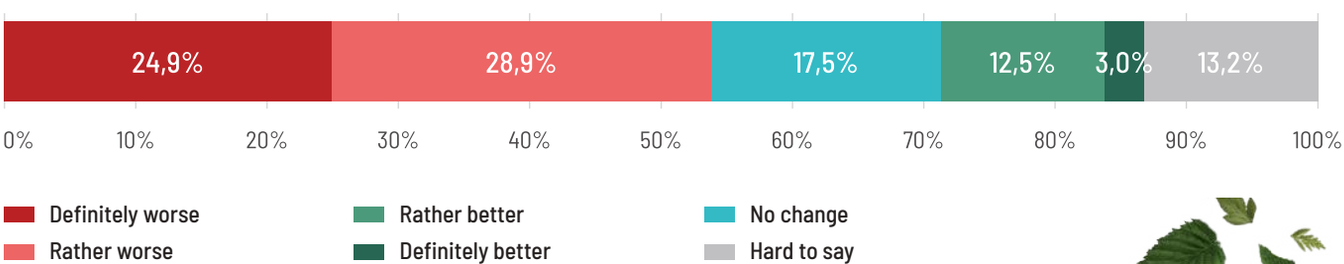
Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

More than half of Poles (54%) believe that after all the Green Deal regulations come into effect, their personal lives will worsen (including 24.9% ho think it will definitely worsen and 28.9% who think it will probably worsen). A decisive minority (17.5%) believe that this policy will not affect their private lives. An even smaller group (12.5%) think that their lives will probably improve, while only 3% believe that their lives will definitely improve. Meanwhile, 13.2% of the population indicate that they do not know how the Green Deal will affect their private lives.

The majority of those who see a threat in the Green Deal are among people working in agriculture (71.8%), industry (67.5%), and business owners (65.4%), as in these groups, 65.0–72.0% of individuals believe their lives will worsen after the introduction of this EU policy's regulations. The largest number of people who think their lives will improve (rather or definitely) thanks to the Green Deal is among residents of the largest agglomerations (over 400 thousand inhabitants; 27.5%), among residents of large cities (200-400 thousand inhabitants; 22.2%), management staff (managers at various levels; 23.1%), and retirees (22.8%) (see Chart 11).

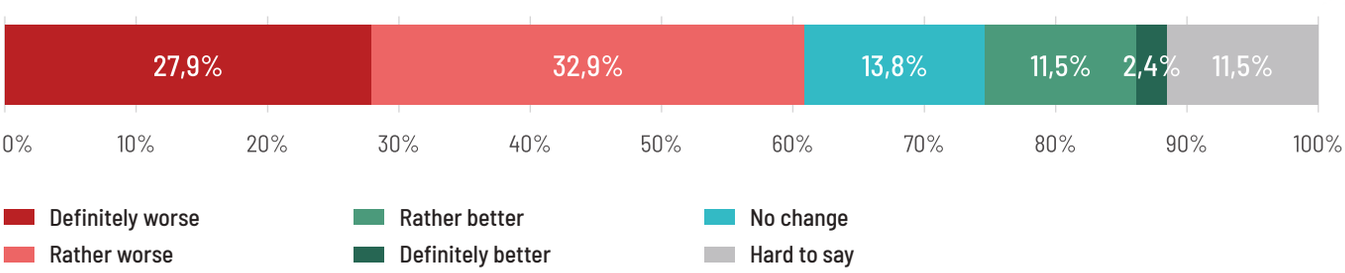
The majority of Poles (60.9%) believe that after all the Green Deal regulations come into effect, the average Pole's life will worsen (including 27.9% who think it will definitely worsen and 32.9% who think it will probably worsen), and most (83%) do not agree to the deterioration in the quality of life. A decisive minority (13.8%) believes that this policy will not affect the life of the average Pole. Only 2.4% of people are convinced that the average Polish citizen will be definitely better off thanks to the Green Deal, while 11.5% think that they will probably live better. In contrast, 11.5% of the population indicate that they do not know how the Green Deal will affect the life of the average Pole. Thus, people believe that this policy will have a slightly more negative impact on the entire society than on them personally (54%). Those most convinced of the negative impact of the Green Deal on the quality of life of Poles are those working in agriculture (73.9%), industry (72.6%), business owners (69.4%), and generally those working in the private sector (68.1%). The strongest belief in its positive impact is among residents of cities with 200-400 thousand inhabitants (29.0%), the largest agglomerations (20.5%), management staff (managers at various levels, not owners; 23.0%), and seniors/retirees (20.4%) (see Charts 12 and 13).

Chart 11. Distribution of answers to the question:
How do you think your life will be after all the Green Deal regulations come into effect?



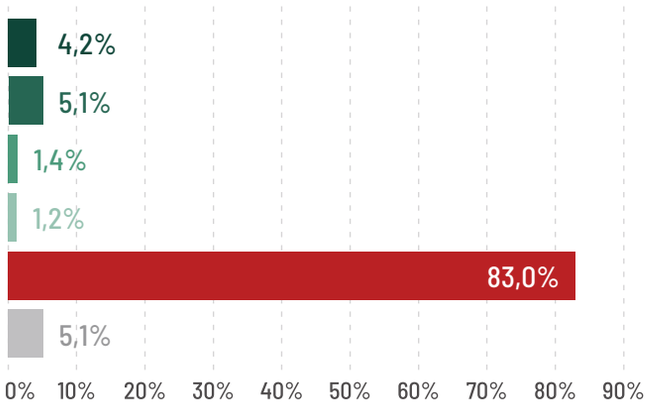
Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 12. Distribution of answers to the question:
How do you think the average Pole will live after all the Green Deal regulations come into force?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 13. Distribution of responses to the question:
Do you accept a deterioration in the quality of life?
among respondents who believe that it will be worse for the average Pole to live after all the Green Deal regulations go into effect

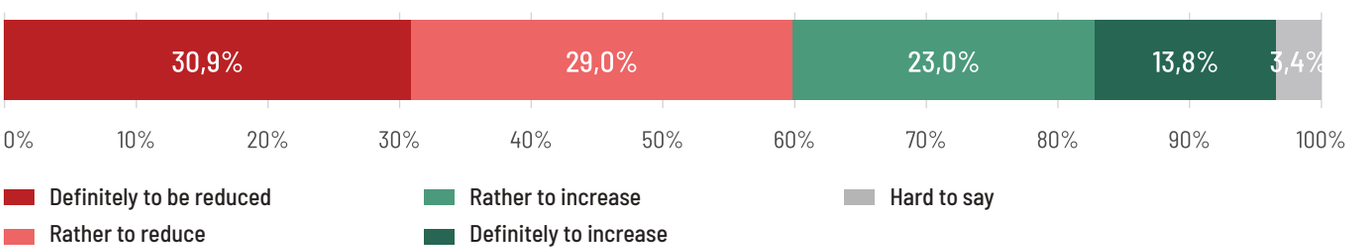


- Yes, I agree completely
- Yes, I agree, if it affects me and my generation
- Yes, I agree, if it affects me, my generation and my children's generation
- Yes, I agree, if it affects me, my generation and generationof my children and grandchildren
- No, I don't completely agree with it
- Hard to say

Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

The majority of Poles (60%) believe that the introduction of the Green Deal legislation in Poland will contribute to a decrease in the number of good jobs in our country. Conversely, only 17.2% of the population believes that this policy will lead to an increase in the number of good jobs in Poland. Meanwhile, 23% have no opinion on this issue (response: hard to say). Those with the most categorically negative views on the impact of this policy on the Polish labor market are farmers and business owners, with 82.5% and 72.6%, respectively, believing that the number of good jobs in Poland will decrease. The strongest belief in the increase in the number of good jobs thanks to the Green Deal is among seniors and retirees (33.5% of these groups), residents of the largest cities[64] (32.6%), and individuals with higher education (26.1%) (see Chart 14).

Chart 14. Distribution of answers to the question
In your opinion, will the introduction of Green Deal regulations in Poland increase or decrease the number of good jobs in Poland?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

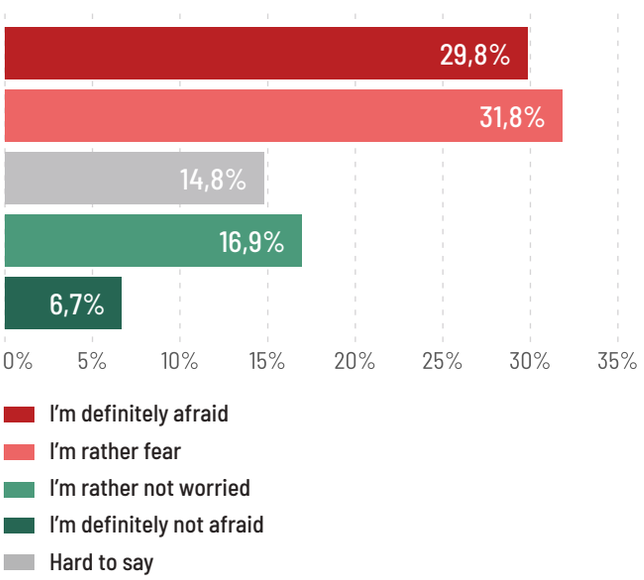
64 *Cities with over 400 thousand inhabitants.*

02.5

POLES' SUPPORT FOR THE GREEN DEAL

The majority of Poles (61.6%) fear the introduction of the Green Deal regulations (including 29.8% who definitely fear it and 31.8% who rather fear it). Only 23.6% of the population are not afraid of its introduction, with 6.7% definitely not fearing it and 16.9% rather not fearing it. Farmers are the ones with highest degree of concern, of whom 88% have fears, while 7.8% do not, and business owners, of whom 78.7% have fears and 14.6% do not. The least fearful are residents of largest Polish agglomerations, of whom 51.1% have concerns and 38.4% do not, and retirees, of whom 54.2% have fears and 37.1% do not (see Chart 15).

Chart 15. Distribution of responses to the question:
Do you fear or not the introduction of Green Deal regulations?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

The study determined the level and index of public support (hereinafter: IPS) for 21 specific solutions that are to be implemented as part of the Green Deal in EU countries – these were communicated as to be implemented until April 2024.The detailed public opinion on them is presented in Table 1. The IPS can range from +100% when there is full public support for a given solution to -100% for full public rejection of a given solution. This indicator is calculated according to the formula: IPS = public support (added categories of 'strongly in favor' and 'rather in favor') – public rejection (added categories of 'strongly against' and 'rather against').

Among the evaluated solutions, only 2 achieved a positive IPS above the statistical error margin, meaning that the Polish public supports their implementation. These are:

#1 Reducing the use of chemical pesticides by 50% by 2030
(IPS = +27,5%);

#2 Extending a status of MPAs[65] over at least 30% of EU marine areas as biodiversity conservation areas within the NATURA 2000 network by 2030
(IPS = +17,4%).

Three solutions achieved a positive ISP, but within the margin of statistical error. Thus, in reality, they can be either supported or rejected by society. These are:

#1 Legally protecting at least 30% of the EU land areas with a status of SPAs[66] as Biodiversity Conservation Area within the NATURA 2000 network by 2030
(IPS = +3,5%);

#2 Reducing the use of fertilizers by at least 20% by 2030
(IPS = +1,7%);

#3 Ensuring at least 49% share of renewable energy in the building sector's final energy consumption by 2030
(IPS = +1,6%).

65 *Marine Protected Areas – translator's note.*
66 *Special Protection Areas – translator's note.*

Other 16 solutions received a negative IPS, meaning that the Polish society opposes their implementation and this opposition is strong. The most strongly rejected solutions are (IPS >- 40%):

#1 Imposing an annual tax on owners of combustion and hybrid cars from 2026
(IPS = –65,5%);

#2 Ban on the sale of internal combustion vehicles from 2035
(IPS = –60,7%);

#3 Including fossil fuels used to power cars and heat individual buildings in the Emissions Trading System (EU ETS2) from 2027, i.e. imposing a fee on all citizens for carbon dioxide emissions
(IPS = –57,8%);

#4 Ban on the registration of new or delivery combustion engine cars from 2035
(IPS = –57,1%);

#5 The EU taking 25% of profits from the Emissions Trading Scheme (EU ETS) that have so far funded national budgets from 2026
(IPS = –48,7%);

#6 Imposing a border carbon tax levied by the EU from 2026
(IPS = –44,5%).

The rejected solutions, imposed by the Green Deal in April 2024, also include:

#7 Ban on the installation of gas, coal, pellet, and oil heating systems in new single-family homes starting in 2030
(IPS = –37,7%);

#8 Closing all coal and lignite mines in Poland by 2049
(IPS = –35,8%);

#9 Mandating the replacement of all gas, coal, pellet, and oil heating systems by 2040
(IPS = –35,2%);

#10 Zero-emission performance of all residential buildings undergoing major renovations from 2032
(IPS = –25,0%);

#11 Zero-emission performance of all public utility buildings from 2026
(IPS = –24,2%);

#12 Energy class D for all residential buildings from 2033
(IPS = –22,0%);

#13 Zero-emission performance of all new buildings as of 2028
(IPS = –21,5%);

#14 Energy class E of all residential buildings from 2030
(IPS = –20,3%);

#15 Ban on the installation of gas, coal, pellet, and oil heating systems in new state and municipal buildings from 2028
(IPS = –18,5%);

#16 Covering at least 25% of agricultural land with organic farming by 2030
(IPS = –16,4%).

The IPS, calculated as the average of the ratings of the 21 solutions, is

-25,7%

indicating that Poles ARE OPPOSED to the Green Deal policy in its form as of April 2024.

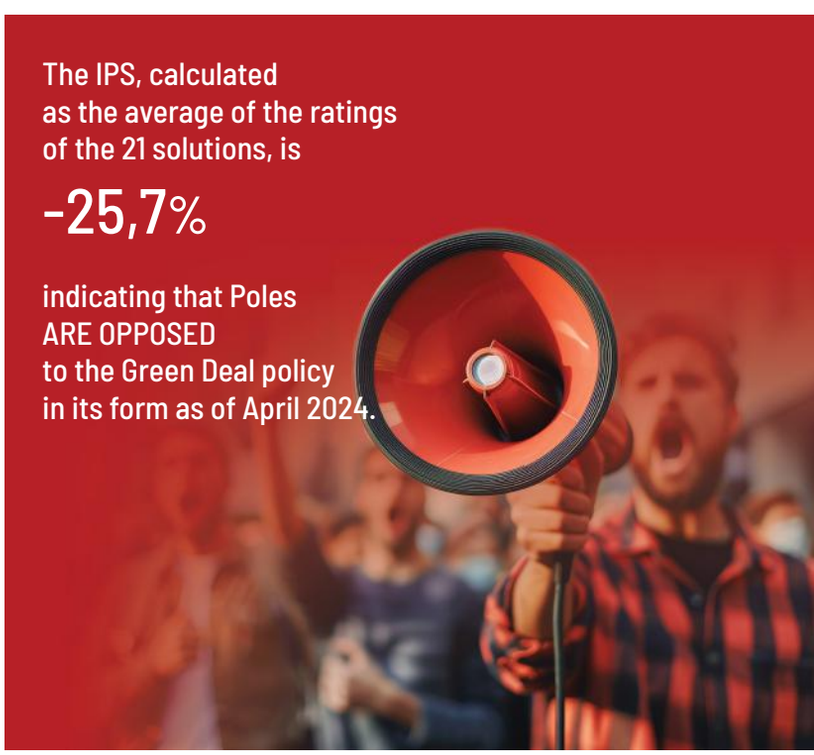


Table 1. Levels and indexes of public support (IPS) for 21 specific EU Green Deal policy solutions.

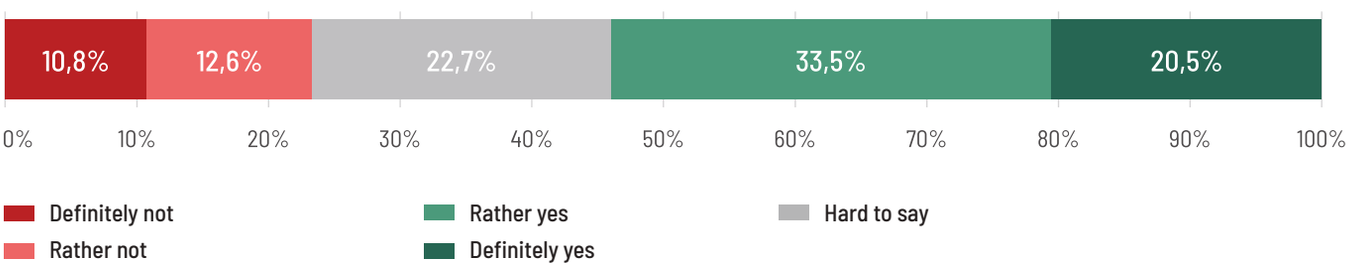
	Please state whether you support or do not support the introduction of these regulations on a scale from strongly oppose to strongly support					Support Index (IPS)
	Strongly oppose	Rather oppose	Hard to say	Rather support	Strongly support	
#1	The EU taking 25% of profits from the Emissions Trading Scheme (EU ETS) that have so far funded national budgets from 2026					
	37,1%	27,0%	20,5%	12,7%	2,7%	–48,7%
#2	Imposing a border carbon tax levied by the EU from 2026					
	39,7%	23,9%	17,3%	14,7%	4,4%	–44,5%
#3	Imposing an annual tax on owners of combustion and hybrid cars from 2026					
	57,6%	20,1%	10,0%	9,4%	2,9%	–65,5%
#4	Zero-emission performance of all public utility buildings from 2026					
	32,4%	20,9%	17,4%	19,1%	10,2%	–24,0%
#5	Including fossil fuels used to power cars and heat individual buildings in the Emissions Trading System (EU ETS2) from 2027, i.e. imposing a fee on all citizens for carbon dioxide emissions					
	49,6%	22,7%	13,3%	11,3%	3,2%	–57,8%
#6	Zero-emission performance of all new buildings as of 2028					
	33,4%	17,7%	19,2%	19,6%	10,0%	–21,5%
#7	Zero-emission performance of all residential buildings undergoing major renovations from 2032					
	33,0%	20,0%	19,1%	19,6%	8,4%	–25,0%
#8	Energy class E of all residential buildings from 2030					
	29,7%	18,0%	24,8%	20,8%	6,6%	–20,3%
#9	Energy class D for all residential buildings from 2033					
	28,1%	18,6%	28,7%	19,1%	5,5%	–22,0%
#10	Ensuring at least 49% share of renewable energy in the building sector's final energy consumption by 2030					
	21,7%	16,0%	23,0%	27,6%	11,7%	1,6%
#11	Ban on the installation of gas, coal, pellet, and oil heating systems in new state and municipal buildings from 2028					
	32,5%	18,8%	16,0%	18,2%	14,6%	–18,5%
#12	Ban on the installation of gas, coal, pellet, and oil heating systems in new single-family homes starting in 2030					
	38,9%	23,7%	12,4%	15,3%	9,6%	–37,7%
#13	Ban on the installation of gas, coal, pellet, and oil heating systems in new single-family homes starting in 2030					
	40,6%	20,8%	12,4%	16,4%	9,8%	–35,2%
#14	Ban on the sale of internal combustion vehicles from 2035					
	54,6%	20,5%	10,5%	9,1%	5,3%	–60,7%
#15	Ban on the registration of new or delivery combustion engine cars from 2035					
	52,0%	20,2%	12,7%	10,6%	4,5%	–57,1%
#16	Covering at least 25% of agricultural land with organic farming by 2030					
	29,8%	19,3%	18,2%	21,6%	11,1%	–16,4%
#17	Reducing the use of fertilizers by at least 20% by 2030					
	21,0%	18,0%	20,4%	26,9%	13,7%	1,7%
#18	Reducing the use of chemical pesticides by 50% by 2030					
	16,1%	11,9%	16,6%	31,1%	24,3%	27,5%
#19	Legally protecting at least 30% of the EU land areas with a status of SPAs as Biodiversity Conservation Area within the NATURA 2000 network by 2030					
	21,6%	14,5%	24,3%	24,7%	15,0%	3,5%
#20	Extending a status of MPAs over at least 30% of EU marine areas as biodiversity conservation areas within the NATURA 2000 network by 2030					
	17,5%	12,6%	22,4%	29,7%	17,9%	17,4%
#21	Closing all coal and lignite mines in Poland by 2049					
	40,2%	20,2%	15,0%	12,0%	12,6%	–35,8%

Source: Own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Over half of Poles (54%) believe that the Green Deal policy is important for Polish society, but as many as 23.4% do not consider it important, and 22.7% have no opinion on its relevance. Its significance is mostly recognized by farmers (65% indicating its importance), managerial staff (67% indicating its importance), and specialists (65.2% indicating its importance) (see Chart 16).

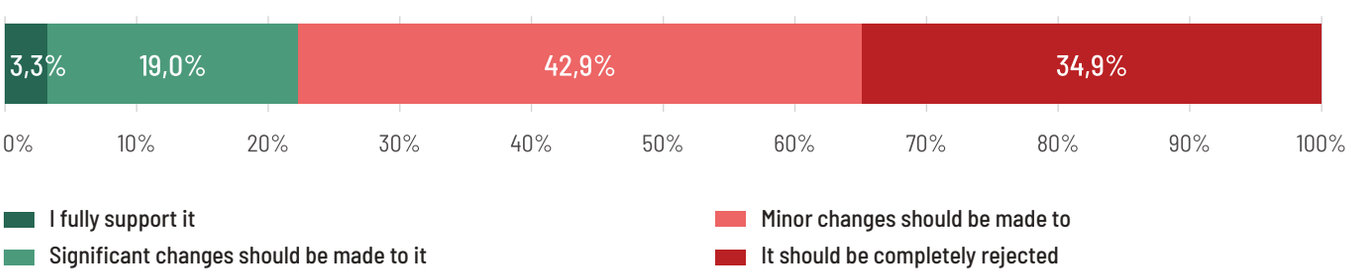
Only 3.3% of adult citizens of Poland fully support the EU Green Deal policy. The largest portion of Polish society, 42.9%, advocates for significant changes to it, while 34.9% believe it should be completely rejected. Additionally, there is a group of 19.0% who think minor changes should be made to the policy. The lowest level of full support for the Green Deal is found among industry workers, where it equals 0% (not a single person in this group was found to fully support the Green Deal). The next lowest support is in the transport sector—1.7% fully supportive, and in agriculture—2.1% supportive. Among farmers and transport sector workers, the highest percentages of people believe that this policy should be completely rejected (41.1% and 41.3%, respectively). Among industrial workers, more than half (52.0%) think that significant changes should be made, making this the group with the majority holding this view (see Chart 17).

Chart 16. Distribution of answers to the question:
In your opinion, is the European Union's Green Deal policy important for Polish society?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 17. Distribution of responses to the question:
Do you support the European Commission's Green Deal policy in its current form, or do you believe changes should be made?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

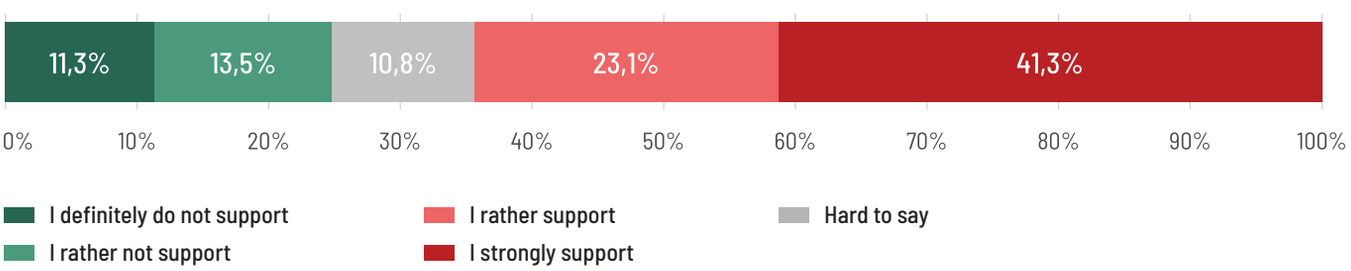
02.6

POLES ON OPPOSITION TO THE GREEN DEAL

The majority of the Polish society (64.4%) in April and May 2024 supported the protest conducted by farmers against the Green Deal. However, 24.8% of the public did not support it. A very small percentage of adults, i.e. 10.8%, had no opinion on the matter (see Chart 18). The highest support for this protest was among farmers (87.5%), business owners (73.1%), and blue-collar workers (71.6%). The lowest support was identified among residents of the largest agglomerations (52.6%) .

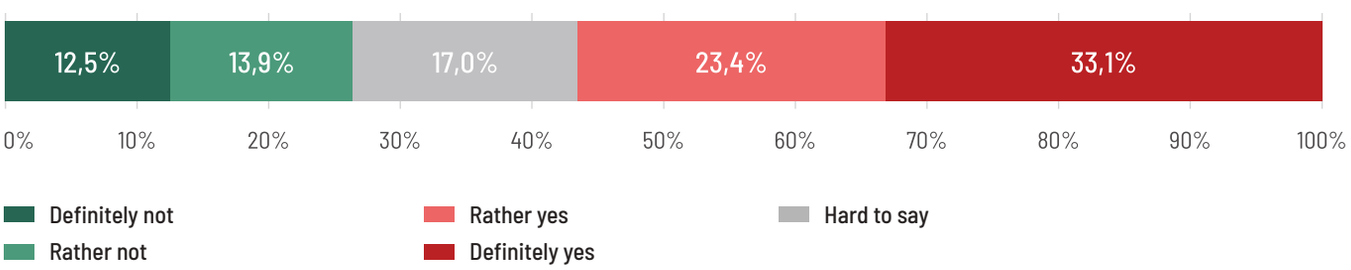
More than half (56.5%) of the Polish society supports holding a referendum in Poland on obliging the government, parliament, and president of the Republic to take actions to reject the Green Deal policy in its entirety. Strong support for such a referendum is expressed by 33.1% of adult citizens, while 23.4% are rather in favor of it. Opposing its organization are 26.4% of Poles (including 12.5% strongly opposed and 13.9% rather opposed) (see Chart 19). The highest support for the referendum initiative is among farmers (71.2%), industrial workers (65.7%), and construction workers (67.6%), but it is also high among office workers (62.3%). The most opponents of the referendum are among retirees (45%; the only group where opponents outnumber supporters), senior citizens (44.1%), residents of the largest agglomerations (43.6%), and people with higher education (39.7%).

Chart 18. Distribution of responses to the question:
Do you support or not support the current strike by farmers against the Green Deal?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 19. Distribution of answers to the question:
Should a referendum be held in Poland to oblige the Government, Parliament, and President of the Republic of Poland t o take actions to completely reject the European Union's Green Deal policy?



Source: own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

02.7

POLES ON THE FUTURE OF THE REPUBLIC OF POLAND AND THE EU

The majority of Polish citizens, 82.9%, oppose the dissolution of the state of the Republic of Poland by integrating its territory and population into a European federal state, which could be called the Federal European Union or the United States of Europe[67], with its capital in Brussels.

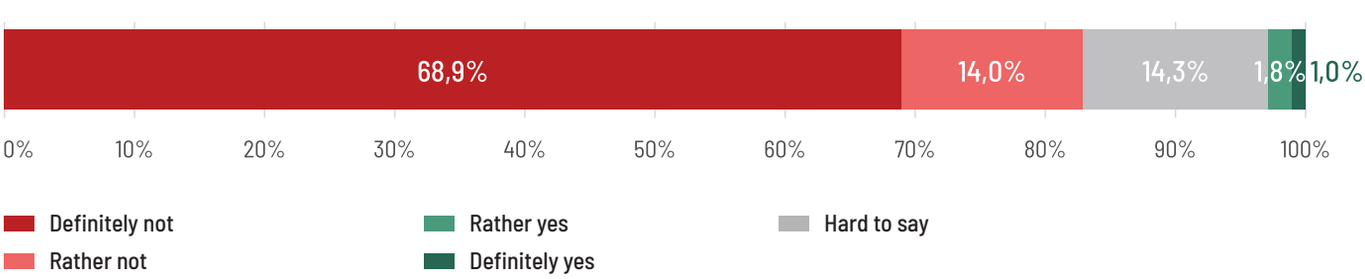
However, a tiny group, 2.9% of the public, supports the dissolution of the Polish state, and a significant group of 14.3% of adults have no opinion on this issue (response: "hard to say") (see Chart 20).

The belief that Republic of Poland should not be dissolved increases with the age of respondents. Among those in early adulthood (18-29), 75.2% have such a conviction, among those in mid-adulthood (30-44) – 78.5%, among mature adults (45-64) – 84.2%, and among seniors – 91%. This is related to the increasing clarity of opinions on this matter, measured by the decrease in the percentage of "hard to say" responses. In the youngest age group, 21.9% of "hard to say" responses were reported, in the 30-44 age group – 18.9%, in the 45-64 age group – 12.7%, and among seniors – only 5.5%. The strongest patriots and/or realists aware of the benefits of having a national state are transport workers (90.5% opponents of the dissolution of the Polish state), retirees (89.4% opponents of the dissolution of the Polish state), farmers (89% opponents of the dissolution of the Polish state), and business owners (87.9% opponents of the dissolution of the Polish state), in contrast to service and trade workers (77.2% opponents of the dissolution of the Polish state).

The majority of Poles support Poland remaining in the EU. However, in a survey conducted in late April and early May 2024, the percentage of those supporting membership was only 63.1%, while the percentage of those advocating for Poland to leave the EU was as high as 22.4% (see Chart 21). The year 2024 marks a drastic drop in support for Poland's EU membership. A CBOS survey from March 2024 already indicated an increase in the percentage of opponents of Poland's EU membership – it was 17% of the society, while in 2023 it was 10%, and in 2022 only 5%. Currently, the percentage of supporters of Poland's remaining in the EU is the lowest since our country's accession to this organization[68], and the percentage of opponents is at the level of the 2003 accession referendum[69].

The conducted survey reveals that the strongest supporters of Poland remaining in the EU are seniors (81% opponents of Poland leaving the EU; 13.7% supporters of Poland leaving the EU) and residents of the largest agglomerations (80.5% opponents of Poland leaving the EU; 12.6% supporters of

Chart 20. Distribution of answers to the question:
Are you in favor of the dissolution of the Republic of Poland by integrating its territory and population into the Federal European Union with its capital in Brussels?



Source: Own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

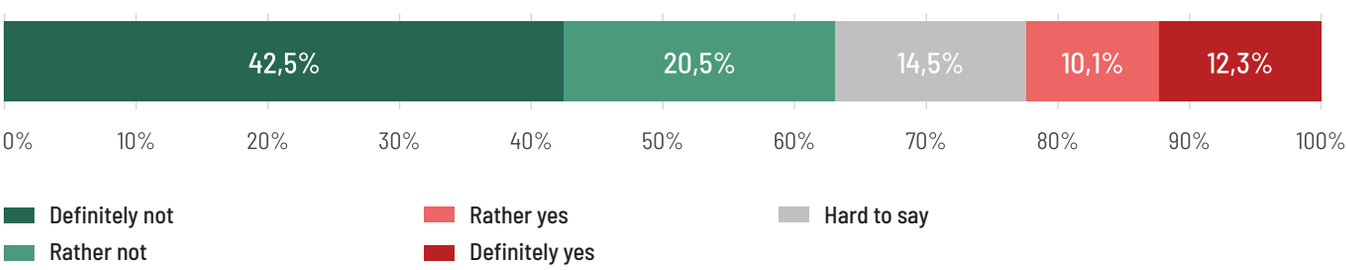
67 *Cf. Movimento Federalista Europeo, È tempo di fare gli Stati Uniti d'Europa, https://www.mfe.it/port/, accessed 18.06.2024.*

68 *Cf. CBOS (Public Opinion Research Center), Stosunek do członkostwa Polski w Unii Europejskiej po rozszerzeniu tej organizacji [Attitudes toward Poland's membership in the European Union after the organization's enlargement]), Research Report BS/92/2004, https://www.cbos.pl/SPISKOM.POL/2004/K_092_04.PDF, accessed 18.06.2024, p. 2 [Polish only]; CBOS(Public Opinion Research Center), 20 lat członkostwa Polski w UE [20 years of Poland's membership in the EU], Research Report No. 43/2024, https://www.cbos.pl/SPISKOM.POL/2024/K_043_24.PDF, accessed 18.06.2024, p. 3 [Polish only].*

69 *eferendum results: 77.45% YES; 22.55% NO. Turnout: 58.85%. Source: Announcement of the State Election Commission of June 9, 2003, on the result of the nationwide referendum on consent to ratify the Treaty concerning the accession of the Republic of Poland to the European Union, Journal of Laws No. 103, item 953 [Polish only].*

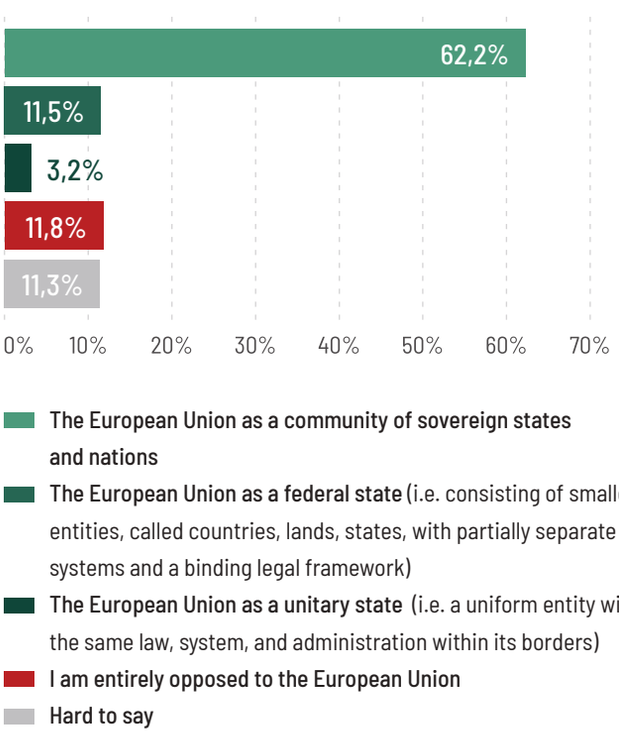
Poland leaving the EU). The strongest supporters of Poland leaving the EU are Poles working in construction (42.3% opposed to Poland leaving the EU; 32.9% supporters of Poland leaving the EU) and individuals aged 30-44 (52.8% opposed to leaving the EU; 28.1% supporters of leaving the EU). Farmers in general are in favor of Poland remaining in the EU, with 65% supporting EU membership, and 21.7% supporting leaving the EU. Similarly, industrial workers favor staying in the EU, with 62.5% supporters of remaining and 18.2% supporters of leaving the EU.

Chart 21. Distribution of answers to the question:
Are you in favor of the Republic of Poland leaving the European Union?

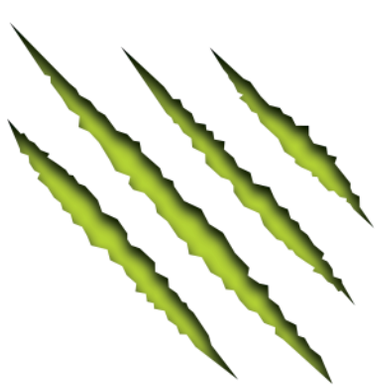


Source: Own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

Chart 22. Distribution of answers to the question
Which model of the European Union do you support?



Poles support the model of the European Union as a community of sovereign states and nations, i.e. the EU as a Europe of Homelands. Support for the Europe of Homelands in Polish society stands at 62.2%. However, 11.5% of the society supports the model of the EU as a federal state, composed of smaller entities – called countries, lands, states – with partially separate systems and a binding legal framework (federal EU). Minimal support, at 3.2%, is expressed for the model of the EU as a unitary state, meaning a uniform entity with the same law, system, and administration within its borders (unitary EU). A portion of the public declares itself as entirely opposed to the EU in general (11.8%). Additionally, 11.3% of adults have no opinion on the preferred model of the EU (see Chart 22).



Source: Own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

With increasing levels of education, the clarity of opinions regarding the preferred model of the EU rises and the rejection of the EU decreases. Among those with higher education, only 2.7% have no opinion on this matter, 7.4% reject the EU, 72.3% support the model of the EU as a Europe of Homelands, 16.1% declare themselves as supporters of the federalization of the EU, and only 1.4% accept the transformation of the EU into a unitary state. Among those with secondary education, 11.6% have no opinion on this issue, and 12.2% reject the EU. Among those with primary and vocational education, 17.4% have no opinion on the preferred model of the EU, and 14.5% reject the EU altogether. All groups—regardless of education—most commonly prefer the model of the EU as a Europe of Homelands, meaning a community of sovereign states and nations (see Table 2).

High support for the model of a federal EU was identified among business owners (24.4%), although the majority of them still prefer the EU as a Europe of Homelands (58.6%). Among industrial workers, the preferences are as follows: EU as a Europe of Homelands – 59.8%, federal EU – 15.1%, unitary EU – 5.2%, rejection of EU – 10.2%, "hard to say" – 9.8%. Among agricultural workers, the preferences are as follows: EU as Europe of Homelands – 61%, federal EU – 15.5%, unitarian EU – 0.8%, rejection of EU – 13.6%, "hard to say" – 9.1% (see Table 2).

Table 2. Support for different models of the EU in demographic groups and by professional activity and employment sector

	Which model of the European Union do you support?				
	The European Union as a community of sovereign states and nations	The European Union as a federal state[a]	The European Union as a unitary state[b]	I am entirely against the European Union	Hard to say
PROFESSIONALLY ACTIVE – EMPLOYMENT SECTOR					
PUBLIC SECTOR: public offices, public institutions, public education and higher education, healthcare, social welfare, cultural institutions, courts, prosecutor's offices, uniformed services, etc.	61.0%	15.7%	4.0%	9.0%	10.2%
INDUSTRY: industry, production, processing, manufacturing, mining, and extraction	59.8%	15.1%	5.2%	10.2%	9.8%
AGRICULTURE: farming, forestry, hunting, fishing	61.0%	15.5%	0.8%	13.6%	9.1%
CONSTRUCTION	54.1%	7.1%	2.5%	22.7%	13.6%
TRANSPORTATION: transport, warehousing logistics, motor trade in motor vehicles and related services (e.g., repair).	48.5%	17.6%	0.0%	15.9%	18.0%
SERVICES AND TRADE: (other than those related to motor vehicles)	59.4%	13.6%	5.7%	9.5%	11.9%
PROFESSIONALLY ACTIVE – POSITION					
OWNER	58.6%	24.4%	1.6%	10.0%	5.3%
MANAGEMENT (CEO, director, manager, supervisor)	69.2%	14.0%	0.9%	9.7%	6.1%
SPECIALIST (not managing the work of others)	68.6%	15.3%	3.8%	8.8%	3.6%
OFFICE WORKER	65.6%	12.3%	1.9%	11.7%	8.6%
MANUAL WORKER	46.7%	9.1%	7.6%	14.0%	22.6%

	Which model of the European Union do you support?				
	The European Union as a community of sovereign states and nations	The European Union as a federal state[a]	The European Union as a unitary state[b]	I am entirely against the European Union	Hard to say
ECONOMICALLY INACTIVE					
RETIRED	71.1%	10.9%	0.7%	11.2%	6.1%
GAINFUL EMPLOYMENT					
GAINFULLY EMPLOYED	58.6%	14.2%	4.2%	11.3%	11.6%
NOT GAINFULLY EMPLOYED	66.5%	8.3%	1.9%	12.3%	11.1%
AGE GROUPS					
18-29 YEARS OLD	66.1%	5.5%	5.9%	9.7%	12.8%
30-44 YEARS	50.4%	15.2%	4.7%	14.1%	15.7%
45-64 YEARS	63.8%	11.4%	2.3%	11.7%	10.9%
65 YEARS AND OLDER	71.8%	11.1%	0.8%	10.5%	5.8%
GROUPS BY EDUCATION					
PRIMARY/VOCATIONAL	53.3%	9.0%	5.7%	14.5%	17.4%
SECONDARY EDUCATION	63.6%	10.6%	2.0%	12.2%	11.6%
TERTIARY/UNIVERSITY EDUCATION	72.3%	16.1%	1.4%	7.4%	2.7%
GROUPS BY CLASS (SIZE) OF PLACE OF RESIDENCE					
VILLAGE	59.8%	9.9%	2.2%	12.3%	15.9%
TOWN up to 20,000 residents	62.1%	10.0%	4.3%	13.5%	10.2%
TOWN from 20,000 to 100,000 residents	65.2%	8.6%	3.7%	10.5%	12.0%
CITY from100,000 to 200,000 residents	61.5%	14.5%	3.5%	12.3%	8.3%
CITY from 200,000 to 400,000 residents	71.4%	5.3%	6.0%	14.3%	3.0%
CITY with over 400,000 residents	62.5%	21.8%	3.0%	9.0%	3.7%

a) i.e. consisting of smaller entities, called countries, lands, states, having partially separate systems and legal frameworks.

b) i.e. uniform, having the same law, system, and administration within the borders.

Source: Own study based on the research by Obłąkowska&Bartoszewicz&PBS, April-May 2024.

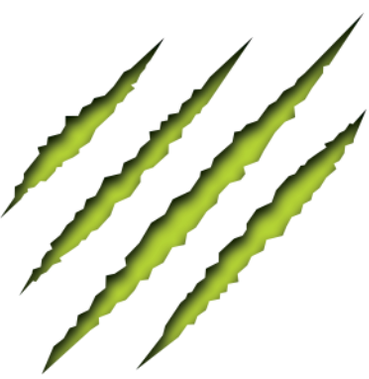
02.8

SUMMARY

On its website, the EC informs the citizens of its member states that "Making Europe the first climate-neutral continent in the world is a binding commitment under the EU Climate Law" and that "this shows that Europe is delivering on its promises made to citizens and international partners to lead the way on climate action and shape the green transition for the benefit of citizens and industries"[70]. An attentive reader might ask what exactly is this "commitment," who has committed, and when, in which act, did the citizens authorize anyone to implement this policy. This keen reader might also ask what is meant by a "Europe" that "is delivering on its promises made to citizens and international partners"? Is Europe the European Commission and the European Parliament? Or are the citizens of European countries Europe? The EC further states in its online enunciation that it is the governments of EU member states that have committed to transforming Europe into the first climate-neutral continent by 2050, and that the EU "now has legally binding climate targets covering all key sectors of the economy"[71]. The EC points out that the goal of this policy is to transform both the economy and society. Again, the attentive reader might ask: into what are we supposed to transform as societies, and who decides on this?

The completed public opinion survey, the results of which are presented in this study, is evidence that Polish society does not give a mandate to politicians and officials to implement the European Green Deal policy. This policy can, of course, be forced upon societies and businesses by the authorities – as states have a monopoly on coercion – but then it will be evident that the EU does not adhere to democratic principles but is an autocratic system. To meet social expectations, and make substantive democracy a reality, Polish politicians should strive for significant changes in the EU policy called the European Green Deal or Poland should reject it altogether. If they fail to do so, it will mean that they are pursuing an autocratic rather than democratic model of governance and that they stand against their sovereign – the nation.

The conducted survey also showed that Poles are in favor of holding a nationwide referendum on the European Green Deal policy. The support of Poles for the referendum should be interpreted as an affirmation of a democratic society and a desire to be treated as a subject and not an object of political decisions. We also know which model of the EU they accept. This model is the Europe of Nations, Europe of sovereign states. Politicians recently elected as Members of the European Parliament should not act behind the backs of the Polish public, implementing the federalization of the EU according to the *Ventotene Manifesto*[72], without informing and obtaining the consent of the sovereign. The conducted survey clearly shows what the public expectation is, and politicians do not have a mandate to act like the Communist Party under Leonid Brezhnev's directive[73], transforming the ideals of a handful of communists into a deep conviction and a norm of conduct for millions of people of all nations and nationalities.



70 *European Commission, Implementing the European Green Deal, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en, accessed 03.06.2024.*

71 *Ibid.*

72 *Cf. Spinelli A., Rossi E., The Ventotene Manifesto, Ventotene 1941.*

73 *Cf. L. Brezhnev, Leninowską drogą [Following Lenin's Course: Speeches and Articles], Warsaw 1973.*

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03

03. OPINION ON THE COMPATIBILITY OF THE PROVISIONS OF THE EUROPEAN GREEN DEAL WITH THE CONSTITUTION OF THE REPUBLIC OF POLAND

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03.1

The European Green Deal is a communication from the European Commission (hereafter: EC) dated December 11, 2019[74], in which the European Union (hereafter: EU) committed itself to "reducing the Union's economy-wide net greenhouse gas emissions by at least 55 % by 2030 below 1990 levels"[75]. In the communication, the EC "set out a new growth strategy that aims to transform the Union into a fair and prosperous society, with a modern, resource-efficient, and competitive economy, where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use"[76]. The basis of the European Green Deal is the belief that: "A fully functional and resilient Energy Union would convert the Union into a leading region for innovation, investment, growth, and social and economic development, in turn providing a good example of how pursuing high ambitions in terms of climate change mitigation is intertwined with measures to foster innovation, investment and growth"[77].

74 *Communication from the Commission to the European Parliament, the European Council, the Council, the Economic and Social Committee and the Committee of the Regions – The European Green Deal, Brussels, 11.12.2019, COM(2019) 640 final, https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF, accessed 09.08.2024.*

75 *So in recital 2 of the preamble to Directive (EU) 2024/1275 of the European Parliament and of the Council of April 24, 2024 on the energy performance of buildings, OJ L of 08.05.2024, hereinafter: Directive 2024/1275.*

76 *So in recital 2 of the preamble of Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 on establishing a framework for achieving climate neutrality and amending Regulations (EC) No. 401/3009 and (EU) 2018/1999 (European Climate Law), OJ L 243 of 09.07.2021, pp. 1-17, hereinafter: Regulation 2021/1119.*

77 *So in recital 4 of the preamble to Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on Governance of the Energy Union and Climate Action, amending Regulations (EC) No. 663/2009 and (EC) No. 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/118/EC and (EU) 2015/652 and repealing Regulation (EU) No. 525/2013 of the European Parliament and of the Council, OJ L 328 of 21.12.2018, pp. 1-77.*

The EC Communication is not among the EU legal acts listed in Article 288 of the Treaty on the Functioning of the European Union[78]. However, the essential solutions of the European Green Deal are contained in regulations and directives forming a part of European law, which must comply with the Polish Constitution[79] – the supreme law of the Republic of Poland[80].

Both the concept of the European Green Deal as well as the key specific solutions for its implementation are incompatible with the provisions of the Constitution of the Republic of Poland within the scope outlined in this opinion.

03.2

According to Article 1 of the Polish Constitution, the Republic is the common good of all citizens, which means rejecting a collectivist vision of the state and accepting an individualist vision that excludes the primacy of the state over the individual, presupposing the ignoring of the individual's welfare by state authorities. Such an understanding of the common good also precludes ignoring the rights of minorities and imposing a top-down vision of the common good, enforced by state coercion (Article 34 of Directive 2024/1275 stipulates that penalties for failure to do so "must be effective, proportionate and dissuasive"[81]), a characteristic feature of European Green Deal solutions.

Article 1 of the Polish Constitution precludes radical social change, which is essentially revolutionary in nature, inherent in the concept of the European Green Deal, the premise of which is to "transform the Union into a fair and prosperous society" regardless of the price it must pay, its stance on the pace of this transformation and the possibility to "decouple economic growth from resource use"[82]. This concept is considered without alternative because it is based on the "best available scientific knowledge" provided by the European Scientific Advisory Board on Climate Change[83].

Moreover, Article 1 of the Polish Constitution excludes the forced implementation of a social reconstruction project, based on the only correct, scientifically justified concept, according to which there is "the need to rapidly step up climate action and to continue the transition to a climate-neutral economy"[84], because there is an "urgent need to reduce the dependence on fossil fuels in buildings and to accelerate efforts to decarbonize and electrify their energy consumptio"[85].

The concept of an imposed, top-down, and non-alternative, scientifically based reconstruction of society and the economy is also irreconcilable with Article 1 of the Constitution of the Republic of Poland, especially in relation to Article 30 of this legal act, which states that the inherent and inalienable human dignity of a person is the source of human rights and freedoms. In the jurisprudence, the Constitutional Tribunal (CT) expressed the conviction that: "The protection of the common interest, no matter how evident, can never take the form of violating the inalienable dignity of a person"[86].

Some of the solutions within the framework of the European Green Deal, reflecting its concept, contradict this principle. Forcing a radical change in the way of life shaped by centuries of experience, within a short time frame, burdening citizens with unexpected costs and administrative obligations, is irreconcilable with Article 1 of the Constitution of the Republic of Poland. The recognition that: "The 'energy efficiency first' principle is an overarching principle that should be taken into account across all sectors, going beyond the energy system, at all levels"[87], gives it a universal character, introducing an inherent risk of threatening the common good.

78 *Consolidated version, OJ C 202 of 07.06.2016, p. 47.*
79 *Constitution of the Republic of Poland of April 2, 1997, Journal of Laws No. 78, item 483 as amended, hereinafter: the Constitution of the Republic of Poland [Polish only].*
80 *Cf. in particular the justifications of the judgments of the Constitutional Tribunal (hereinafter: CT) of May 11, 2005 (K 18/04, OTK ZU 5A/2005, item 49 [Polish only]) and November 24, 2010. (K 32/09, OTK ZU 9A/2010, item 108). Cf. also, for example, L. Garlicki, Polskie prawo konstytucyjne [Polish Consitutional Law], Warsaw 2023, p. 149 [Polish only].*
81 *Cf. Communication from the Commission to the European Parliament, the European Council, the Council, the Economic and Social Committee and the Committee of the Regions – The European Green Deal, op. cit.*
82 *Cf. Regulation 2021/1119.*
83 *So in Article 12 of Regulation 2021/1119.*
84 *Cf. recital 3 of the preamble to Regulation 2021/1119.*
85 *Cf. recital 32 of the preamble to Directive 2024/1275.*
86 *So in the justification of the judgment of March 20, 2006, K 17/05, OTK ZU 3A/2006, item 30 [Polish only].*
87 *So in recital 38 of the preamble to Directive 2024/1275.*

03.3

Key provisions of the European Green Deal are inconsistent with Article 2 of the Constitution of the Republic of Poland, which states that the Republic is a democratic state governed by law and implementing the principles of social justice.

This concerns those provisions of Directive 2024/1275, the application of which – in the case of the renovation of existing buildings – may lead to situations requiring the state to take "measures to prevent evictions because of renovation"[88]. Thus, the implementation of the aforementioned directive may lead to a situation where residents of homes built by their ancestors and maintained over the years by their own efforts may find themselves living in a "vulnerable household" due to "increasing energy prices as they spend a larger proportion of their budget on energy products"[89], and are therefore unable to finance renovations. They may also not be able to cope with having to pay potential penalties stipulated in Article 34 of the directive, which implies that eviction in their case is not excluded and should be prevented by the state. It is difficult to consider such consequences of the directive as consistent with the principle of social justice, and thus with the principle of a democratic state governed by law.

In the jurisprudence of the CT, the conviction has been expressed that: "According to the Polish Constitution, social justice is also an objective that the democratic state governed by law should realize. This specific model of a democratic state governed by law was adopted by the Constitution of the Republic of Poland. A state that does not implement the idea of justice, understood at least as striving to maintain balance in social relations and refraining from creating unjustified privileges for selected groups of citizens, is not a democratic state governed by law. Justice, as expressed in the preamble, has become, alongside other values mentioned there, one of the principles that everyone should consider 'the unshakeable foundation of the Republic of Poland"[90]. According to the CT, "It is primarily about the principle of justice, understood as a factor leading to the rightful or just balance of the public interest (common good) and the interests of the individual"[91].

The violation of the rules of social justice consists in unjustified differentiation in the situation of citizens, the majority of whom will face the threat of negative consequences of the European Green Deal, involving the risk of nullifying their life's achievements without any legal or economic circumstances dependent on them that could justify it.

In light of the jurisprudence of the CT, the pillars of a democratic state governed by law include the prohibition of arbitrariness in public authority actions and respect for the dignity of the individual[92]. In the case of the regulations comprising the European Green Deal, we are dealing with arbitrary interference in the lives of citizens, forcing them under threat of penalties to adapt, at their own expense or with a significant share of their own funds, to new requirements, regardless of citizens' capabilities and their conviction about the legitimacy of the endeavor, which is to be implemented ambitiously and quickly. Such an assumption is incompatible with the principle of a democratic state governed by law.

The violation of this principle lies not only the arbitrary nature of interference in the legal and economic situation of citizens, but also the disproportionality of the interference. The jurisprudence of the CT has expressed the conviction that in a democratic state governed by law, the means used to achieve the legislator's intended goal should be proportional to that goal; this is especially true for measures that conflict with the justified interests of the citizen[93]. The CT has repeatedly pointed out that the model of a democratic state requires adherence to the principle of proportionality. In turn, the assessment of proportionality requires "a response to three questions:

1) whether the introduced regulation can lead to intended effects
2) whether this regulation is necessary for the protection of the public interest to which it is linked,
3) whether the effects of the introduced regulation are in proportion to the burdens it imposes on the citizen[94].

It is unclear whether the regulations comprising the European Green Deal are capable of producing the intended outcomes, as this depends both on how those effects are defined and on the weight given to expert assessments of the likelihood

88 *So in recital 63 of Directive 2024/1275.*
89 *Ibid.*
90 *So in the justification of the judgment of April 12, 2000, K 8/98, OTK ZU 3/2000, item 87 [Polish only].*
91 *Ibid.*
92 *So in the justification of the judgment of December 12, 2005, K 32/04, OTK ZU 11A/2005, item 132 [Polish only].*
93 *So in the justification of the ruling of April 26, 1995, K 11/94, OTK ZU 1995, item 12 [Polish only].*
94 *So, for example, in the justification of the judgment of December 12, 2005, K 32/04, op. cit.*

of success. It is also difficult to unequivocally assess the necessity of these regulations for the protection of the public interest to which they are linked. This interest includes not only climate protection but also the protection of citizens' rights, encompassing not just economic and social rights but also political rights. The implementation of fundamental changes affecting citizens without giving them a chance to effectively challenge the undertaking, as implied by the structure of the European Green Deal, is a violation of the foundations of the democratic order. However, it is in the public interest to respect citizens' rights as well as protect the climate. The degree of arbitrariness reflected in the proposed regulations raises doubts about their necessity for the protection of the public interest. The implementation of the European Green Deal also violates the principle of proportionality, as the effects of the introduced regulation are not proportional to the burdens imposed on the citizen, when the burdens are certain, as is evident from the regulations, while the effects can be deemed uncertain. The disproportionality also lies in the fact that the concept of the European Green Deal does not include an adaptation mechanism that takes into account the consequences of either epidemics or war, and disregards the specificities of individual Member States, related, such as the introduction of excessive deficit mechanisms or the influx of refugees due to war.

In the doctrine, the conviction is expressed that the foundation of a democratic state governed by law is the principle of protecting citizens trust in the state, as also confirmed in the jurisprudence of the CT[95]. According to this principle, the state should treat citizens with a commitment to certain minimal rules of fairness, meaning that legal regulations cannot set traps, withdraw from established rules of conduct, allow state authorities to abuse their position towards citizens[96], or create normative constructs that are infeasible[97]. The regulations of the European Green Deal contradict these principles, as they undermine the trust of citizens in the state, thereby threatening the foundations of their lives, which are the certainty of governance rules and the stability of housing conditions. Additionally, they pursue climate change efforts in the name of which the state withdraws from the established rules of conduct, and housing or business activity become traps due to the introduction of new energy prices and the abandonment of previous heating methods. Imposing obligations on citizens regarding the thermal modernization of homes, under the threat of penalties provided for in Article 34 of Directive 2024/1275, strikes at the fundamental principle in a democratic state governed by law of protecting acquired rights, since even the ultimately established and respected right to housing can be undermined in the manner outlined in the aforementioned directive in the form of the risk of eviction.

03.4

Significant provisions of the European Green Deal are incompatible with Article 5 of the Polish Constitution, according to which the Republic of Poland "shall safeguard the independence and integrity of its territory and ensure the freedoms and rights of persons and citizens, the security of the citizens, safeguard the national heritage and shall ensure the protection of the natural environment pursuant to the principles of sustainable development."

The doctrine has expressed the view that the security of citizens "should be understood broadly, as a state providing a sense of certainty and stability and protection." This concept includes, among others, "political, military, social, environmental security"[98]. The implementation of the rules for achieving climate neutrality, including, in particular, "decoupling economic growth from resource use" and creating a society "where there are no net emissions of greenhouse gases," brings immanent risks to the development of the economy and, consequently, to social security, including health security, and, in the event of an external threat, to political and military security.

The concept of "sustainable development"" means "first and foremost, that environmental interference should be as minimal as possible, and the social benefits of the interference should outweigh the damage"[99]. In light of the doctrine, this principle includes, in particular, "infrastructure development, building social ties or shaping spatial order"[100]. The concept of the European Green Deal is incompatible with the principle of sustainable development, because it assumes an unsustainability of development such that the consideration

95 *Cf. L. Garlicki, op. cit. p. 78 et seq. Cf. also, for example, the justification of the judgment of the CT of March 10, 2015, K 29/13, OTK ZU 3A/2015, item 28 [Polish only].*
96 *Ibid.*
97 *So TK in the justification of the judgment of January 8, 2013, K 18/10, OTK ZU 1A/2013, item 2 [Polish only].*
98 *Cf. P. Tuleja, comments on Article 5, in The Constitution of the Republic of Poland. Commentary, ed. P. Tuleja, Warsaw 2019, p. 41 [Polish only].*
99 *Ibid.*
100 *Cf. Constitution of the Republic of Poland, ed. M. Safjan, L. Bosek, vol. 1, Warsaw 2016, p. 289 et seq. [Polish only].*

of the possibilities of satisfying needs in the future causes a fundamental limitation of the possibilities of satisfying those needs at present. Development is also unsustainable in that it relies almost entirely on renewable energy and decouples economic growth from resource use[101]. Sustainable development consists in considering the rights of present and future generations, rather than ignoring the rights of those who are already here, in the name of the presumed rights of those who are not yet here.

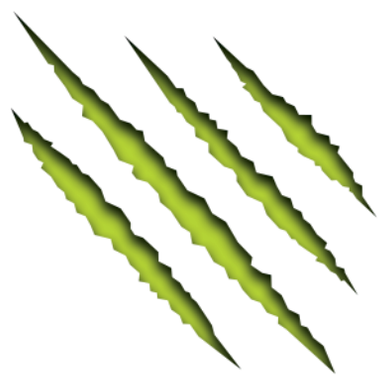
03.5

The concept of the European Green Deal is inconsistent with the principle of a social market economy expressed in Article 20 of the Constitution of the Republic of Poland, which states that this economy "based on the freedom of economic activity, private ownership, and solidarity, dialogue and cooperation between social partners, shall be the basis of the economic system" of the state. Replacing market rules with climate correctness rules in the process of transforming the EU, as imposed by the European Green Deal, results in accepting as the main the criterion for competitive advantage not manufacturing capacity, but low emissions. The freedom of economic activity is a constitutional value and cannot be replaced by low carbon footprint in economic activities. However, the European Green Deal – through economic and administrative coercion, and the use of sanctions[102] – conditions the possibility of conducting business activities on meeting arbitrarily established requirements derived from the state's political choice, based on the acceptance of the primacy of climate protection over the economic, and social rights of citizens. Market mechanisms are being replaced by central planning, applied to the implementation of the European Green Deal, since "each member state establishes a national building renovation plan" and "introduces a scheme for renovation passports," which can be made "mandatory," taking measures to ensure that "renovation passports are affordable," and considering "whether to provide financial support to vulnerable households"[103].

03.6

The concept of the European Green Deal is inconsistent with the principle of property protection established in Article 21 of the Polish Constitution. As a result of implementing this concept, the cost of building renovations will significantly increase, since when "buildings undergo major renovation" the energy performance of the building must be "upgraded in order to meet minimum energy performance requirements"[104], set out in regulations. This could fundamentally limit the rights of building owners to renovate their property.

According to Article 17(5) of Directive 2024/1275, Member States "shall take appropriate regulatory measures to remove non-economic barriers to building renovation," and "such measures may include removing unanimity requirements in co-ownership structures"[105]. In addition, according to Article 20(2) of that directive, Member States "shall require that, when buildings or building units are constructed, have undergone a major renovation, or are sold or rented out, or when rental contracts for buildings or building units are renewed, the energy performance certificate is shown to the prospective tenant or buyer and handed over to the buyer or tenan"[106]. This means that, in specific cases, ownership of real estate may turn out to be completely fictitious due to a reduction in value caused not by the owner, but having its source in the authoritative interference of the state, transforming the right of ownership into *nudum ius*.



101 *Cf. recital 2 of the preamble to Regulation 2021/1119.*
102 *Cf. Article 34 of Directive 2024/1275.*
103 *Cf. Articles 3 and 12 of Directive 2024/1275.*
104 *Cf. Article 8 of Directive 2024/1275.*
105 *Cf. Article 17(5) of Directive 2024/1275.*
106 *Cf. Article 20(2) of Directive 2024/1275.*

03.7

The concept of the European Green Deal is inconsistent with the principles of limiting the exercise of constitutional freedoms and rights set forth in Article 31(3) of the Polish Constitution. According to this provision, freedoms and rights, including the right to property, may be subject to limitations, which "may be imposed only by statute, and only when necessary in a democratic state for the protection of its security or public order, or to protect the natural environment, health, or public morals, or the freedoms and rights of other persons. Such limitations shall not violate the essence of freedoms and rights".

It should be emphasized that, according to the CT, regulations that impose obligations on the owner in a scale exceeding the income generated by the object of this ownership violate the essence of the right to property, as they nullify one of the fundamental rights of the owner, which is the right to collect benefits[107]. The obligations of owners resulting from the implementation of the European Green Deal may, in some cases, violate the essence of the right to property.

Restrictions on freedoms and rights justified by the realization of this constitutional value of environmental protection must be necessary in a democratic state, thus complying with the principle of proportionality. According to the doctrine, this principle includes the necessity principle, which means that the restriction of constitutional rights is permissible only by legal means capable of achieving the goal justifying the restriction. The principle of proportionality also includes the principle of the least restrictive means, which assumes that if there are several possible ways to restrict a given constitutional right for a constitutionally justified purpose, the least burdensome means should be chosen. Avoided should be situations, where a legal means justifiably restricting a person's freedom or constitutional right also restricts other rights. Additionally, this principle includes the principle of proportionality in the strict sense, which involves weighing two or more conflicting principles and determining which one takes precedence in the given factual and legal circumstances[108].

The restrictions foreseen in the concept of the European Green Deal are inconsistent with the principle of proportionality, and therefore are not necessary in a democratic state. It is not evident that the goals justifying the envisaged restrictions will be achieved, given the complexity of social realities and threats arising from the international situation. The least onerous measure was not chosen; rather the most radical one has been selected, leading to limitations on the freedoms and rights that constitute self-determination, and thus the individuality of a person, who becomes the object of a centrally planned and enforced transformation, regardless of their attitude towards this project. It is also difficult to recognize that the consideration of achieving the transformation goals according to the established schedule outweighs the value of the rights and freedoms thus restricted.

107 So in the justification of the judgment of October 10, 2000, P 8/99, OTK ZU 6/2000, item 190.
108 So P. Tuleja, comments on Article 31, in The Constitution of the Republic of Poland. Commentary, op. cit. p. 116 et seq.

03.8

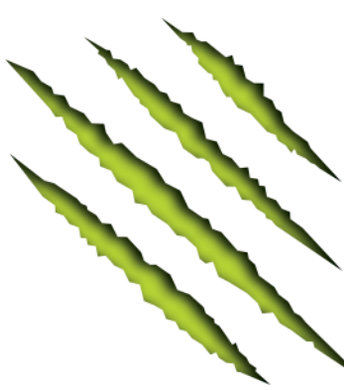
The implementation of the rules of the European Green Deal poses a potential threat to the right to the protection of private and family life guaranteed by Article 47 of the Polish Constitution, particularly in connection with the process of introducing renovation passports[109] and addressing "the eviction of vulnerable households caused by disproportionate rent increases following energy renovation of their residential building or building unit"[110]. In this case, the state will create a problem of jeopardizing the material situation of families and their households as a result of energy renovations carried out in accordance with the principle of "energy efficiency first"[111], and will then have to address this problem (eviction) in a manner that involves an invasion of privacy.

Privacy risks are associated with the implementation of the promise to encourage "the use of digital technologies for analysis, simulation and management of buildings, including with regard to deep renovations"[112]. This particularly pertains to the concept of a digital twin of a building, which is "an interactive and dynamic simulation that reflects the real-time status and behavior of a physical building." Such a system could be a source of extensive data about the building's inhabitants, collected and processed without their knowledge and consent, and significant to various public and private entities.

03.9

The implementation of the provisions of the European Green Deal will violate Article 76 of the Constitution of the Republic of Poland, which states that public authorities "shall protect consumers, users and tenants against activities threatening their health, privacy and safety, as well as against dishonest market practices." The threats referred to in this provision include, in particular, threats to privacy, but also the threat of poverty as a result of the greening of life within the framework of "enhanced ambition and increased climate action"[113].

03.10



The regulations comprising the European Green Deal exceed the scope of competences subject to transfer under Article 90(1) of the Constitution of the Republic of Poland. The delegation of powers of state authorities in certain matters, as provided for in this provision, does not imply transferring to an "international organization or international body" the competence to decide on the way of life of citizens without giving them the possibility of a choice, under the assumption that "the 'energy efficiency first' principle is an overarching principle" going beyond "the energy system, at all levels"[114].

According to the CT, "Article 4 of the Constitution stipulates that supreme power in the Republic of Poland 'shall be vested in the Nation', which excludes the possibility of conferring it to another entity"[115]. However, the European Green Deal assumes that its creators have a certain sovereignty over

109 *Cf. Article 12 of Directive 2024/1275.*
110 *So in Article 17(17) of Directive 2024/1275.*
111 *Cf. Article 2(18) of Regulation 2018/1999.*
112 *So in recital 54 of the preamble to Directive 2024/1275.*
113 *So in Recital 1 of Regulation 2021/1119.*
114 *Cf. recital 38 of the preamble to Directive 2024/1275.*
115 *So in the justification of the judgment of November 24, 2010, K 32/09, op. cit.*

the constitutional subject of power. According to the CT, accession "to the European Union and the relevant conferral of competences do entail surrendering sovereignty to the European Union. The limit of conferral of competences is determined in the Preamble to the Constitution by recognizing the state's sovereignty as a national value; and the application of the Constitution – inter alia with regard to the realm of European integration – should correspond to the meaning which the introduction to the Constitution assigns to regaining sovereignty understood as a possibility of determining the fate of Poland"[116].

The arbitrary nature, disproportionality, and lack of alternatives of the rules comprising the European Green Deal mean relinquishing the ability to determine the fate of the people of Poland to the extent that the planned transformation of the EU is to take place, which is tantamount to the constitutionally precluded abandonment of the ability to determine the fate of Poland.

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Judgment of the Constitutional Tribunal of October 10, 2000, P 8/99, OTK ZU 6/2000, item 190 [Polish only].

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Regulation (EU) 2018/1999 of the European Parliament and of the Council of December 11, 2018. on Governance of the Energy Union and Climate Action, amending Regulations (EC) No. 663/2009 and (EC) No. 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/118/EC and (EU) 2015/652 and repealing Regulation (EU) No. 525/2013 of the European Parliament and of the Council, OJ L 328 of 21.12.2018, pp. 1-77.

Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 on establishing a framework for achieving climate neutrality and amending Regulations (EC) No 401/3009 and (EU) 2018/1999 (European Climate Law), OJ L 243 of 09.07.2021, pp. 1-17.

Treaty on the Functioning of the European Union (consolidated version), OJ C 202 of 07.06.2016, p. 47.

Tuleja P., comments on Article 31, in The Constitution of the Republic of Poland. Commentary, ed. by P. Tuleja, Warsaw 2019.

Tuleja P., comments on Article 5, in The Constitution of the Republic of Poland. Commentary, ed. by P. Tuleja, Warsaw 2019.

116 *Ibid.*

04

TAX AND FISCAL IMPLICATIONS OF IMPLEMENTING LEGAL CHANGES RELATED TO THE EUROPEAN GREEN DEAL AND THE EUROPEAN CLIMATE PACT – AN ATTEMPT AT EVALUATION

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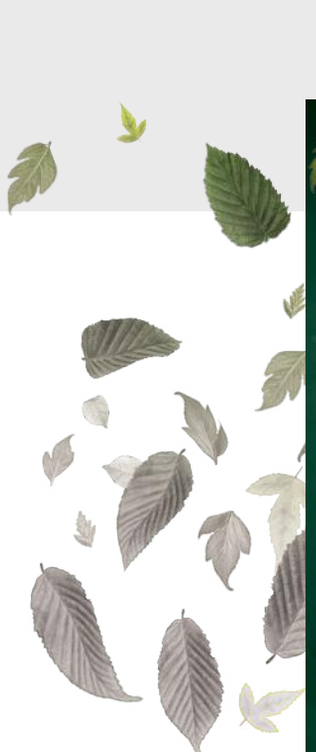
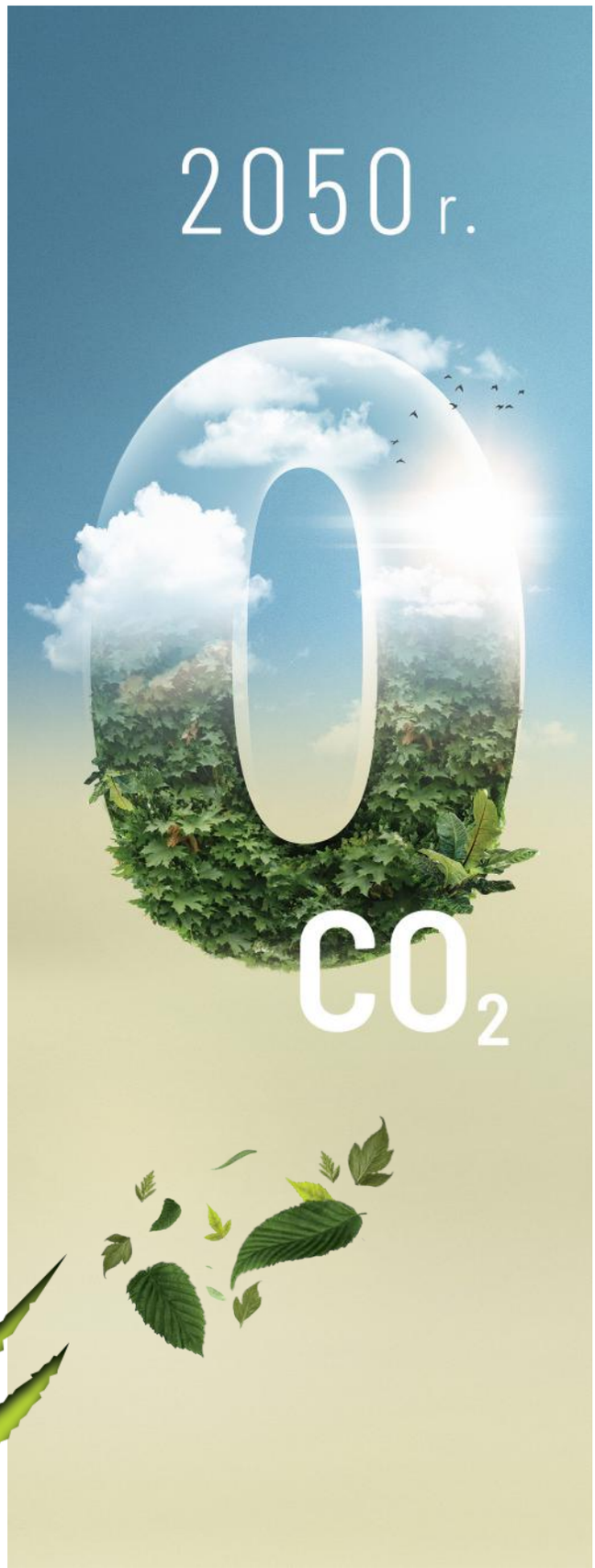


The introduction to this discussion will be a brief characterization of those elements of the Green Deal and the Climate Pact that already have had or will have an impact on the tax system and its fiscal efficiency. The focus is primarily on the taxation of those engaged in business (agricultural and non-agricultural), although some effects on the taxation of employees and pensioners are also included.

04.1

THE CONCEPT OF REVOLUTION IN THE TAX SYSTEM RESULTING FROM THE IMPLEMENTATION OF THE GREEN DEAL AND THE CLIMATE PACT



04.1.1. GEEN DEAL – THE MAIN PRINCIPLES

According to the creators of the Green Deal, its primary goal is to **achieve so-called climate neutrality by 2050**. Initially, the intermediate goal was to reduce greenhouse gas emissions by 55% by 2030 compared to levels from 1990. However, in a communication dated February 6, 2024, the European Commission (hereafter: EC) recommends a net reduction in greenhouse gases **by as much as 90% by 2040**[117]. It should also be emphasized that, **according to the European Environment Agency, the European Union (hereafter: EU) is responsible for only 7% of global greenhouse gas emissions (in 1990 it was 15%)**[118]. **These emissions for the EU as a whole fell by 24% between 1990 and 2019 (according to Eurostat data). Without a global agreement, however, reducing the EU's carbon dioxide (hereinafter: CO_2) emissions into the atmosphere will have little effect, because in the meantime other countries are likely to increase their emissions, potentially even leading to an increase in global CO_2 emissions.**

117 *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Securing our Future. The 2040 Climate Target and the Road to Climate Neutrality by 2050 as the Foundations for a Sustainable, Just and Prosperous Society, Strasbourg, 06.02.2024, COM(2024) 63 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52024DC0063&qid=1729517408125, accessed 10.06.2024.*

118 *Our World in Data, Annual CO emissions, https://ourworldindata.org/grapher/annual-co2-emissions-per-country, accessed 10.06.2024.*

The main tool for implementing the Green Deal is the Fit for 55 package, published in July 2021. This is a **set of legislative proposals to amend and update EU law** and establish new initiatives to bring EU policy in line with the climate goals set by the Council and the European Parliament (hereinafter: EP). Fit for 55 includes 8 revised EU laws and 5 brand new initiatives, that is:

FIT FOR 55 OBEJMUJE 8 ZMIENIONYCH UNIJNYCH AKTÓW PRAWNYCH ORAZ 5 ZUPEŁNIE NOWYCH INICJATYW, tj.:

- revised EU ETS Directive[119];
- changed Effort Sharing Regulation[120] on emission reduction targets in non-ETS sectors[121];
- amended so called Renewable Energy Directive[122];
- revised Energy Efficiency Directive[123];
- amended Directive on taxation of energy products and electricity[124];
- Regulation on infrastructure for alternative fuels[125];
- amended Regulation on CO_2 emission standards for new cars[126];
- amended Regulation on the Inclusion of Greenhouse Gas Emissions and Removals from Land Use and Forestry in the 2030 Climate and Energy Policy Framework (the so-called LULUCF Regulation)[127, 128];
- CBAM Regulation[129] on CO_2 border price adjustment mechanism[130];
- Regulation for the establishment of a Social Climate Fund[131];
- the so-called ReFuelEU Aviation Regulation on sustainable air transport[132].

The cost of Europe's green transition is estimated to be as high as around EUR 360 billion per year, representing as much as 2.3% of the EU-27's current gross domestic product (hereafter: GDP), with 70% of the investment being the responsibility of the public sector[133].

119 *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, European Union L 275, 25.10.2003, pp. 32-46, European Union Polish Special Edition, Chapter 15, Vol. 7, pp. 631-646, hereinafter: EU ETS Directive.*

120 *ESR – Effort Sharing Regulation.*

121 *Regulation (EU) 2018/842 of the European Parliament and of the Council of May 30, 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet their commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013, OJ L 156 of 19.06.2018, pp. 26-42, hereinafter: ESR.*

122 *Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, OJ L 328 of 21.12.2018, pp. 82-209, hereinafter: the RES Directive.*

123 *Directive 2012/27/EU of the European Parliament and of the Council of October 25, 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315 of 14.11.2012, pp. 1-56, hereinafter: the Energy Efficiency Directive.*

124 *Council Directive 2003/96/EC of October 27, 2003 restructuring the Community framework for the taxation of energy products and electricity, OJ L 283 of 31.10.2003, pp. 51-70, OJ Polish Special Edition, Chapter 9, vol. 1, pp. 405-424, hereinafter: Directive on taxation of energy products and electricity.*

125 *Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the development of alternative fuel infrastructure and repealing Directive 2014/94/EU, OJ L 234 of 22.09.2023, pp. 1-47.*

126 *Regulation (EU) 2019/631 of the European Parliament and of the Council of April 17, 2019, setting CO2 emission standards for new passenger cars and for new light commercial vehicles and repealing Regulation (EC) No. 443/2009 and (EU) No. 510/2011, OJ L 111 of 25.04.2019, pp. 13-53.*

127 *LULUCF – land use, land use change and forestry.*

128 *Regulation (EU) 2018/841 of the European Parliament and of the Council of May 30, 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry activities in the 2030 climate and energy policy framework and amending Regulation (EU) No. 525/2013 and Decision No. 529/2013/EU, OJ L 156 of 19.06.2018, pp. 1-25.*

129 *CBAM – carbon border adjustment mechanism – carbon border tax.*

130 *Regulation (EU) 2023/956 of the European Parliament and of the Council of May 10, 2023, establishing a CO2 border price adjustment mechanism, OJ L 130 of 16.05.2023, pp. 52-104, hereinafter: CBAM Regulation.*

131 *Regulation (EU) 2023/955 of the European Parliament and of the Council of May 10, 2023 on the establishment of a Social Climate Fund and amending Regulation (EU) 2021/1060, OJ L 130, 16.05.2023, pp. 1-51.*

132 *Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on ensuring a level playing field for sustainable air transport (ReFuelEU Aviation), OJ L of 31.10.2023.*

133 *Institut Rousseau, Road to The Net Zero. Bridging the Green Investment Gap, January 2024, https://extranet.greens-efa.eu/public/media/file/1/8692, accessed 10.06.2024.*

04.1.2. NATIONAL ENERGY AND CLIMATE PLAN FOR 2021-2030 – MAIN ASSUMPTIONS

Poland – as a member of the EU – has committed to meeting the goals set out in the Climate Pact and international agreements on climate change, such as the Paris Agreement. It has therefore developed a National Energy and Climate Plan for 2021-2030 (hereafter: NECP), which describes specific targets and measures to reduce greenhouse gas emissions and transform the energy sector in accordance with the requirements of the Climate Pact. The plan is the basis for Poland's climate and energy policy actions for the coming years[134].

04.1.3. AREAS OF THE ECONOMY AFFECTED BY THE NEED FOR CHANGES RESULTING FROM THE IMPLEMENTATION OF THE GREEN DEAL AND THE CLIMATE PACT

04.1.3.1.

Reform of the current emissions trading system – inclusion of new sectors of the economy in emission allowances

The EU Emissions Trading Scheme (EU ETS) was established in 2005. It is the EU's main tool for reducing emissions, covering about 40% of the EU's total CO_2 emissions. **It limits the amount of greenhouse gases** that can be emitted by energy-intensive industries, power producers, and airlines. The EU sets an overall cap on emission allowances, and business taxpayers get or buy these allowances. The cap is successively lowered so that **the amount of emissions gradually decreases.**

The most important element of Fit for 55 is the reform of the EU ETS, which is expected to accelerate the CO2 price increase for energy and industry, as well as extend emission costs to new sectors – road and sea transport and heating. Under the existing ETS, the rate of retirement of emission allowances is to be increased. The index that accounts for it is the linear reduction factor[135], which determines the percentage of allowances removed from the market each year. It currently stands at 2.2% and is set to increase to 4.2%. As a result, ETS emissions are expected by 2030 to fall by 61% relative to 2005 levels, instead of previously planned 43%. One effect of this tightening will be a further increase in allowance prices. It cannot be ruled out that in the course of negotiations on the

Among the main goals of the NECP are:

DECARBONIZATION
The NECP sets specific targets for reducing greenhouse gas emissions by 2030 and a path to climate neutrality by 2050. Poland is committed to significantly reducing emissions, especially CO_2, by reducing dependence on fossil fuels and promoting RES;

RES
The NECP aims to increase the share of RES in total energy production. Poland plans to expand wind farms, solar power plants, and other RES projects;

IMPROVING ENERGY EFFICIENCY
The NECP also assumes increased energy efficiency in various sectors of the economy, such as construction, industry, and transportation. Improving energy efficiency is to be a key element in reducing energy consumption and greenhouse gas emissions;

MODERNIZATION OF THE ENERGY SECTOR
Poland plans to modernize and transform the energy sector to make it more sustainable and environmentally friendly, with an increased share of RES, reduced emissions from heating systems, and improved energy efficiency;

ENERGY SECURITY
For this purpose, policies have been defined to guarantee: meeting the demand for energy raw materials; certainty of transmission and distribution of these raw materials and fuels; certainty of production of electricity and heat, as well as their transmission and distribution to end users;

INTRA-EU ENERGY MARKET AND SOCIAL ASPECTS OF THE TRANSITION
Changes in the energy market resulting from the dynamic development of capacity in distributed energy sources and the need to integrate renewable energy sources imply huge challenges for the expansion and modernization of the network, including in the area of adequate cross-border connection capacity to ensure better conditions for electricity interconnectivity.

134 *Ministry of Climate and Environment, National Energy and Climate Plan 2021-2030, https://www.gov.pl/web/klimat/krajowy-plan-na-rzecz-energii-i-klimatu, accessed 28.06.2024 [Polish only].*

135 *Linear reduction factor – LRF.*

revision of the EU ETS Directive this factor will be raised again. The EP supported in its position on the draft revision of the Directive the idea that the LRF should increase to 4.4% from 2024, 4.5% in 2026 and 4.6% in 2029. At the same time, MEPs agreed to facilitate interventions in the ETS market if allowance prices for 6 months were 2 times higher than the average of the last 2 years. The current rules stipulate that they must be 3 times higher than in the previous 2 years.

This poses a major risk for Poland, as our country still has the highest share of coal in energy production among European countries; in 2021, as much as 72% of electricity was generated from this fuel. In order to produce 1 megawatt hour of electricity in fuel combustion facilities, 788 kilograms of CO2 must be emitted[136]. The high carbon intensity of the Polish energy sector and the slow pace of its transformation may significantly reduce the competitiveness of Polish taxpayers engaged in economic activities (agricultural or non-agricultural) due to the high cost of obtaining energy, as well as a higher carbon footprint in the supply chain than in other countries. According to the Polish government's Energy Policy for Poland until 2040[137], adopted in 2021, the energy sector's carbon footprint should fall to 533 kilograms of CO_2 per megawatt hour in 2030, but will then still be 2 times higher than the EU average today. Even despite the implementation of the Fit for 55 package, emissions in the domestic energy sector will still be higher than the EU average today. Poland's GDP is in 50% based on exports, out of which 75% go to EU countries. In order to remain competitive, business taxpayers (agricultural or non-agricultural) will be forced to take measures to reduce the energy costs and carbon footprint of their products as much as possible.

A part of the revision of the EU ETS Directive is the construction of ETS2, a new emissions trading system that will cover **road transport and building emissions**. The obligation to purchase emission allowances will apply to fuel producers and importers, as well as heat suppliers to buildings. The new system is to start operating from 2025. In the first year, the entities covered by it will be required to obtain emission allowances and submit reports on their emissions for 2024 and 2025.

In turn, including road transport emissions in costs will increase **the cost of transporting goods by combustion engine cars**. As a result, investing in electric cars and alternative means of transport (e.g., rail) will become more attractive. From a fiscal point of view and from the perspective of taxpayers engaged in business activities (agricultural and non-agricultural), the key issue will be the **increase in goods transportation costs**, which will be much higher per unit than in individual transport, since alternative types of propulsion (hybrids and electric engines) will be available for trucks much later than for passenger cars. The pace of electrification of transport will force a tightening of requirements under emission standards for passenger cars. Current regulations require that passenger vehicles introduced by automotive corporations into the EU market should emit on average no more than 95 grams CO_2/km. This level is to be reduced by 15% from 2025 and by 37.5% from 2030 compared to the 2021 ceiling. As part of the Fit for 55 plan, the EC proposes increasing the reduction target for 2030 (to 55%) and setting a new target for 2035 at 100%. On June 8, 2022, the EP supported this proposal. This will require all new cars sold in the EU to be zero-emission from 2035. This will eliminate from the market not only gasoline and diesel-powered vehicles, but also hybrids.

04.1.3.2.
Introduction of additional charges for coal, gas, electricity products supplied from outside the EU

The ESR sets individual emission reduction targets for each member state in construction, agriculture, waste management, and road transport. These vary depending on a country's wealth, as measured by GDP *per capita*. The richer a country is, the more ambitious its target. Under the Fit for 55, the EC proposed to increase the emission reduction target for the sectors covered by the joint reduction effort from 29% to 40% compared to 2005 levels. Annual emission limits have been set for each member state, which will be gradually raised until 2030. The emission reduction target for Poland is 17.7%, 10 percentage points higher than the current one. Meeting this commitment will require additional measures in the context of currently implemented policies. **To the greatest extent, these will concern road transport, since emissions from this sector account for more than 40% of CO_2 emissions in the non-ETS area in Poland and ¼ of total national emissions.**

136 *National Center for Emissions Management (Krajowy Ośrodek Bilansowania i Zarządzania Emisjami, KOBIZE), Institute of Environmental Protection – National Research Institute (Instytut Ochrony Środowiska – Państwowy Instytyt Badawczy) Wskaźniki emisyjności CO2,SO2,NOx, Cl i pyłu całkowitego dla energii elektrycznej na podstawie informacji zawartych w Krajowej bazie o emisjach gazów cieplarnianych i innych substancji za 2022 rok [Emission factors of CO2,SO2,NOx, Cl and total dust for electricity based on information contained in the National database on emissions of greenhouse gases and other substances for 2022], Warsaw December 2022, https://www.kobize.pl/uploads/materialy/materialy_do_pobrania/wskazniki_emisyjnosci/Wskazniki_emisyjnosci_2022.pdf, accessed 30.06.2024 [Polish only].*

137 *Portal Interoperacyjności i Architektury [Interoperability and Architecture Portal], Poland's Energy Policy to 2040 (PEP2040), https://www.gov.pl/web/ia/polityka-energetyczna-polski-do-2040-r-pep2040, accessed 28.06.2024 [Polish only].*

Joint reduction efforts in the EU ETS and non-ETS sectors are expected to achieve the 55% reduction target by 2030. The EC also intends to tighten regulations on the circular economy, which will translate into increased costs for business taxpayers (agricultural and non-agricultural) for waste disposal and recycling.

For economic operators, the key factor will be an **increase in the cost of transporting goods**. The new Waste Directive[138] increases recycling levels for municipal waste: to a minimum of 55% by 2025, to 60% by 2030, and by 2035 to 65%. Stricter requirements will apply to entities placing packaging on the market – for them, recycling levels will have to increase from 59% in 2022 to 70% in 2030.

The carbon border tax is the result of a CBAM Regulation. It aims to regulate the price of goods entering the EU customs territory, taking into account the CO_2 emitted during their production.

Moreover, on September 15, 2023, Commission Implementing Regulation (EU) 2023/1773 of August 17, 2023 was published, laying down rules for the application of Regulation (EU) 2023/956 of the European Parliament and of the Council with regard to reporting purposes of the carbon border adjustment mechanism during the transitional period[139], which introduced **reporting obligations related to the carbon tax**. The CBAM commodities affected by the new regulatory obligations are defined in Article 2 of the CBAM Regulation and include cement, iron and steel, aluminum, synthetic fertilizers, hydrogen and electricity.

The implementation of the mechanism in question is divided into two phases. In the first phase (the transitional period), from October 1, 2023, declarants of imported goods are only required to submit a CBAM report on a quarterly basis. In the second phase, starting January 1, 2026, importers will be required to purchase CBAM certificates in the amount corresponding to the emissions resulting from the production of goods, and to submit annual CBAM declarations (by May 31 each year).

The introduction of CBAM in Poland may involve:

- **an increase in costs for carbon-intensive sectors and a decrease (or lack of) income taxation of business taxpayers (agricultural and non-agricultural) with corporate and personal income taxes** – the introduction of CBAM could increase costs in economic sectors that are strongly linked to greenhouse gas emissions, such as the cement industry and coal-based power generation. Since emission costs are higher in other EU countries compared to Poland, Polish companies in these sectors could face more competition from abroad, which could lead to higher production costs and reduced competitiveness;

- **the risk of job losses and decline in fiscal revenues on wages in these sectors** – rising production costs in carbon-intensive sectors may entail job losses, especially if companies are forced to reduce production or move some operations abroad, where emission costs are lower;

- **pressure to transform the energy sector** – the introduction of CBAM may increase pressure to transform Poland's energy sector toward more sustainable energy sources, such as RES and natural gas. This may require significant investment and structural changes, which could be difficult and costly;

- **the need to restructure the economy** – the introduction of CBAM may require a thorough restructuring of the Polish economy, especially sectors strongly related to coal mining and processing, to adapt it to new market conditions. This process is likely to be lengthy and costly, causing a decline in fiscal revenues from this sector or even resulting in the de facto non-taxation of its income.

The introduction of CBAM in Poland will be very expensive and may have negative consequences for some sectors of the Polish economy, particularly those strongly linked to the extraction and consumption of coal and lignite.

138 Directive 2008/98/EC of the European Parliament and of the Council of November 19, 2008 on waste and repealing certain directives, OJ L 312 of 22.11.2008, pp. 3-30.
139 OJ L 228 of 15.09.2023, pp. 94-195.

04.1.3.3.

3 Increase in the share of RES

The Fit for 55 package includes a proposal to amend the RES Directive. By virtue of Directive (EU) 2023/2413 of the European Parliament and of the Council of October 18, 2023, amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC with regard to the promotion of energy from renewable sources and repealing Council Directive (EU) 2015/652[140] the share of energy from renewable sources in the overall energy mix in 2030 is increased to 42.5%. To accelerate the introduction of renewable energy in sectors where the progress has been slow so far, the new legislation sets ambitious sectoral targets for transportation, industry, buildings, as well as heating and cooling systems.

According to Article 3 of the RES Directive, EU member states shall ensure that the share of renewable energy in the Union's gross final energy consumption in 2030 is at least 32%. The aforementioned amendment **raises the share of renewable energy in the EU's total energy consumption to 42.5%**, and possibly (due to an additional commitment of an indicative 2.5%) **even to 45%**. The share of RES in Poland's electricity production in 2023 was around 27%. In case of Poland achieving the above targets by 2030 is unrealistic. These measures will only result in a decrease in fiscal revenues from this sector of the economy.

The proposal to amend the directive on the taxation of energy products and electricity provides for:

- aligning taxation with EU energy, environmental and climate policies;
- protecting and streamlining the EU's internal market by updating the range of energy products and tax rate structure, and more rational use of tax exemptions and reductions by member states;
- maintaining the fiscal revenue-generating capacity of member states.

04.1.3.4.

Stricter emission standards for the transport sector and reaching the zero-emission standard by the construction industry[141]

As part of the Fit for 55 package, the EC has proposed amending the existing Energy Efficiency Directive to raise the existing EU-wide target from 32.5% to 36% for final energy consumption and to 39% for primary energy consumption. In addition, the amendment includes provisions to push member states to intensify their energy efficiency efforts. Namely, it provides for tightening of obligations regarding annual energy savings and introduces new regulations reducing energy consumption in public sector buildings, as well as increasing protection of vulnerable consumers.

Under the REPowerEU plan, this strategy aims to install more than 320 gigawatts of photovoltaic capacity by 2025 (a figure more than two times that of 2020) and nearly 600 gigawatts by 2030. Such pre-provided additional capacity will replace the consumption of 9 billion cubic meters of natural gas per year by 2027.[142]

140 *OJ L of 31.10.2023.*

141 *All buildings on EU territory owned by public institutions must be carbon-free in 2026, and all other newly constructed buildings from 2028.*

142 *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. EU Solar Energy Strategy, Brussels, 18.05.2022, COM(2022) 221 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022DC0221, accessed 10.06.2024.*

04.1.3.5.
Revision of EU agricultural policy in the context of the nature pillar of the Green Deal, directed at sustainable use of key natural resources

The above change in EU agricultural policy is expected to lead to a more resilient food system and agriculture in the EU.

GREENING OF THE COMMON AGRICULTURAL POLICY TAKING INTO ACCOUNT THE FARM TO FORK STRATEGY

On May 20, 2020 the EC adopted a Communication on 'A Farm to Fork Strategy': For a fair, healthy and environmentally friendly food system[143]. The strategy is part of the Green Deal. It sets very ambitious goals, such as: reducing the use of pesticides, antibiotics, and fertilizers; increasing the share of organic farming. Multiple technological adjustments, mainly of an investment nature, requiring extensive transfer of new knowledge and, above all, involving high costs, will be necessary to achieve these goals.

The strategy identifies the main goals that relate to various agricultural practices, which should be achieved by 2030. First and foremost it is a reduction in the use of pesticides, fertilizers, and antimicrobials, as well as the development of organic farming:

PESTICIDE USE TARGET
Reduction in the use of chemical pesticides and their associated risks by 50%, and reduction in the use of more hazardous pesticides by 50%. The rationale behind the adopted target is the negative impact of pesticides on the condition of soil, water, and air.

ORGANIC FARMING TARGET
The area of agricultural land used in accordance with the principles of organic farming should constitute 25%. The adoption of this ambitious goal was determined by its importance in protecting environmental resources, its favorable impact on the climate, as well as its positive impact on biodiversity.

THE GOAL FOR THE REDUCTION IN USE OF FERTILIZERS
Reducing nutrient losses by at least 50%, while ensuring that there is no deterioration in soil fertility; reducing the use of fertilizers by at least 20%. The rationale behind the adopted target is the pollution of natural resources due to excess nutrients in the environment, as well as their impact on biodiversity and climate.

ANTIMICROBIALS SALES TARGET
A 50% reduction in sales of antimicrobials for farmed animals and use in aquaculture. The rationale behind the adopted target is the increase in the resistance of microorganisms to their antimicrobial agents as a result of their widespread use in the treatment of animals and humans;

143 *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Farm to Fork Strategy: For a fair, healthy and environmentally friendly food system, Brussels, 20.05.2020, COM(2020) 381 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0381, accessed 28.06.2024.*

CONSERVATION AND PROTECTION OF BIODIVERSITY

In addition to the Farm to Fork Strategy, an important strategy for agriculture is the "EU Biodiversity Strategy for 2030," with the symbolic subtitle "Bringing nature back into our lives," also published by the EC on May 20, 2020[144]. Its main goal is to restore Europe's biodiversity by 2030 through the application of concrete actions and the fulfillment of commitments. In addition, the EU aims to take over the role of global leader in biodiversity conservation, which means that if other countries in the world take intensive action, biodiversity conservation policies can be more advanced.

Implementation of the 2030 goals will be carried out through two types of activities. Firstly, work will continue on a coherent network of protected areas, and secondly, efforts will be made to develop an ambitious EU plan for restoring natural resources.

The NATURA 2000 network of protected areas has been under construction for a long time and also forms an intrinsic part of the agricultural policy. However, it is to be expanded to 30% of the EU's land and sea area in the next 10 years.

Regarding ambitious efforts to restore natural resources, ten areas of action have been highlighted, two of which directly relate to agriculture, namely "Bringing nature back to agricultural land" and "Addressing land take and restoring soil ecosystems." Additionally, agricultural issues can also be noticed in other areas, such as energy production and pollution reduction[145].

In the context of agriculture, the biodiversity strategy does not differ much from the Farm to Fork Strategy. Both contain very similar sets of actions aimed at limiting and restoring biodiversity. The significant difference, however, lies in an additional assumption in the biodiversity strategy, which involves the need to maintain at least 10% of agricultural land with high-diversity landscape features. These include, among others, buffer zones, rotational or non-rotational fallow land, hedges, non-productive trees, terrace walls, ponds, and similar resources. Their value lies in carbon sequestration, preventing soil erosion and depletion, filtering air and water, and supporting climate adaptation. Taking into account not only the current geopolitical conditions, such as the ongoing war in Ukraine, but also the destabilization of the economies of many EU countries due to, among other things, the admission of agricultural imports from Ukraine, which **destroys agricultural production volumes in the EU, and in addition, high energy prices, the implementation of the Green Deal by 2030 is, in the Authors' opinion, unattainable. It will only result in a permanent decline in the fiscal efficiency of the agricultural sector**.

04.1.4.
NEW TAXES AND FEES THAT MAY BE INTRODUCED AS PART OF THE IMPLEMENTATION OF THE GREEN DEAL AND THE CLIMATE PACT

Under the Green Deal, various forms of tax burdens may be proposed, such as:

- **a CO_2 emissions tax** – imposed to increase the cost of emissions on taxpayers conducting business activities (agricultural or non-agricultural) who emit large amounts of greenhouse gases;
- **ecological taxes or fees for ownership and use of vehicles that emit large amounts of CO_2;**
- **property taxes dependent on the level of CO_2 emissions from the use of the property in question;**
- **taxes on products and services with high energy consumption or generating large amounts of waste;**
- **energy consumption tax** – levied on taxpayers conducting business activities (agricultural or non-agricultural) or households depending on energy consumption;
- **tax on the extraction of natural resources,** such as coal and gas, imposed to compensate for the environmental damage associated with their extraction;
- **tax on flights** – taking into account CO_2 emissions associated with air transport.

144 *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. EU Biodiversity Strategy 2030: Bringing nature back into our lives, Brussels, 20.05.2020, COM(2020) 380 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0380, accessed 28.06.2024.*

145 *W. Wrzaszcz, K. Prandecki, Agriculture and the European Green Deal, "Zagadnienia Ekonomiki Rolnej / Problems of Agricultural Economics" 2020, vol. 365, Special Issue 4, pp. 156-179, https://doi.org/10.30858/zer/131841.*

04.2

CHANGES IN THE FISCAL EFFICIENCY OF THE TAX SYSTEM RESULTING FROM THE IMPLEMENTATION OF THE GREEN DEAL AND THE CLIMATE PACT

04.2.1. DESTRUCTIVE IMPACT ON INDIRECT TAXES

The implementation of the Green Deal, which is part of the EU strategy to combat climate change, will have a historic impact on the permanent deterioration of Poland's macroeconomic and fiscal situation. The introduction of such an extensive list of new regulations concerning, among others, the reduction of CO_2 emissions, improvement of energy efficiency and the increase in the share of energy from renewable sources will require expenditures on infrastructure investments, modernization of industry or agriculture, and will result in a permanent decline in budget revenues.

Poland, as one of the largest producers of electricity from coal, may face difficulties in complying with the new emission requirements. The need to modernize coal-fired power plants or gradually phase them out will come at a cost that will need to be incurred in a short period, and could thereby threaten our economy.

Implementation of the Green Deal will have a significant negative impact on Poland's budget revenues. **First and foremost, the Green Deal envisages limiting the sale of carbon-intensive products, mainly motor fuels. The reduction in the production and sales of fuels, which are predominantly consumed by end users (final buyers), will significantly affect the reduction of budget revenues from indirect taxes and income taxes from the energy sector.**

The possible introduction of a CO_2 tax will also result in a decrease in budget revenue. Business taxpayers, especially non-agricultural taxpayers, will be forced to pay an additional fiscal burden for the greenhouse gases they emit, which may contribute to increased operational costs of their businesses, decreased profitability, decreased income, and what follows also lower tax revenue.

The restrictions discussed earlier will also result in an increase in the price of individual goods and services, resulting in higher inflation. There is a risk that this "green transition" will even lead to hyperinflation.

Implementation of the Green Deal will require significant investment in "green infrastructure" such as wind farms and photovoltaic installations. These will absorb budget resources, resulting in less revenue available for other purposes.

04.2.2. DECREASE IN BUDGET REVENUES FROM INDIVIDUAL TAXES

04.2.2.1. Excise tax

It is difficult to estimate precisely the decrease in budget revenues from excise taxes after the introduction of the Green Deal. However, it should be noted that sales of so-called high-carbon products account for a significant portion of budget revenues from this tax (about 45%). The planned increase in excise taxes on these products or the introduction of charges for CO_2 emissions is expected to reduce their consumption. The main recipients of these products are consumers (final buyers) and taxpayers engaged in economic activities (agricultural or non-agricultural), thus the decrease in sales of these products will result in a significant decrease in budget revenues from excise tax.

04.2.2.2. Value added tax

The implementation of the Green Deal may also have a negative impact on the amount of budget revenues from the goods and services tax. First of all, the increase in the price of goods and services resulting from the need for business taxpayers (agricultural or non-agricultural) to adapt to the restrictions of the "green transition" will significantly reduce demand, resulting in a decrease in budget revenues from this tax.

In addition, limiting the sale of petroleum and carbon-intensive products will also contribute to a reduction in budget revenues from the goods and services tax.

04.2.2.3.
Income taxes

Implementation of the Green Deal may also affect budget revenues from corporate income tax. The CO_2 tax, paid by business taxpayers (agricultural or non-agricultural), firstly means additional costs for them, and secondly may result in a reduction in corporate income tax revenues, particularly from high-emission companies, as their profits will fall. "Green transition" may also require taxing the production and consumption of natural resources, such as water, energy and raw materials in order to reduce negative environmental impacts. This could make conducting economic activity more costly for business taxpayers (agricultural or non-agricultural), thereby reducing their income, which in turn will reduce corporate tax revenues.

In addition, implementation of the Green Deal will result in a decline in personal income tax revenues. The impoverishment of taxpayers and the reduction of employment in carbon-intensive sectors will also contribute to a decline in revenues from social security and health insurance contributions.

04.3

POTENTIAL EFFECTS OF THE IMPLEMENTATION OF THE GREEN DEAL AND THE CLIMATE PACT ON THE PUBLIC FINANCE SYSTEM (state and local government budgets)

04.3.1.
INCREASE IN OPERATIONAL COSTS RESULTING FROM THE NEED TO COMPLY WITH THE GREEN DEAL

According to expert estimates, it is Poland, alongside Bulgaria, that will have to spend the most to bring its economy up to zero-carbon standards. Data for January 2024 show that even now, **as much as 64% of the electricity in our homes is generated from burning coal**. Gas-fired power plants generate almost 11% of electricity, wind power plants 20%, and hydroelectric and other plants 5%[146].

The implementation of the Green Deal will result in a dramatic increase in the price of electricity, gas, and petroleum products. This will lead to a significant share of energy costs in the expenditure of business taxpayers (agricultural or non-agricultural). In addition, the Green Deal assumes a reduction in the extraction and consumption of fossil fuels, including coal. Increased operational costs associated with emission reductions, reduced demand for coal, and the need to comply with stricter environmental standards and requirements for recycling and waste disposal could increase pressure on specific sectors of the Polish economy. Almost all business taxpayers (agricultural or non-agricultural) will have to face new regulatory requirements. The industries most at risk include: **the mining industry, the chemical industry, transportation, the energy industry, and the automotive industry.**

146 *Rynek Elektryczny, Produkcja energii elektrycznej w Polsce STYCZEŃ 2024 r. [Electricity Production in Poland JANUARY 2024], https://www.rynekelektryczny.pl/produkcja-energii-elektrycznej-w-polsce/, accessed 10.06.2024 [Polish only].*

The introduction of stricter emission standards could increase costs for transportation companies and automakers, especially if they have to invest in the development of electric or hybrid vehicles.

New requirements regarding the energy efficiency of buildings and increase in the share of renewable energy in this sector may pose a threat to the construction industry. Construction companies must adapt to new standards and technologies, which could lead to higher construction costs.

As a result, profitability of Polish taxpayers engaged in economic activities (agricultural or non-agricultural) and the fiscal efficiency of taxing their income will decline. This will particularly affect the industrial sector. Higher costs of maintaining production will result in higher prices of products. This will translate into a relative increase in prices in dependent industries, especially in construction, automotive, machinery, and household appliance manufacturing. The increase in costs will reduce the global competitiveness of Polish taxpayers doing business, especially vis-à-vis non-EU entrepreneurs (e.g., China, India).

The implementation of regulations related to the Green Deal and the Climate Pact will also have a negative impact on the agricultural sector, especially those resulting from restrictions on the use of fertilizers, pesticides, and greenhouse gas emissions. According to experts, **production efficiency** in agriculture **will decrease**, so farmers' incomes are likely to fall. Already in 2030, farmers are expected to harvest 6% less wheat, 11% less potatoes, 9% less triticale and as much as 19% less apples from their orchards[147]. Smaller yields translate into increase in food prices. The consequence of the above will be a decline in the competitiveness of Polish agriculture on the international market, especially since it is characterized by a fragmented agrarian structure. Small and medium-sized farms will therefore be most affected.

In conclusion, Polish agriculture is not prepared to implement the Green Deal in such a short time.

04.3.2. REDUCTION IN CONSUMER DEMAND UNDER THE IMPACT OF THE COST REVOLUTION AND THE INCREASE IN PRICES OF GOODS AND SERVICES

A consequence of the implementation of regulations related to the Green Deal and the Climate Pact will be a decline in the profitability of business (non-agricultural) taxpayers, particularly in the industrial, road transport, and trade sectors. Higher costs of maintaining production will increase the price of industrial products. This will translate into a relative increase in prices in dependent industries, especially in construction, automotive, machinery, and appliance manufacturing. The increase in costs will therefore reduce the global competitiveness of Polish companies.

Reducing energy production from conventional sources, such as coal, could result in greater reliance on energy imports, which could threaten the country's energy sovereignty.

Moreover, restrictions on emissions may reduce consumers' choices of energy sources, which could be seen as an interference with their freedom of decision-making.

Increases in the prices of products and services, resulting from the introduction of CO_2 mitigation measures, will place an additional financial burden on consumers, which may affect their purchasing power and standard of living. The above could result in high involuntary unemployment, inflation (and even hyperinflation) and low output growth.

04.3.3. COMPETITIVENESS IN THE MARKET – COSTS OF IMPLEMENTING NEW REGULATIONS FOR SMALL AND MEDIUM-SIZED ENTERPRISES

The consequence of regulations resulting from the Green Deal and the Climate Pact will be a reduction in Poland's economic development opportunities due to the need to invest in "green infrastructure" and adapt to new environmental requirements.

If other EU countries go through the process more swiftly, Polish business taxpayers (agricultural or non-agricultural) may find it difficult to compete in international markets, especially if they are burdened with the additional costs of reducing emissions.

147 *Polityka Insight, Wpływ Europejskiego Zielonego Ładu na polskie rolnictwo [Impact of the European Green Deal on Polish Agriculture], Warsaw, December 2021, https://www.politykainsight.pl/_resource/multimedium/20299055, accessed 10.06.2024 [Polish only].*

Another consequence could be a reduction in employment or even the closure of operations in certain sectors of the economy, especially those strongly linked to the extraction and processing of natural resources and the production of carbon-intensive products (e.g., the coal industry, the chemical industry, transportation, conventional power generation, construction, agriculture).

Excessive restrictions and costs associated with the implementation of the Green Deal may therefore limit Poland's economic development opportunities.

Due to the transformation of carbon-intensive sectors, some jobs may be at risk, especially in places heavily dependent on mining or energy industries. The need for restructuring could lead to increased unemployment and social hardship in some regions.

The introduction of stricter emission regulations and the need to invest in new environmental technologies may increase the costs for business taxpayers (agricultural or non-agricultural). This in turn may limit their ability to invest in development, research, and innovation, which could affect economic dynamics.

Most business entities will have to adapt to new standards of energy efficiency, emission reduction, and sustainable use of natural resources. In the Authors' opinion, the goals set out in the Green Deal are not achievable within the designated period. Implementing such significant changes will require time and massive financial resources.

The most at risk will be small and medium-sized enterprises (SMEs), as they have significantly less capital but will still need to adapt to the changes. Most companies simply will not be able to afford these expenses. The increase in operational and investment costs, coupled with the need to remain competitive, may contribute to a significant decline in this sector.

04.3.4.
IMPACT OF GREEN DEAL AND CLIMATE PACT IMPLEMENTATION ON LOCAL GOVERNMENT FINANCES

The implementation of the Green Deal and the Climate Pact may also have negative consequences for local government units. First of all, it may require significant financial outlays for investments in environmental protection, improving energy efficiency or developing "green infrastructure." This may lead to an increase in the budgetary burden on local government units.

These entities may be required to adapt their infrastructure, such as energy networks, sewage systems, or transportation, to new energy efficiency and environmental standards. The costs of this process can be significant, especially for smaller and less developed regions.

The impoverishment of society and the plight of entrepreneurs will also result in lower income tax revenue, which will negatively affect the finances of local government units.

04.4

CONCLUSIONS

The Polish tax system is not ready for the implementation of the Green Deal and the Climate Pact within the timeframe set by the EU. The introduction of the described restrictions and mandates will result in a drastic increase in budget expenditure, while simultaneously impoverishing society and taxpayers engaged in economic activities (both agricultural and non-agricultural). The discussed changes will directly affect the increase in consumer goods prices, as well as may contribute to a decrease in the competitiveness of Polish companies in international markets. A significant reduction in the consumption of carbon-intensive goods and services (especially motor fuels) will result in a permanent decline in budget revenue.

The introduction of such momentous changes requires time and almost unimaginable financial outlays, which Poland – both as a state and its citizens – is currently unable to bear.

THE INTRODUCTION OF THE GREEN DEAL AND THE CLIMATE PACT WILL RESULT IN:

DECLINE IN BUDGET REVENUES (state budget and local government budgets) from indirect taxation of carbon-intensive sectors, and the trade of goods and services discriminated against by new mandates and prohibitions (estimated at approximately 30.0-35% annually in the initial period; later the decline will be even deeper);

DECREASE IN INCOME TAX revenues due to increased costs in the corporate sector and a decline in employment in the carbon-intensive sector (up to 50.0-55%);

DECLINE IN THE REVENUES OF THE SOCIAL INSURANCE FUND AND THE NATIONAL HEALTH FUND (social and health insurance contributions) due to reduced employment in the high-emission sector (conservative estimates – up to 25.0-30%).

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05

EUROPEAN GREEN DEAL – DIRECT COSTS FOR THE ECONOMY AND SOCIETY

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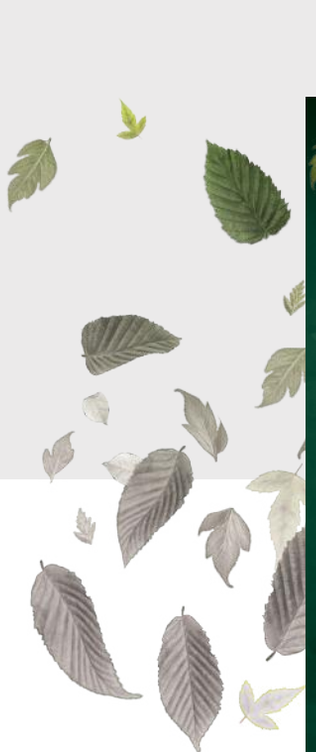


The implementation of the Green Deal, which is part of European Union (hereafter: EU) policy, entails significant costs for the economy and society. While its full achievement is not feasible, attempting to implement it will cause stagnation in European economies, which we are already observing, and will result in enormous costs for society.

This study presents the most important information about the four main directions of the Green Deal's implementation and its effects on the economies and societies of EU member states, and particularly Poland, such as:

- energy performance of buildings;
- carbon dioxide (hereinafter: CO_2) emissions trading systems – EU ETS and EU ETS2[148];
- development of alternative means of transportation;
- electricity costs for consumers.

148. *European Union Emissions Trading System.*

05.1

ENERGY PERFORMANCE OF BUILDINGS

The EU's activities in the area of energy performance of buildings impose a significant burden on the societies and economies of its member states. The European Commission (hereinafter: EC) and the European Parliament (hereinafter: EP) have taken the following actions.

First and foremost, on March 12, 2024, the EP adopted a position supporting the introduction of a new Energy Performance of Buildings Directive[149]. This is a building renovation strategy announced in the Green Deal, which aims to at least double the annual energy renovation rate "resulting in 35 million building units[150] renovated by 2030"[151].

The above goal is to be achieved by **making it mandatory** for buildings to have an energy performance certificate and a renovation passport, relating to major renovation, as a result of which the building should become a nearly zero energy building before January 1, 2030, and from January 1, 2030 a zero-emission building.
The obligation for a building to be zero-emission will cover:

- as of January 1, 2028 – new buildings owned by public entities;
- as of January 1, 2030 – all new buildings.

The obligation to renovate buildings will also apply to all privately owned buildings, starting from their trigger point in the market, i.e. from the moment of "sale, rent, donation or change of purpose within the cadastre or land registry" (e.g., inheritance)[152].

Additionally, the new directive on the energy performance of buildings stipulates the **mandatory installation of solar energy installations**:

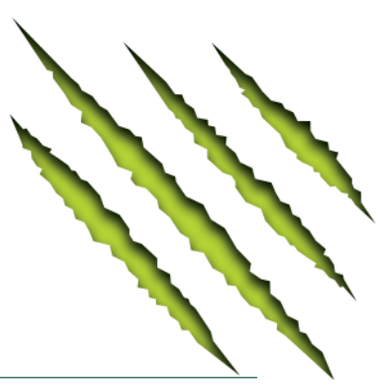
1) on all new public and non-residential buildings with a floor area of more than 250 m^2 – until December 31, 2026;

2) on all existing public buildings with a floor area above:
   - 2000 m^2 – until December 31, 2027;
   - 750 m^2 – until December 31, 2028;
   - 250 m^2 – by December 31, 2030.

Moreover, Member States are to **lay down provisions setting penalties** for violations of national provisions adopted pursuant to this Directive. The penalties provided for must be effective, proportionate, and dissuasive.

It should be noted that according to the latest National Census of 2021 of the Statistics Poland (Główny Urząd Statystyczny, hereinafter: GUS), there are more than 6 million buildings in Poland (see Table 4 in a further part of the report). Out of this number, about 17.6% had been built before 1944, and by 2002 (buildings more than 20 years old) – more than 4.7 million, or about 60% of all existing buildings in Poland (see Table 5). It should be taken into account that a significant part of the building stock before 2002 (i.e. 75%) was erected using the 'build-it-yourself' house construction, as buildings multi-generational by definition, which, due to their floor area and construction technology, will be difficult to renovate.

The average cost of renovating a building is about PLN 200 thousand, which means that the cost of renovating buildings built until 2002 will be about PLN 1,000 billion.



149 *Position of the European Parliament adopted at first reading on March 12, 2024, to adopt Directive (EU) 2024/... on the energy performance of buildings (recast), 12.03.2024, EP-PE_TC1-COD(2021)0426, https://www.europarl.europa.eu/doceo/document/TC1-COD-2021-0426_EN.pdf, accessed 29.06.2024.*

150 *According to the new Energy Performance of Buildings Directive, a "building unit" means a section, floor or apartment in a building which is designed or altered to be used separately.*

151 *Ibid, p. 3.*

152 *Ibid, p. 52.*

05.2

EU ETS 2

The **EU ETS** was introduced in 2005. The obligation to purchase permits (**European Union Allowances**) applies to all installations in the EU covered by the ETS. In order to emit CO_2 an emission allowance must be purchased. The ETS applies to so-called high carbon emissions and covers mainly power engineering (power plants and combined heat and power plants) and heavy industry.

For years, the prices of emission allowances were low, and until early 2018 they did not exceed EUR 10 per ton, which allowed the power industry to function reasonably well. However, the EC has taken a number of steps to increase their prices. The most significant change was a decision to transform the allowances into a financial instrument, which led to price manipulation, and as a result prices reached almost EUR 100 per ton in 2022.

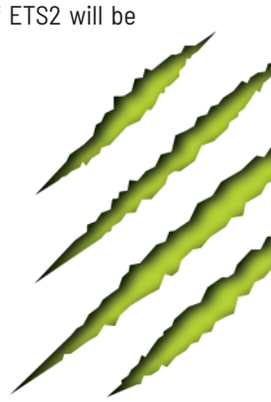
The high purchase prices of CO_2 permits have caused a significant increase in energy prices, which is the reason for the current economic crisis observed in EU countries. Although the economic crisis of 2023 and 2024 has caused some decrease in the prices of allowances, the impact of this system on the economies of EU countries remains negative.

Despite the negative effects of the ETS, it was decided to expand the system to the construction, road transport, and small industry sectors. The goal of the new ETS2 is to reduce CO_2 emissions by 42% by 2030 in comparison to 2005 levels. Monitoring and reporting of emissions will begin in 2025.

According to the calculations by **Warsaw Enterprise Institute (WEI)**, assuming an allowance price of EUR 45 per ton, the fee for a household will reach PLN 1,560 per year. In the above amount, in addition to the tax on heating, also charges related to individual transportation are included. According to the WEI report, the annual cost of introducing ETS2 for households is about PLN 21 billion. Since residential buildings and private transport are foreseen to be included in the system from 2029, the costs will add up to PLN 63 billion by 2032[153].

The costs of change for the poorest part of society are to be compensated by the Climate Social Fund. Poland can count on 17.6% from this fund over the period 2025-2032. The amount of funds it is to have at its disposal, however, is not specified. The latest figures put it at EUR 87 billion, most of which will come from the central budget. Poland is likely to receive about EUR 15.3 billion, which constitutes around PLN 70 billion. According to WEI, for every average Polish family, using 3.5 tons of coal and two tons of diesel fuel per year, the cost of ETS2 will be about PLN 2,500 annually[154].

05.3



ROZWÓJ ALTERNATYWNYCH ŚRODKÓW TRANSPORTU

Regulation (EU) 2023/1804 of the European Parliament and of the Council of September 13, 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU[155] deals with the development of transportation using alternative fuels, such as electricity, hydrogen and methane, as well as concerns the provision of energy for ships while in ports and for stationary aircraft in airports.

In the case of electricity, the aforementioned regulation mandates the provision of recharging infrastructure for vehicles in accordance with the principle of the following power output targets:

- 1,3 kilowatts (hereafter: kW) for each fully electric vehicle,
- 0,8 kW for a hybrid vehicle.

153 *M. Lachowicz, Zapłacą najubożsi. Koszty wprowadzenia systemu handlu emisjami dla budynków mieszkalnych oraz transport [Costs of Introducing an Emissions Trading Scheme for Residential Buildings and Transportation], May 2023, https://wei.org.pl/wp-content/uploads/2023/05/Zaplaca-najubozsi-WEI.pdf, accessed 01.07.2024 [Polish only].*

154 *Ibid, pp. 10, 22.*

155 *OJ L 234 of 22.09.2023, pp. 101-107, hereinafter: Regulation 2023/1804.*

Additionally, publicly accessible recharging stations must be provided along the Trans-European Transport Network (TEN-T network) with the following requirements:

- by December 31, 2025 – one recharging pool with a power output of at least 400 kW at intervals of up to 60 kilometers (hereinafter: km);
- by December 31, 2027 – along at least half of the TEN-T comprehensive road network[156] recharging pools with a power output of at least 300 kW;
- by December 31, 2035 – each recharging pool must offer a power output of at least 600 kW.

As for recharging infrastructure dedicated to heavy-duty electric vehicles (hereinafter: eHDVs), the new responsibilities are as follows:

- by December 31, 2025 – publicly accessible recharging pools with a power output of at least 1,400 kW must be installed along at least 15% of the length of the TEN-T network;
- by December 31, 2027 – recharging pools with a power output of at least 1,400 kW (2,800 kW along the TEN-T core network[157] must be installed along at least half of the length of the TEN-T network, including at least one recharging station (two in the case of the TEN-T core network) with an individual power output of at least 350 kW.

In addition, member states must ensure that:

- by December 31, 2030, along the TEN-T core network, publicly accessible recharging pools dedicated to eHDVs are deployed in each direction of traffic, with a maximum distance of 60 km between them, and each recharging pool offering a power output of at least 3,600 kW, including at least 2 recharging points with an individual power output of at least 350 kW;
- by December 31, 2030, along the TEN-T comprehensive network, publicly accessible recharging pools dedicated to eHDVs are deployed in each direction of traffic, with a maximum distance of 100 km between them, and each recharging pool offering a power output of at least 1,500 kW, including at least 1 recharging point with an individual power output of at least 350 kW.

The provisions of the Regulation 2023/1804 also apply to parking areas and urban nodes in the periods up to 2027 and 2030.

Regarding hydrogen and methane refueling infrastructure for road vehicles, the aforementioned Regulation requires member states that:

- by December 31, 2030, publicly accessible hydrogen refueling stations with a minimum cumulative capacity of at least one ton per day are deployed at a maximum distance of 200 kilometers between them;
- by December 31, 2024, an adequate number of liquefied methane refueling points are deployed wherever there is demand, unless the costs are disproportionate to the benefits, including environmental benefits.

There are approximately 15,000 km of major roads in Poland. The requirement to install chargers every 60 km thus implies the obligation to build around 250 recharging stations, each of which should have 4-8 points for DC charging. The cost of their construction can be estimated at around PLN 500 million.

Proposed by the government, the Electric Vehicle Subsidy Program within the framework of the National Recovery and Resilience Plan with a budget of over PLN 1.6 billion, means an increase in the number of electric cars by at least 500 thousand under this instrument alone. The proposed Directive requires the installation of recharging infrastructure with a minimum power output of 1.3 kW per one electric car, which means that approximately 200 thousand recharging stations are needed, the cost of which, including installation, is around PLN 20 thousand per piece, i.e. the total cost of building recharging infrastructure for light-duty vehicles alone is almost PLN 4 billion.

05.4

ELECTRICITY COSTS FOR CONSUMERS

The development of renewable energy sources (hereafter: RES) leads to a systematic increase in the energy costs borne by consumers. Table 1 shows the increase in electricity prices as the share of RES in electricity production in Poland grows. The variants are marked Wx%, where x represents the percentage share of RES in total electricity production.

156 *According to Article 2(67) of Regulation 2023/1804, "TEN-T comprehensive network" means a comprehensive network within the meaning of Article 9 of Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010/EU (OJ L 348, 20.12.2013, pp. 1-128, hereinafter: Regulation No. 1315/2013).*

157 *According to Article 2(68) of Regulation 2023/1804, "TEN-T core network" means a core network within the meaning of Article 38 of Regulation (EU) No 1315/2013.*

The increase in the share of RES in the energy mix leads to an increase in energy costs by approximately 30%. It should be noted that this is an optimistic scenario, assuming stable costs at 2023 levels, and the fact that these calculations do not take into account the increase in electricity costs due to forced outages. In reality, the estimated increase in electricity costs, assuming the share of RES in the energy mix increases to 75%, which enables the decarbonization of the energy sector (see Table 7 later in the document), will be at least 50%.

The current cost of electricity, depending on the technology used, can be estimated as follows:

- lignite – PLN 535 per megawatt hour (hereinafter: MWh);
- hard coal – PLN 610 per MWh;
- wind farms – PLN 754 per MWh;
- photovoltaic farms 819 PLN per MWh.

The cost of producing energy from coal, excluding the cost of purchasing CO_2 emission allowances, is around PLN 225 per MWh for lignite, and PLN 352 per MWh for hard coal, assuming allowance price of EUR 80 per ton.

The costs of electricity production are shown in Table 2 for two options – without the ETS tax and with the ETS tax. The cost of producing electricity from lignite is over three times lower than the cost of producing electricity from PV panels, and 1.5 times lower even when the ETS tax is included. The cost of producing electricity from hard coal is 2.3 times lower than the cost of production from PV panels and is still 33% lower even with the inclusion of the ETS tax.

The cost of producing electricity from RES includes four main components (see Table 3). The first is the price that these RES can obtain at the RES auction; which is close to the reference price. The second component is balancing costs, which are borne by all electricity consumers as part of the capacity fee that covers the costs of the Capacity Market. The third component is the subsidy in the form of grid development costs, which amount to approximately PLN 10 billion per year, and are mainly allocated for the construction of power grids for RES producers. The next subsidy for RES is positive balance settlements. This involves deferring the settlement (payments) of revenues above the price guaranteed at the RES auction. The deferral of payments functions like a "payment holiday," which originally covered the period of 15 years, but now consists of one four-year period followed by additional three-year periods. The level of subsidies granted for RES is not disclosed, so energy consumers have no information about the actual cost of electricity.

Table 1. Electricity costs in relation to increasing share of RES in energy mix

	2023	W40%	W50%	W75%
Power generation (TWh)	166	200	225	250
Average cost of energy (PLN/MWh) without ETS	440	502	553	672
Average cost of energy (PLN/MWh) with ETS	603	665	716	835
Increase of energy costs in %	**100**	**114**	**111**	**127**

Source: own calculations.

Table 2. Electricity production costs for each source

Technology	Costs without ETS (PLN/MWh)	Costs with ETS (PLN/MWh)
Lignite	225	535
Hard-coal	352	610
Gas	450	450
Wind	754	754
Photovoltaics	819	819
Other RES	530	530
Other power plants	470	470

Source: own calculations.

Table 3. Costs of electricity production from renewable

Costs of electricity production (PLN/MWh)	Wind farms >1 MW	Photovoltaic farms >1 MW
Reference price 2023 (PLN/MWh)	324	389
Capacity fee (Capacity Market) (PLN/MWh)	180	180
Grid development costs (PLN/MWh)	190	190
Positive balance settlements (PLN/MWh)	60	60

Source: own calculations.

05.5

ANALYSIS OF THE GREEN DEAL PROVISIONS

05.5.1. DIRECTIVE ON ENERGY PERFORMANCE OF BUILDINGS

05.5.1.1. Main assumptions of the new directive on energy performance of buildings

On March 12, 2024, the EP adopted a position supporting the introduction of a new directive on energy performance of buildings[158]. The Directive forms a part of the building renovation strategy announced in the Green Deal, outlined in the EC's October 14, 2020 Communication entitled "A renovation wave for Europe – greening buildings, creating jobs, improving lives"[159], which is an action plan with specific regulatory, financial, and support measures, with an objective to at least double the annual energy renovation rate of buildings by 2030 and support major renovations, **leading to the renovation of 35 million building units by 2030.**

EU law, specifically Regulation 2021/1119[160], sets a goal of achieving economy-wide climate neutrality by 2050 at the latest, and establishes a binding EU commitment to reduce net greenhouse gas emissions (emissions after the deduction of removals) by at least 55% by 2030 compared to 1990 levels.

Buildings account for 40% of the EU's final energy consumption and 36% of its energy-related greenhouse gas emissions, while 75% of buildings in the EU are still energy inefficient. Natural gas plays the largest role in heating buildings, accounting for about 39% of energy consumption used for space heating in the residential sector. Building renovation is considered a sustainable activity if it achieves energy savings at the level of at least 30%.

The new Directive on Energy Performance of Buildings establishes requirements for a common general framework on methodologies for calculating the integrated energy performance of buildings and building units and for applying minimum energy performance requirements to new buildings and new building units. It covers existing buildings and existing building units that undergo major renovation.

05.5.1.2. Facilities subject to the new directive on energy performance of buildings

For the purposes of this Directive, the following definitions shall apply:

- "building" means a roofed construction having walls, for which energy is used to condition the **indoor environment**;
- "zero-emission building" means a building with a very high energy performance, **requiring zero or a very low amount of energy**;
- "nearly zero-energy building" means a building with a very high energy performance, which is no worse than the cost-optimal level for 2023 and where the nearly zero or a very little amount of energy required is covered to a very significant extent by energy from renewable sources;
- "minimum energy performance standards" means rules that require existing buildings to meet an energy performance requirement as part of a wide renovation plan for a building stock or **at a trigger point** on the market **such as sale, rent, donation or change of purpose within the cadastre or land registry**, in a period of time or by a specific date.

158 *Position of the European Parliament adopted at first reading on March 12, 2024, with a view to adopting Directive (EU) 2024/... of the European Parliament and of the Council on the energy performance of buildings (recast version), op. cit.*

159 *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A wave of renovation for Europe – greening buildings, creating jobs, improving lives, Brussels, 14.10.2020, COM(2020) 662 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0662, accessed 01.07.2024.*

160 *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 on establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), OJ L 243 of 09.07.2021, pp. 1-17.*

An important element in achieving the goals of the directive under discussion is the **renovation passport**, meaning a tailored roadmap for **the deep renovation** of a specific building in a maximum number of steps that will significantly improve its energy performance. The passports are to be introduced no later than 24 months after the date of entry into force of the directive, i.e. around 2026. The passport system can be used voluntarily by owners of buildings and building units, unless a member state decides to make it mandatory. Member states may also allow a renovation passport to be drawn up and issued together with an energy performance certificate.

The aforementioned "deep renovation" means a renovation which is in line with the 'energy efficiency first' principle, which focuses on essential building elements and which transforms a building or building unit:

- before January 1, 2030 into a nearly-zero energy building;
- as of January 1, 2030 into a zero-emission building.

The energy performance certificate indicates the energy performance of a building, expressed as a numerical primary energy consumption rate in kWh/(m^2×year), and reference values such as minimum energy performance requirements, minimum energy performance standards, requirements for nearly-zero energy buildings, and requirements for zero-emission buildings.

05.5.1.3.

Obligations introduced by the new Directive on the energy performance of buildings

Article 7 of the proposed Directive makes it mandatory that emission-free should be:

- as of January 1, 2028 – new buildings owned by public entities;
- as of January 1, 2030 – all new buildings.

Member states are to ensure that the average primary energy consumption in kWh/(m^2 × year) of the entire residential building stock:

- decreases by at least 16% by 2030 compared to 2020;
- decreases by at least 20-22% by 2035 compared to 2020;
- and every five years afterwards is equal to or lower than the value set at the national level.

Member states are also to ensure that at least 55% of the reduction in average primary energy consumption mentioned above is achieved through the renovation of 43% of residential buildings with the worst energy performance.

n additional element is **the obligation of deployment of solar energy installations**:

- on all new public and non-residential buildings with useful floor area of more than 250 m2 – by December 31, 2026;
- on all **existing public buildings** with useful floor area over:
  - 2000 m^2 – by December 31, 2027;
  - 750 m^2 – by December 31, 2028;
  - 250 m^2 – by December 31, 2030.
- on all new residential buildings – by December 31, 2029;
- on all new roofed car parks physically adjacent to buildings – by December 31, 2029.

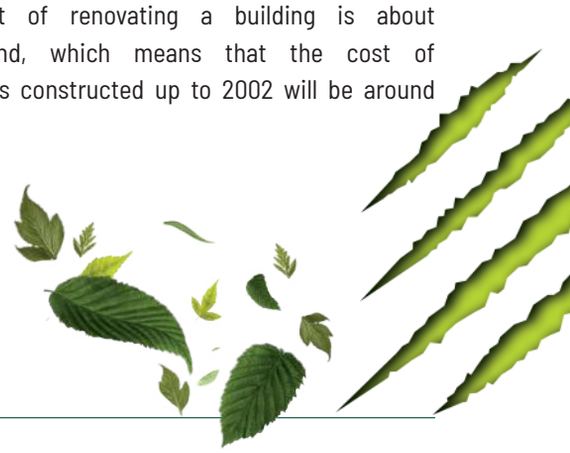
As of December 31, 2027, photovoltaic installations must also be deployed on **existing non-residential buildings with useful floor area of over 500 m^2**, where the building undergoes a major renovation or an action requiring an administrative permit for building renovations, works on the roof, or the installation of a technical building system.

05.5.1.4.

Renovation of buildings

According to Statistics Poland (GUS)[161], there are over 6 million buildings in Poland (see Table 4). Of this number, approximately 17.6% were built by 1944, and by 1988, which can be considered a turning point in the economy, over 3.6 million, or about 60% of all buildings in Poland (Table 5). It should be noted that a significant portion of the buildings erected up to 2002 (over 75%) were built using the 'build-it-yourself' house construction as structures multi-generational by definition, which, due to their floor area and construction technology, will be difficult to renovate.

The average cost of renovating a building is about PLN 200 thousand, which means that the cost of renovating buildings constructed up to 2002 will be around PLN 1,000 billion.



161 *Statistics Poland, National Population and Housing Census 2021. Final Results. https://stat.gov.pl/en/national-census/national-population-and-housing-census-2021/final-results-of-the-national-population-and-housing-census-2021/ accessed 29.06.2024.*

Table 4. Age of buildings in Poland

Construction period	Number of buildings (in thousands)	% share
Up to 1944	1 089	17.6%
1945-1970	1 157	18.7%
1971-1988	1 442	23.3%
1989-2002	1 046	16.9%
2003-2021	1 454	23.5%
TOTAL	6 189	100.0%

Source: GUS, 2021, op. cit.

Table 5. Building construction periods in Poland

Year of construction	Number of buildings (in thousands)	% share
Up to 1944	1 089	17.6%
Up to 1970	2 247	36.3%
Up to 1988	3 689	59.6%
Up to 2002	4 735	76.5%
Up to 2021	6 189	100.0%

Source: GUS, 2021, op. cit.

05.5.1.5.
Electric cars

An additional obligation imposed by the new Directive on the energy performance of buildings is the creation of parking spaces for electric cars in new residential buildings with more than three car parking spaces, and in residential buildings undergoing major renovations. Additionally, it requires:

- the installation of pre-cabling for at least 50% of car parking spaces and ducting, namely conduits for electric cables, for the remaining car parking spaces and electrically power-assisted cycles; and
- the provision of at least two bicycle parking spaces for every residential building unit.

For new residential buildings with more than three parking spaces for cars, member states shall also ensure the installation of at least one recharging point.

05.5.1.6.
Fire protection

Another cost resulting from the application of the discussed Directive is the cost of fire safety measures, which are necessary due to the electrification of buildings and which should be ensured through the deployment of heat pumps, solar installations, batteries and recharging infrastructure. This changes the fire safety risks of buildings, which must be addressed by the member states. As a result additional costs are entailed, and these will be borne directly by the purchasers or tenants of the apartments in the price of housing or rent, and indirectly by all consumers due to the transfer of these safety costs.

05.5.1.7.
Penalties

Under the new Directive on the energy performance of buildings, member states are required to establish provisions for penalties applicable to infringements of national legislation adopted under this Directive and take all necessary measures to ensure their enforcement. The penalties provided for must be effective, proportionate, and dissuasive. Member states will immediately notify the EC of these rules and measures, as well as of any subsequent amendments affecting them.

05.5.2. ETS AND ETS2

05.5.2.1. ETS

The main purpose of introducing the CO_2 trading system was the economic promotion of RES. The system covered only so-called high emissions (from tall smokestacks) generated by power plants, cogeneration plants, heating plants, and industry. The system did not apply to the following sectors: construction, households, or land, sea, and air transport. The main assumption was that the sum of the cost of producing energy from conventional fuels plus the cost of allowance purchase should be greater than the cost of producing energy from renewable sources. The resulting economic advantage of RES was to cause a shift away from conventional fuels in favor of RES.

The **EU ETS** was introduced in 2005. The obligation to purchase allowances applies to all installations in the EU covered by the system. To emit one ton of CO_2, an emission allowance must be purchased. This obligation to purchase allowances arises with the following emission factors:

LIGNITE	HARD COAL	NATURAL GAS
1,0–1,3 tons/MWh	0,8–1,0 tons/MWh	0,55 tons/MWh

The ETS was introduced in the following trading phases:

PHASE 1 (2005–2007)
almost all allowances granted free of charge;

PHASE 2 (2008–2012)
90% of allowances were free, with a penalty of EUR 100 per ton for not having an allowance;

PHASE 3 (2013–2020)
by 2020, the rate of free allocation dropped to 50%;

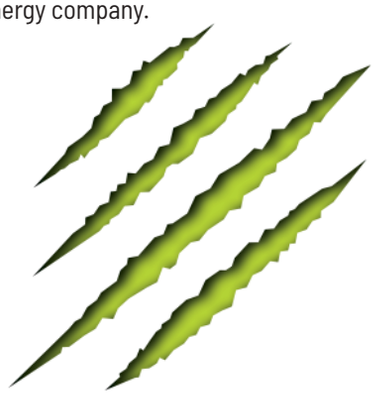
PHASE 4 (2020–2030)
the number of allowances available at auctions is reduced by 2.2% annually.

For years, prices for emission allowances were low. Until early 2018, they did not exceed EUR 10 per ton, which did not lead to intended revenue on RES and as a result improving its market position. The EC started to introduce changes to the system. The first temporary solution was the so-called back-loading, a system that delayed the auctioning of some allowances. Thus, in 2014, 400 million allowances were back-loaded, 300 million in 2015, and in 2016 – 200 million allowances. They were supposed to return to the market in 2019 and 2020, but instead went straight to a new mechanism – the Market Stability Reserve. It was introduced in 2019 as a long-term solution that allows the number of allowances available on the market to be changed on an ongoing basis.

In addition to reducing the oversupply of permits, the EU also decided to increase demand. This was done by allowing new players interested in allowance purchase to enter the market. Thus, in 2018, allowance auctions admitted investment funds, which began profiting from manipulating the ETS system, thereby increasing the prices of allowances.

As a consequence of all these actions taken by the EU, as well as the slow pace of the energy transition, emission allowance prices significantly increased over the past few years. In 2022, futures contracts approached EUR 100 per ton, which hit the most carbon-intensive energy companies really hard. Additionally, high price volatility has significant negative effects. Companies mainly buy allowances through futures contracts, and these require deposits that must be replenished when the market price falls.

When a company enters into a contract at price X, it must prove that it is able to pay for this contract when the delivery time comes. If the price remains unchanged until the time of delivery, both parties to the contract are safe, because if the buying party does not collect the allowances, the selling party can find another buyer at the same price. However, if the market price drops, the selling party may be concerned that the buyer will not pay for the previous obligations, since at that time the same commodity can be obtained on the market at a lower cost. Therefore, a deposit is required to bring the market price in line with the contract price. In practice, a significant drop in allowance prices, and thus the need to replenish deposits, can lead to a loss of liquidity for the energy company.



05.5.2.2.
ETS 2

ETS2 is a new emission trading system that will cover CO_2 emissions from fuel combustion in the construction sector, road transport, and small industry, which are currently not covered by the ETS. ETS2 will become fully operational in 2027[162].

ETS2 allowances will be auctioned. Member states are expected to use the proceeds from ETS2 for environmental investment and social measures. Under the new system, fuel suppliers will be required to monitor and report their emissions. ETS2 aims to reduce CO_2 emissions by 42% by 2030 compared to 2005 levels.

Emissions monitoring and reporting will begin in 2025. As in the current system, ETS2 will maintain an active market stability reserve, which will be used to artificially balance the supply of allowances in the market and control price stability by withdrawing allowances if there is an oversupply and introducing allowances in case of insufficient supply. The new system has a kind of "price ceiling" – a price stability mechanism. During the first three years of ETS2 operation, if the allowance price exceeds EUR 45, additional allowances can be released from the above reserve[163].

According to WEI's calculations, if the price of allowances reaches EUR 45, the fee for a household will be about PLN 1560 per year. In the above amount, in addition to the tax on heating, charges related to individual transportation are also included[164]. According to the WEI report, the introduction of ETS2 will cost households about PLN 21 billion per year. Since residential buildings and private transport will be included in the system starting from 2029, by 2032 the system's costs will add up to PLN 63 billion.

To this amount expenses incurred by businesses should be added, because ETS2 will first cover commercial buildings and commercial transportation. If it is assumed that the price cap (a gentle defense of the EUR 45 level) proposed by the EC will have the expected effect, then in 2030 the cost of the new system will be about PLN 1,560 per statistical Polish household. If the release of the additional pool of allowances does not deter investors (e.g., if they had sufficiently large funds at their disposal), then the cost will rise to PLN 7,100 in 2030. In total, for the entire economy, these costs add up to PLN 21.2 billion and PLN 96.5 billion, respectively[165].

As noted by WEI, the costs of these changes for the poorest part of society are to be compensated by the Social Climate Fund. Poland can count on 17.6% of the value of this Fund in 2025-2032. However, the exact budget of the Fund is not specified. The latest figures put it at EUR 87 billion, most of which will come from the central budget. Poland may receive about EUR 15.3 billion, i.e. approximately PLN 70 billion. For a statistical Polish family, using 3.5 tons of coal and two tons of diesel fuel annually, the cost of ETS2 will be about PLN 2,500.

05.5.3.
RDEVELOPMENT OF ALTERNATIVE FUEL INFRASTRUCTURE

Regulation 2023/1804 establishes mandatory targets for EU member states to implement publicly accessible alternative fuel infrastructure (in particular, electricity and hydrogen) for road vehicles, trains, ships, and stationary aircraft, with a focus on trans-European transport networks. The regulation also establishes:

- uniform rules on user information, data provision, and payment requirements;
- granting the EC the authority to adopt delegated acts to ensure interoperability of infrastructure by introducing technical specifications based on European standards;
- planning and reporting requirements for member states.

162 *European Commission, ETS2: buildings, road transport and additional sectors, https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/ets2-buildings-road-transport-and-additional-sectors_en, accessed 02.07.2024.*

163 *M. Lachowicz, op. cit.*

164 *Ibid.*

165 *Ibid*

05.5.3.1.
Recharging infrastructure for electric vehicles and delivery trucks

Member states must ensure the establishment of publicly accessible recharging points in proportion to the number of registered vehicles, in accordance with the following principles:

- for each registered electric vehicle – with a total power output of at least 1.3 kW;
- for each registered plug-in hybrid vehicle – with a total power output of at least 0.8 kW.

Additionally, member states must also ensure the deployment of publicly accessible recharging stations along the TEN-T:

- by December 31, 2025 – recharging pools with an output power of at least 400 kW (including at least one recharging station with 150 kW) should be located in each direction of travel so that the maximum distance between these pools is 60 km along the TEN-T core road network; by December 31, 2027, each pool must provide a power output of 600 kW and include at least two recharging stations with 150 kW;

- by December 31, 2027 – along at least half of the TEN-T comprehensive road network recharging pools must provide an output power of at least 300 kW and include at least one recharging station with 150 kW, they must be available along the entire length by December 31, 2030;

- by December 31, 2035 – each recharging pool must offer an output of at least 600 kW and include at least two recharging stations with a capacity of 150 kW.

In addition, member states must ensure minimum coverage of their territory with publicly accessible recharging points dedicated to heavy-duty electric vehicles:

- by December 31, 2025 – along at least 15% of the TEN-T road network, recharging pools with a total output power of at least 1,400 kW must be installed, including at least one recharging station with an output power of at least 350 kW;

- by December 31, 2027 – along at least half of the TEN-T road network, recharging pools with a total output power of at least 1,400 kW (2,800 kW along the TEN-T core road network) must be installed, including at least one recharging station (two in the case of the TEN-T core road network) with an output power of at least 350 kW;

- by December 31, 2030 – in the comprehensive TEN-T network, the output power must be increased to at least 1,500 kW, and stations should be located no more than 100 km apart, while in the TEN-T core network, the power must be increased to 3,600 kW, with stations no more than 60 km apart;

- by December 31, 2027 – in each safe and secure parking area, at least two publicly accessible recharging stations for heavy electric vehicles with an individual output power of at least 100 kW must be made available (increasing to four by December 31, 2030);

- by December 31, 2025 – each urban node must be equipped with publicly accessible recharging stations for heavy vehicles with a total output power of at least 900 kW (increasing to 1,800 kW by December 31, 2030).

05.5.3.2.
Infrastructure for hydrogen and methane

Regarding hydrogen and methane refueling infrastructure for road vehicles, Regulation 2023/1804 establishes the following obligations:

- by December 31, 2030, member states must ensure that publicly accessible hydrogen refueling stations with a total capacity of at least one ton per day are distributed along the TEN-T core network at least every 200 km. At least one refueling station must be located in each urban node;

- by December 31, 2024, member states shall ensure that an appropriate number of publicly accessible refueling points for liquefied methane are deployed, at least along the TEN-T core network, where there is demand, unless the costs of doing so are disproportionate to the benefits, including environmental benefits.

Regulation 2023/1804 also establishes targets for shore-side electricity supply in maritime ports. By December 31, 2029, shore-side electricity supply must be provided for ships moored at the quayside to serve at least 90% of all seagoing container and passenger ships above 5,000 gross tons.

As far as the supply of electricity to stationary aircraft is concerned, by December 31, 2024, all TEN-T core and comprehensive network airports must provide electricity to stationary aircraft used for commercial air transport operations at aircraft contact stands, and by December 31, 2029 – at all remote stands.

Regulation 2023/1804 entered into force on October 12, 2023, and is applicable as of April 13, 2024. The goals to be achieved by member states will be implemented gradually until 2035.

05.5.4. TOTAL ELECTRICITY COSTS FOR ENERGY CONSUMERS

05.5.4.1. Cost increase estimate

The development of RES means that the cost of energy to consumers is steadily rising. Table 6 shows the increase in the cost of electricity as the share of RES energy in Poland's electricity generation increases.

Table 6. Electricity costs in relation to increasing share of RES in energy mix

	2023	W40%	W50%	W75%
Power generation (TWh)	166	200	225	250
Average cost of energy (PLN/MWh) without ETS	440	502	553	672
Average cost of energy (PLN/MWh) with ETS	603	665	716	835
Increase of energy costs in %	100	114	111	127

Source: own calculations.

An increase in the share of RES in the energy mix results in an increase in energy costs of about 30%. It should be noted that this is an optimistic scenario, assuming stable costs at 2023 levels, and the fact that these calculations do not take into account the increase in electricity costs due to forced outages. In reality, assuming an increase of RES share in the energy mix up to 75%, at which decarbonization of the power industry is possible (see Table 7), the estimated increase in the cost of electricity will be at least 50%.

Table 7. Share of individual sources in electricity production with increase in RES share

TECHNOLOGY	W40%	W50%	W75%
Lignite	30	23	0
Hard-coal	44	36	0
Gas	20	23	25
Wind and photovoltaic	60	90	163
Other RES	20	25	30
Other power plants	26	29	33
TOTAL	200	225	250

Source: own calculations.

05.5.4.2. Comparison of cost components of electricity production

To illustrate the total cost of electricity for its consumers, two coal-based technologies (lignite and hard coal) and the two most commonly used RES technologies, i.e. wind farms with a capacity of P > 1 megawatt (hereafter: MW) and photovoltaic farms with a capacity of P > 1 MW, were compared.

For coal-fired power plants, production costs including CAPEX[166], OPEX[167] and fuel costs were considered. In addition, the costs of purchasing CO_2 emission permits (ETS tax) were taken into account in proportion to the volume of emissions of a given technology.

For the purpose of calculating the production costs of energy from renewable sources, the reference price for 2023, set by the Ministry of Climate and Environment, was used as the base, and the following subsidies were taken into account:

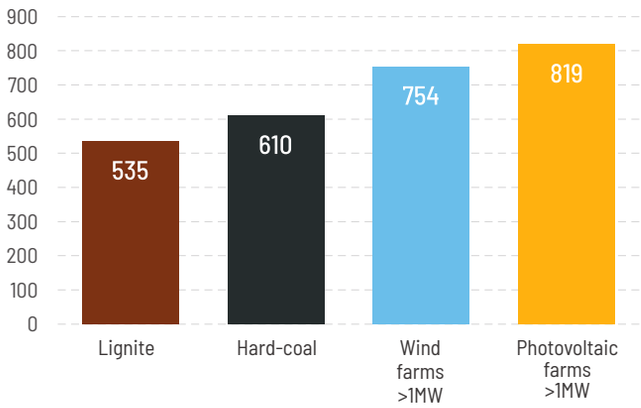
- balancing costs calculated on the basis of data from Polskie Sieci Elektroenergetyczne SA (hereinafter: PSE SA) regarding the Capacity Market costs;
- grid development costs for RES based on data from network operators (distribution and transmission);
- subsidies resulting from positive balance settlements based on data from Settlement Manager SA (Zarządca Rozliczeń SA).

The conducted analyses indicate that even after accounting for the cost of purchasing CO2 emission allowances (ETS tax), the total production costs of electricity by wind farms and photovoltaic farms are higher than the production cost of coal-based electricity (Chart 1), and amount to respectively:

- lignite power plants – 535 PLN/MWh;
- hard coal power plants – 610 PLN/MWh;
- onshore wind farms – 754 PLN/MWh;
- photovoltaic farms – 819 PLN/MWh.

166 CAPEX – capital expenditures – investment outlay.
167 OPEX – operational expenditures.

Chart 1. Total costs for consumers of electricity from coal and RES (in PLN/MWh)



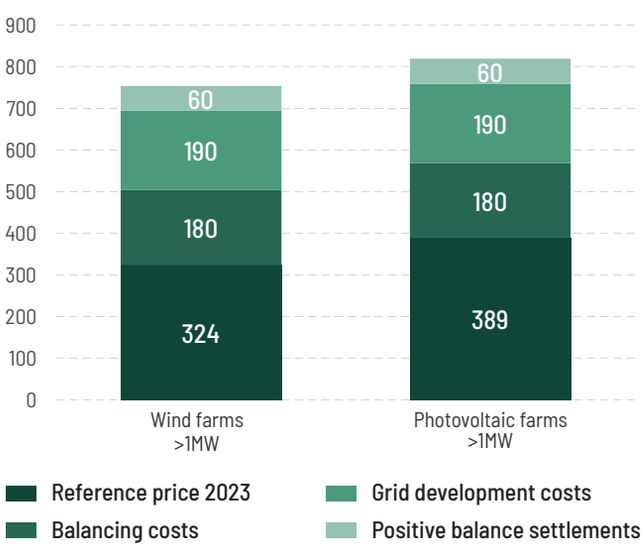
Source: data from the National Center for Emissions Management (Krajowy Ośrodek Bilansowania i Zarządzania Emisjami, KOBiZE), Energy Market Agency (Agencja Rynku Energii, ARE), Settlement Manager SA (Zarządca Rozliczeń SA), Ministry of Climate and Environment, Energy Regulatory Office (Urząd Regulacji Energetyki, URE), Polish Chamber of Coal Sellers (Polska Izba Sprzedawców Węgla, PISW), Statista, International Energy Agency (IEA), and National Renewable Energy Laboratory (NREL).

05.5.4.3.
Subsidies for RES

The high cost of renewable energy production is the result of three main types of subsidies:

- balancing costs covered by the Capacity Market system;
- grid development costs for RES;
- positive balance settlements (payment holiday) (see Chart 2).

Chart 2. Total costs for consumers of electricity produced from RES (in PLN/MWh)

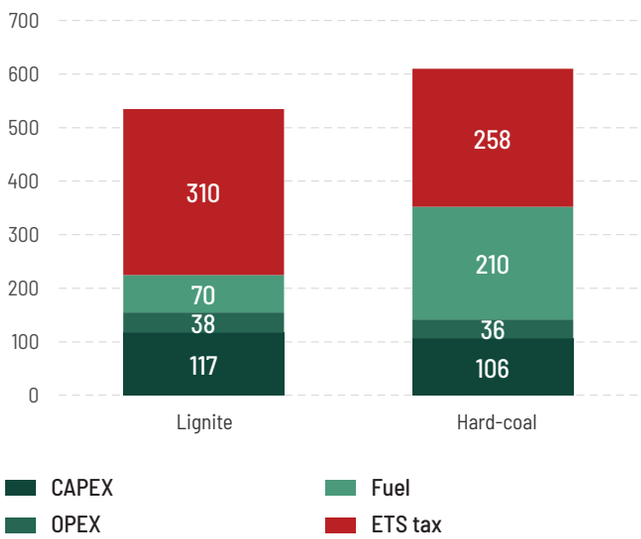


Source: data from ARE, Settlement Manager SA, Ministry of Climate and Environment, URE, Statista, IEA, NREL.

05.5.4.4.
Electricity production costs

The largest component in the production costs of electricity is the cost of purchasing CO_2 emission allowances (ETS tax) (Chart 3).Although this cost is borne by energy consumers, these amounts are transferred to the state budget, and a portion of them (so far) is returned to consumers.

Chart 3. Production costs of electricity from lignite and hard coal (in PLN/MWh)



Source: data from KOBiZE, ARE, Settlement Manager SA, Ministry of Climate and Environment, ERO, PISW, Statista, IEA, NREL.

Detailed costs are summarized in Table 8. For the calculation of the costs of coal-fired power generation, the following were used:

- IEA and NREL data for CAPEX and OPEX;
- coal prices published by PISW;
- CO_2 permit prices published by KOBiZE.

For the calculation of RES electricity costs the following data was used:

- 2023 reference prices for RES, published by URE;
- the volume of energy production from RES published by ARE;
- Capacity Market costs for calculating balancing costs published by PSE SA;
- grid expansion costs for RES based on data from network operators, with replacement investments not taken into account;
- data from Settlement Manager SA in the positive balance settlement (payment holiday for excess revenues).

Table 8. Summary of production costs and total costs for consumers of electricity from coal power plants and RES

Electricity production costs (PLN/MWh)	Lignite	Hard-coal			
CAPEX	117	106			
OPEX	38	36			
Fuel	70	210			
TOTAL PRODUCTION COSTS	225	352			
ETS tax	310	258			
COST INCLUDING ETS TAX	535	610			
			Wind farms >1MW	PV farms >1MW	
2023 REFERENCE PRICE			324	389	
Balancing costs (Capacity Market)			180	180	Subsidies
Grid development costs			190	190	Subsidies
Positive balance settlements			60	60	Subsidies
TOTAL COSTS FOR THE END RECIPIENT	535	610	754	819	

Source: data from KOBiZE, ARE, Settlement Manager SA, Ministry of Climate and Environment, URE, PISW, Statista, IEA, NREL.

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Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the development of alternative fuel infrastructure and repealing Directive 2014/94/EU, OJ L 234 of 22.09.2023, pp. 101-107.

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06

LIMITS OF IMPLEMENTING ENERGY TECHNOLOGIES PROPOSED BY THE EUROPEAN GREEN DEAL

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The European Green Deal is an ideological approach of the European Union (hereafter: EU), which assumes the possibility of simultaneously transforming the entire economy of member countries to a basically zero-carbon economy while maintaining its global competitiveness.

According to the official position of the European Council: "The European Green Deal [...] is a package of policy initiatives, which set the EU on the path to a green transition, with the ultimate goal of reaching climate neutrality by 2050.

The Green Deal supports the transformation of the EU into a fair and prosperous society with a modern and competitive economy.

It underlines the need for all policy areas to contribute to fighting climate change. The strategy supports measures across economic sectors covering energy, transport, industry, agriculture, sustainable finance and more"[168].

168 *Council of the European Union, Council of the European Union, European Green Deal, https://www.consilium.europa.eu/en/policies/green-deal/#what, accessed 18.05.2024.*

The Green Deal is a complex set of interrelated regulations and directives that determine transform individual sectors of the economy, including energy. The primary function of the goal is to reduce greenhouse gas emissions. Member states have pledged to reduce net EU greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels.

The provisions of the Green Deal are formulated as if the very fact of transforming the economy would result in an increase in its competitiveness and the achievement of climate goals.

The transformation of the energy industry is primarily reduced to increasing the share of renewable energy sources (hereinafter: RES) in the energy mix. This is a flawed approach, because due to the lack of technology for storing energy from unstable sources, it is not possible to build balanced energy systems that make significant use of RES without duplicating them with conventional stable sources. This means that once a certain – characteristic of a specific energy mix – limit value of the RES share in the power system is exceeded, the system becomes inefficient and is t a risk of technical and financial collapse. In order to avoid this catastrophic scenario for the economy, it is necessary to set a limit value for the share of RES in the power system and develop the system harmoniously, i.e. invest simultaneously in diversified generation technologies and energy storage systems.

Reckless installation of increasingly large, intermittent RES capacities in the Polish power system without their simultaneous balancing with stable sources and large-scale energy storage in the form of pumped-storage power plants will result in huge costs without achieving climate goals. The economy will become less competitive and an economic will most likely come. This does not mean that the Polish energy sector should not be transformed, but the transformation path should result from the unique shape of the Polish energy mix on a European scale, the projected demand for energy and the available emission-free technologies, particularly nuclear power. During the transition period, the Polish power system should be based on modernized and more flexible units of the 200 megawatt class (hereinafter: MWe).

The purpose of this study is to determine the limiting degree of saturation of the Polish RES power system and to indicate the direction of evolution of the Polish energy mix allowing for an increase in the share of intermittent RES, while always maintaining appropriate proportions with other energy technologies.

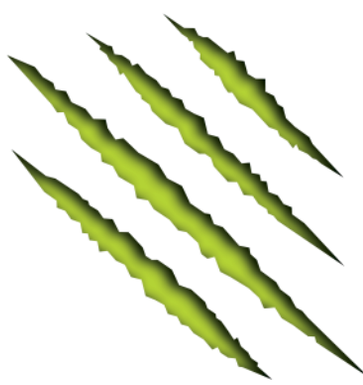
The analysis is based on a comparison of the actual costs of constructing power plants using different energy conversion technologies, in particular, the EROI (Energy Return on Investment) coefficient that allows for an assessment of the true efficiency of various energy technologies, regardless of the support systems that may distort their evaluation based on typical economic indicators.

06.1

ACTUAL COST OF VARIOUS TECHNOLOGIES THAT PRODUCE USABLE ENERGY

The capital, operational, as well as environmental costs of RES-based systems (particularly wind and solar power) are significant and are further multiplied by the need to construct large-scale energy storage facilities, backup power plants that replicate the installed capacity of RES on demand, and dedicated transmission networks.

The analysis of these expenses based on monetary values does not reflect the actual costs associated with particular technologies, as it is distorted by regulations, laws, and current policies. Real costs and profits can be estimated according to physical quantities, which by definition cannot be influenced by regulations or legal provisions. Such a physical quantity is useful energy, which under given environmental conditions can be used for any purpose, including the construction of an energy source, such as a wind or nuclear power plant. Essentially, usable energy, also known as exergy, is equal to electrical energy not subject to any restrictions in the processes of conversion to other forms of energy, or it is the product of multiplying the thermal energy by the efficiency of the Carnot cycle using the considered heat source.



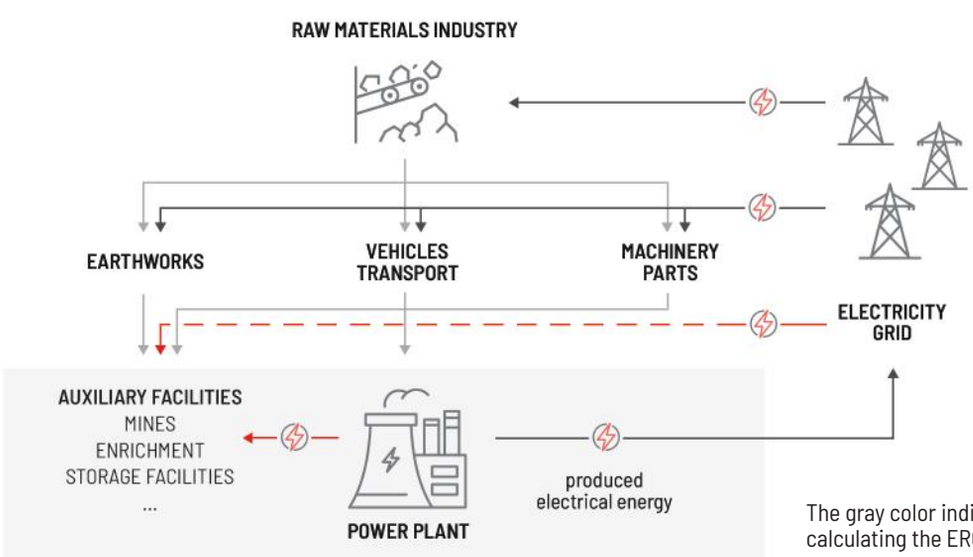
With the above in mind, the real costs and impact on the environment, economy, and the entire societies should be assessed through the lens of the EROI coefficient, which is defined as follows:

$$EROI = \frac{E_{out}}{E_{in}}$$

where:
E_{out} represents the useful energy (exergy) delivered by the generating unit (power plant) over its entire operational period,
E_{in} represents the total useful energy required to construct and operate the source that produces
E_{out} (including the cost of fuel extraction and other necessary minerals, the cost of processing these minerals, transportation, earthworks, machinery, fuel enrichment, storage, and other necessary energy inputs)[169].

Figure 1 presents a schematic of the system boundaries (in gray) for calculating E_{out} for the generating unit, taking into account the energy streams that must be supplied to the generating unit during its lifetime.

Figure 1. Schematic of the system boundaries for calculating Eout for the generating unit, taking into account the energy streams that must be supplied to the generating unit during its lifetime.



The gray color indicates the system boundaries for calculating the EROI for a typical power plant.

It matters whether the electrical energy (el. en.) for auxiliary facilities (e.g., coal mine) is drawn from the grid (dashed line) or directly from the power plant[170].

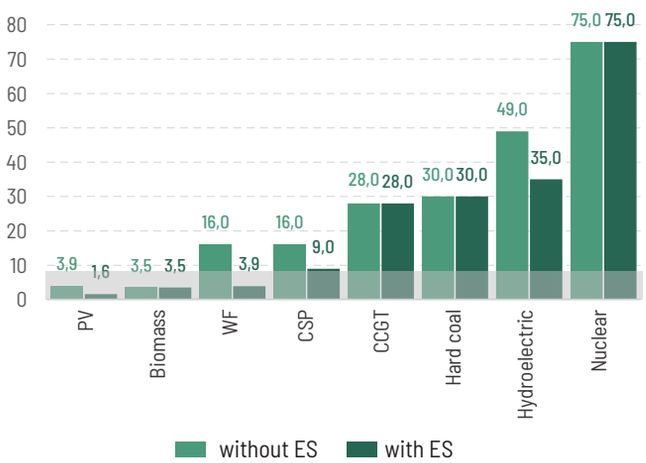
Source: own compilation based on D. Weißbach, G. Ruprecht, A. Huke, K. Czerski, S. Gottlieb, A. Hussein, op. cit.

169 *D. Weißbach, F. Herrmann, G. Ruprecht, A. Huke, K. Czerski, S. Gottlieb, A. Hussein, Energy intensities, EROIs (Energy Returned on Invested), for electric energy sources, "EPJ Web of Conferences" 2018, vol. 189, p. 16; D. Weißbach, G. Ruprecht, A. Huke, K. Czerski, S. Gottlieb, A. Hussein, Energy intensities, EROIs (Energy Returned on Invested), and energy payback times of electricity generating power plants, "Energy," 2013, vol. 52, pp. 210-221.*
170 *D. Weißbach, G. Ruprecht, A. Huke, K. Czerski, S. Gottlieb, A. Hussein, op. cit.*

The EROI values for individual power generation technologies, are presented in Figure 2. The results are considered for two variants – with and without energy storage. The gray area indicates the economic viability of energy technologies, which, depending on the methods adopted for its estimation, ranges from approximately EROI = 8[171] to EROI = 11[172]. Economic viability means the minimum EROI value that provides enough surplus primary energy in the system to guarantee positive economic growth.

The cited results indicate that the EROI values for all RES technologies, except for concentrated solar power (CSP) and hydroelectric power plants, are significantly below the threshold of economic viability. In this context, it means that an economic system based on these technologies will not be able to generate enough useful energy to expand and restore the energy sources after they are depreciated, resulting in a considerable increase in energy prices, energy poverty, and a significant economic crisis.

Figure2. EROI values for individual electricity generation technologies



Legenda: PV – photovoltaic panels, WF – onshore wind farms with high capacity factor, CSP = concentrated solar power, CCGT – combined cycle gas turbines, ES – energy storage

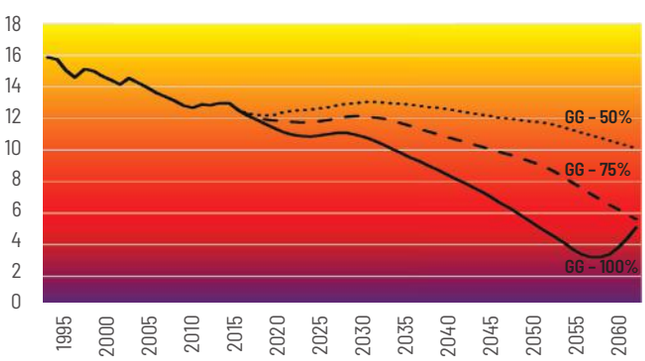
Source: own compilation based on D. Weißbach, F. Herrmann, G. Ruprecht, A. Huke, K. Czerski, S. Gottlieb, A. Hussein, op. cit.

The results shown in Figure 2 assume that the entire energy system is based on a single source electricity generation technology. This means that for systems using only RES technologies (marked as: PV – photovoltaic power plants, biomass, WF – onshore wind farms, CSP – concentrated solar power plants), the EROI values should be considered taking into account energy storage (ES), which is necessary for the operation of such a system (similarly to how coal, CCGT, and nuclear technologies account for the energy inputs related to fuel extraction and processing).

In the context of the results shown above, it is important to refer to the research presented in the paper *Dynamic Energy Return on Energy Investment* (EROI) and *material requirements in scenarios of global transition to renewable energies*[173]. The results therein indicate that a rapid transition to a 100% RES-based unstable electricity system, according to the Green Growth (GG) narrative by 2060, could reduce the EROI of the energy system from its current level of about 12 to a level of 3 by mid-century, after which the EROI would stabilize at 5. These values are well below the thresholds identified in the literature as required to sustain developed societies. Moreover, the cited studies have shown that a too rapid and intensive transition to RES could result in a significant rematerialization of the economy, which will increase the risks associated with the availability of certain minerals.

Figure 3 shows the change in EROI values over time for 3 scenarios: GG – 50%, GG – 75% and GG – 100%, which assume a share of intermittent RES of respectively 50%, 75% and 100% by 2060.

Figure 3. Change in EROI of the power system over time for GG – 50%, GG – 75% and GG – 100% scenarios along with risk level



The darker the color, the greater the risk of system failure.
The risk is inversely proportional to the EROI value of the system.

Source: own compilation based on I. Capellán-Pérez, C. de Castro, L.J.M. González, op. cit.

171 *Ibid.*
172 *F. Fizaine, V. Court, Energy expenditure, economic growth, and the minimum EROI of society, "Energy Policy" 2016, vol. 95, pp. 172-186.*
173 *I. Capellán-Pérez, C. de Castro, L.J.M. González, Dynamic Energy Return on Energy Investment (EROI) and material requirements in scenarios of global transition to renewable energies, "Energy Strategy Reviews" 2019, t. 26, 100399*

Summarizing the results shown in Figure 3, it can be observed that:

dla EROI > 15
there is no risk of economic system failure;

10 < EROI < 15
indicates a low risk of economic system failure;

5 < EROI < 10
indicates entry into a dangerous area for the economic system;

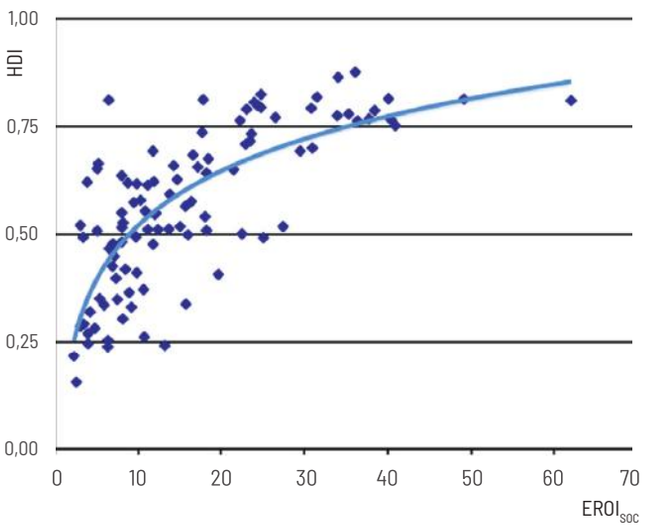
5 < EROI < 3
indicates entry into a very dangerous area for the economic system;,

3 > EROI
indicates failure of the economic system.

It is worth noting that by the middle of this century, even with the share of renewable energy in the electric power sector at around 50%, the system could enter what the literature describes as the "danger zone."

It should be added that the EROI value of the entire energy generation system has significant consequences for the well-being of society. Figure 4 shows the results of a study presented in *Energy, EROI and quality of life*[174], which shows the relationship between the quality of life of a society (expressed as HDI – Human Development Index) and the value of EROI determined for a given society/country ($EROI_{SOC}$). It should be noted that the value of $EROI_{SOC}$ is not the same as the value of EROI designated for individual generation technologies shown in Figures 2 and 3. Additionally, the studies discussed in the above paper[175] referred to a broader concept of "quality of life" rather than just HDI, and took into account a combination of such factors as the HDI, the share of underweight children, life expectancy, gender inequality (Gender Inequality Index), illiteracy, and access to drinking water.

Figure 4. Impact of society's EROI value (EROISOC) on quality of life as expressed in HDI



The individual points represent selected countries considered in the study.

Source: own compilation based on J.G. Lambert, C.A. Hall, S. Balogh, A. Gupta, M. Arnold, op. cit.

Summarizing the results presented in the paper *Energy, EROI and quality of life,* it should be added that in areas characterized by low $EROI_{SOC}$ values, small changes in this value lead to significant changes in the quality of life. Based on the discussed research[176], the following conclusions were drawn:

- **a large amount of high-quality energy positively affects the well-being of societies,**
- **$EROI_{SOC}$ < 25** (or less than 100 gigajoules [hereafter: GJ] of energy per person) **leads to a low quality of life,**
- **in the range 20 < $EROI_{SOC}$ < 30** (100 do 200 GJ of energy per person), **there is a threshold value of societal well-being,**
- **$EROI_{SOC}$ > 30** (over 200 GJ of energy per person) **does not further improve the quality of life.**

174 *J.G. Lambert, C.A. Hall, S. Balogh, A. Gupta, M. Arnold, Energy, EROI and quality of life, "Energy Policy" 2014, vol. 64, pp. 153-167.*
175 *Ibid.*
176 *Ibid.*

06.2

THE CAPACITY FACTOR OF RES AND THE NECESSITY OF OVERSIZING

Existing wind farms are characterized by significant variability in the average annual capacity utilization factor, which expresses the ratio of the actual annual electricity generation by a wind turbine P_{year} to the maximum theoretical energy potentially generated based on the rated power of the turbine P_z:

$$C_F = \frac{P_{rok}}{P_z \cdot 365 \cdot 24}$$

For European wind farms, this ratio averages 21% for onshore farms and 32% for offshore farms[177]. Specific examples include:

- Margonin onshore wind farm with a capacity factor of 26%;
- North Hoyle offshore wind farm, for which C_F is 25%;
- Scroby Sands offshore wind farm, for which C_F is 35%[178].

It should be noted that the actual capacity utilization factor for entire wind farms is lower than for individual turbines, as there are additional losses in wind farms that are strongly associated with the interaction of wind turbines with each other, contamination, and erosion. If a wind farm is poorly designed, losses can reach up to 23% of energy, whereas if it is properly designed, losses are around 12.5%[179].

The consequence of this is that wind farms perform worse compared to manufacturers' assurances, who provide characteristics of individual turbines. The capacity factors presented by them are generally overestimated by 10% to 30%. The actual average capacity factor of wind farms in Europe from 2004 to 2009 was just under 21%, which reduced expected profits by more than 60% and resulted in a 40% lower than expected reduction in CO_2 emissions[180]. One of the key reasons for this situation is the underestimation of the deterioration in the aerodynamic properties of turbine blades, caused by changes in their roughness, erosion, contamination with foreign bodies, icing, peeling of the coating, and also the wind speed deficit in the aerodynamic wake behind the wind turbines[181]. Example studies indicating the significant and difficult-to-predict impact of contamination on the performance of wind turbines are described in the paper *Aerodynamics. Insects can halve wind turbine power*[182] and are presented in Figure 5.

177 *T. Linnemann, G. Vallana, Wind energy in Germany and Europe. Pt. 2. status, potentials and challenges for baseload application: European situation in 2017, " atw - Internationale Zeitschrift für Kernenergie" 2019, vol. 64 (3), pp. 141-148.*

178 *G. Gawrońska, K. Gawroński, K. Król, K. Gajecka, Wind farms in Poland – Legal and location conditions. The case of Margonin wind farm, "Geomatics, Landmanagement and Landscape" 2019, no. 3, pp. 25-39; Department of Trade and Industry, Capital Grants Scheme for North Hoyle Offshore Wind Farm. Technical Report, London 2006; Department of Trade and Industry, Capital Grants Scheme for Scroby Sands Offshore Wind Farm. Technical Report, London 2006; Z. Malecha, Risks for a Successful Transition to a Net-Zero Emissions Energy System, "Energies" 2022, no. 15, 4071.*

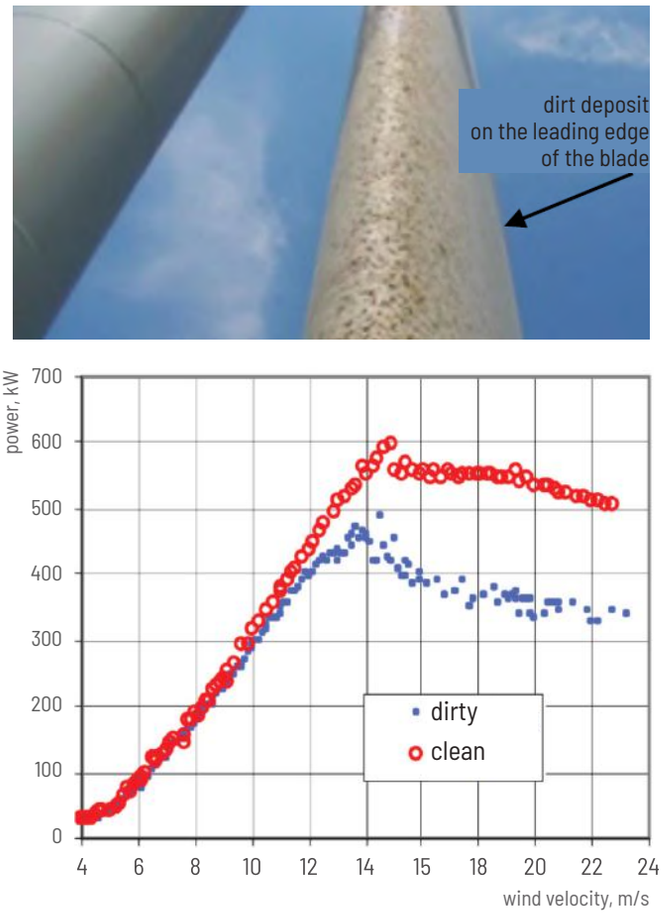
179 *K.S. Hansen, R.J. Barthelmie, L.E. Jensen, A. Sommer, The impact of turbulence intensity and atmospheric stability on power deficits due to wind turbine wakes at Horns Rev wind farm, "Wind Energy" 2012, vol. 15, pp. 183-196; J. Dahlberg, S. Thor, Power Performance and Wake Effects in the Closely Spaced Lillgrund Offshore Wind Farm, Proceedings of the European Offshore Wind 2009 Conference and Exhibition, Stockholm, Sweden, September 14-16, 2009; T. Sørensen, M.L. Thøgersen, Recalibrating Wind Turbine Wake Model Parameters – Validating the Wake Model Performance for Large Offshore Wind Farms, Proceedings of the European Wind Energy Conference and Exhibition, Athens, Greece, 27 February-2 March 2006.*

180 *N. Boccard, Capacity factor of wind power realized values vs. estimates, "Energy Policy" 2009, vol. 37, pp. 2679-2688.*

181 *E. White, D. Kutz, J. Freels, J. Monschke, R. Grife, Y. Sun, D. Chao, Leading-Edge Roughness Effects on 63(3)-418 Airfoil Performance, in proceeding of the 49th AIAA Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition, Orlando, FL, USA, January 4-7, 2011; L. Gao, Y. Liu, W. Zhou, H. Hu, An experimental study on the aerodynamic performance degradation of a wind turbine blade model induced by ice accretion process, "Renewable Energy" 2019, vol. 133, pp. 663-675; L. Gao, T. Tao, Y. Liu, H. Hu, A field study of ice accretion and its effects on the power production of utility-scale wind turbines, "Renewable Energy" 2021, vol. 167, pp. 917-928; G. Corten, H. Veldkamp, Aerodynamics. Insects can halve wind turbine power, "Nature" 2011, vol. 412, 6842, pp. 41-42; Z. Malecha, K. Sierpowski, Numerical studies of the effect of erosion and blade fouling on wind turbine operation, "Instal" 2023, no. 7-8.*

182 *G. Corten, H. Veldkamp, op. cit.*

Figure 5. Impact of dirt deposits on wind turbine operation



At the top : Deposit in the form of dead insects on the leading edge of the blade.

At the bottom: A comparison of observed changes in power production with the results of an experiment confirming the significant impact of deposits on the leading edge of the blade on power production by wind turbines;
results from: G. Corten, H. Veldkamp, op. cit.

Source: own compilation based on: W. Wang, Y. Xue, C. He, Y. Zhao, Review of the typical damage and damage-detection methods of large wind turbine blades, "Energies" 2022, no. 15, 5672; G. Corten, H. Veldkamp, op. cit.

From the above facts, it is necessary to significantly oversize wind farms in order to achieve the planned annual electricity production. **For example, to produce energy comparable to that generated by a continuously operating conventional power plant (coal, gas, or nuclear) within a year, it is necessary to ensure approximately 4-5 times or 2-3 times higher installed capacity for onshore and offshore wind farms, respectively.** Photovoltaic farms, for which the CF in Poland is 10%, **must be oversized more than 10 times.**

The above clearly indicates that wind and solar energy technologies are very unstable and inefficient energy production sources. The energy they produce is fully determined by weather conditions and other random events (contamination, icing, etc.). They are characterized by high uncertainty and significantly depend on the specific location. Due to these three main drawbacks, their integration into the power grid requires a significant number of additional, stable power sources that must be characterized by a short start-up time and a large number of large-scale energy storage systems[183].

Wind measurements have shown that there are even 10-day periods over relatively large areas without sufficient wind speed to start any of the wind farms. Such periods regularly occur throughout Europe and are characterized by marginal electricity production from wind farms[184]. This confirms the high demand for fast-starting and flexible generation sources that can replace non-operating wind farms when needed (demand for flexibility and backup units)[185].

Data collected in a review paper by Hendrik Kondziella and Thomas Bruckner[186] indicate **that the required power reserve, which must be additionally available, should allow for the production of 20% to 40% of the annual electricity demand depending on the size of the grid and the share of intermittent renewable energy sources (RES).** However, the analysis of electricity production by European wind farms indicates that **intermittent RES practically require a 100% reserve in units ready for quick activation, duplicating the installed RES capacities**[187].

It should be emphasized that in practice the only reliable technology that meets the above requirements are gas power plants, which are characterized by high operational flexibility, but unfortunately at the cost of low efficiency not exceeding 35%[188], combined cycle power plants, or coal units adapted for flexible operation. In Poland, such flexibility of coal units

183 *D. Weißbach, F. Herrmann, G. Ruprecht, A. Huke, K. Czerski, S. Gottlieb, and A. Hussein, op. cit.; Z. Malecha, Risks for a Successful Transition..., op. cit.*

184 *T. Linnemann, G. Vallana, op. cit.; W. Jędral, Wytwarzanie i magazynowanie wielkich ilości energii elektrycznej w transformacji energetycznej do 2050 r. [Generation and storage of large amounts of electricity in the energy transition to 2050), "Energetyka Cieplna i Zawodowa" 2022, no. 5 (816), pp. 44-50 [Polish only].*

185 *H. Kondziella, T. Bruckner, Flexibility requirements of renewable energy based electricity systems – a review of research results and methodologies, "Renewable and Sustainable Energy Reviews" 2016, vol. 53, pp. 10-22; M. Guezgouz, J. Jurasz, B. Bekkouche, T. Ma, M.S. Javed, A. Kies, Optimal hybrid pumped hydro-battery storage scheme for off-grid renewable energy systems, "Energy Conversion and Management" 2019, vol. 199, 112046.*

186 *H. Kondziella, T. Bruckner, op. cit.*

187 *T. Linnemann, G. Vallana, op. cit.*

188 *J. Milewski, K. Badyda, A. Miller, Gas Turbines in Unconventional Applications, in: Efficiency, performance and robustness of gas turbines, ed. K. Volkov, 2012.*

is possible for popular 200 MWe class units as a result of the implementation of the Bloki 200+ [Units 200+] program. This program was funded by the National Center for Research and Development [Narodowe Centrum Badań i Rozwoju (NCBiR)] and led to the development of several technologies to increase the flexibility of the 200 MWe class coal-fired power generation units installed in Poland. For reasons difficult to understand, the electricity generation companies were not interested in the program's results, as they were counting on the establishment of the National Energy Security Agency [Narodowa Agencja Bezpieczeństwa Energetycznego (NABE)] to relieve them of coal assets.

It should be noted that the combination of intermittent renewable energy technologies (RES) and gas power plants as the primary backup units can create a very dangerous precedent. On one hand, having a large amount of generating capacity in RES should theoretically lead to energy independence, but on the other hand, the more intermittent RES there are, the greater the demand for natural gas, which must be imported from outside the EU.

The necessity of building large-scale energy storage is directly related to the previously presented principle that intermittent renewable energy sources (RES) must be significantly oversized. There are periods when they utilize their full installed capacity and produce significant surpluses, far exceeding the instantaneous demand for electricity. For example, assuming that the average demand for generated power is 1 gigawatt (GW) (about 5% of the instantaneous demand for Poland) and the necessarily oversized, intermittent RES operate at full installed capacity for 1 hour, then:

- onshore wind farms will produce approx. 3-4 gigawatt hours (hereafter: GWh) of surplus electricity;
- photovoltaic farms will produce about 9 GWh of surplus electricity;
- offshore wind farms will produce about 2-3 GWh of surplus electricity.

It should be added that in practice such periods can last many hours, resulting in significantly larger surpluses of electricity than indicated above.

Energy storage systems, besides needing to have high charging and discharging power and sufficiently large capacity, must also ensure the ability to store energy for long periods. In theory, this can be provided by large-scale battery storage or pumped-storage power plants; in practice, only by pumped-storage plants, as there is currently no economically acceptable technology for large-scale battery storage.

Cogeneration and trigeneration heating systems can also serve as energy storage. Thermal energy storage is technically mastered, and it is possible to change the operational paradigm of cogeneration systems, particularly gas-powered ones. Instead of delivering heat on demand, assuming that electricity is always a marketable by-product, cogeneration systems can start delivering electricity on demand, such as to supplement RES capacity in the absence of sun or wind. The heat generated in cogeneration can be stored for several hours and can also be converted into cooling with parameters suitable for use in air conditioning systems[189].

POTENTIAL OF PUMPED-STORAGE POWER PLANTS IN POLAND

Currently, the only large-scale energy storage systems with the dynamics to work with wind and solar power plants are pumped-storage power plants (PSPs). Poland currently operates 6 such power plants with a total capacity of 1760 MWe. The construction of the Młoty pumped-storage power plant with a capacity of 750 MWe is planned. In 2022, the National Fund for Environmental Protection and Water Management (Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej [NFOŚiGW],) estimated the development potential of this type of power plant in Poland at about 6.5 gigawatts of electric power (GWe). After utilizing the full potential of new pumped-storage power plants in Poland, the total installed capacity in such power plants may amount to approximately 7.5 GWe, and the total capacity of these energy storage systems could reach up to 20 GWh.

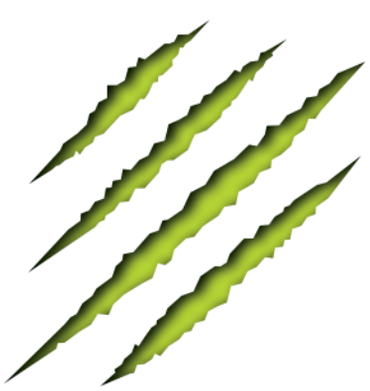
189 *M. Chorowski, P. Pyrka, Modelling and experimental investigation of an adsorption chiller using low-temperature heat from cogeneration, "Energy" 2015, vol. 92, part 2, pp. 221-229.*

Table 1. Demand for energy storage capacity depending on the share of intermittent RES in the power system, where t_{max}^{OZE} denotes the operating time of the RES at rated power

Electricity produced by RES	Installed RES capacity	Power installed at the base	Energy storage capacity for t_{max}^{OZE} = 1h	Energy storage capacity for t_{max}^{OZE} = 2h	Energy storage capacity for t_{max}^{OZE} = 3h
%	GW	GW	GWh	GWh	GWh
0.0	0.0	20.0	0.0	0.0	0.0
10.0	7.3	18.0	0.0	0.0	0.0
15.0	**11.0**	**17.0**	1.0	2.0	3.5
20.0	14.7	16.0	4.7	9.4	14.6
30.0	**22.0**	**14.0**	12.0	24.1	36.9
40.0	29.4	12.0	**19.4**	**38.8**	59.3
50.0	36.7	10.0	**26.7**	**53.5**	81.6

Source: own study.

Table 1 shows the energy storage capacity requirements depending on the percentage share of renewable energy sources (RES) in electricity generation, assuming that the capacity factor of RES averages 0.27 (assumed: 1/3 photovoltaic panels, 1/3 onshore wind farms, 1/3 offshore wind farms). Additionally, it is assumed that 20 GWe of power should be continuously available in the Polish power system. The risk associated with an excessive share of RES in the power system is also considered, i.e. it is assumed that the installed capacity at the base must account for at least 50% of electricity production. Under these assumptions, it can be observed that the maximum amount of electricity generated by RES cannot exceed 41%, 28%, and 23% for RES operating at rated power for 1, 2, and 3 hours, respectively, because the maximum possible energy storage capacity in the form of pumped-storage power plants is 20 GWh. It should be noted that if the demand for electricity increases, the permissible share of intermittent RES will be correspondingly lower. In contrast, with a bigger share of sources with higher capacity factors (e.g., more offshore wind farms), the permissible share of RES in the system will be correspondingly higher.

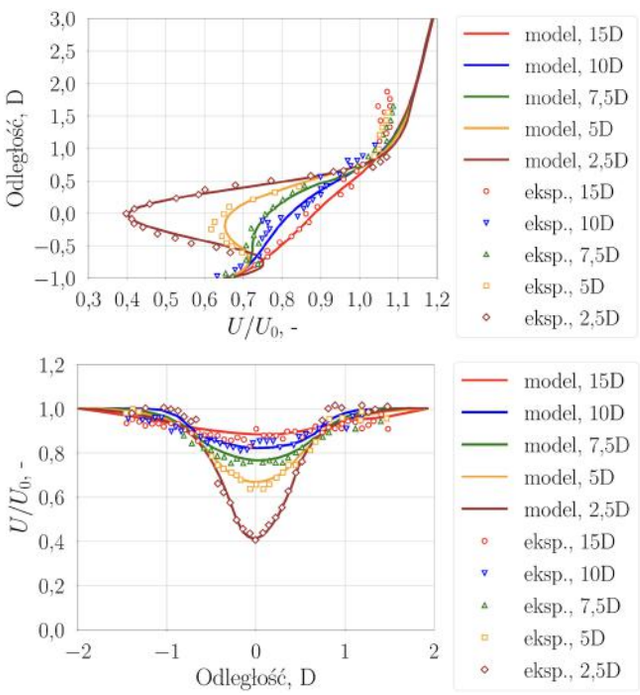


06.4

SPACE REQUIREMENTS (ENERGY DENSITY), ENVIRONMENTAL AND SOCIAL WELL-BEING

Wind and photovoltaic farms require very large areas. This is related to the very low energy density of these generating units and, in the case of wind farms, the necessity of ensuring significant distances between individual turbines. Figure 6 collects the results of experimental and modelling studies demonstrating the wind speed deficit behind a wind turbine and the distance needed to recover this deficit.

Figure 6. Results of experimental and modelling studies showing the wind speed deficit behind a wind turbine and the distance needed to recover this deficit.



At the top: Wind speed deficit U/U_0 in the wake at a distance of (2.5; 5; 7.5; 10; 15)D behind the wind turbine. The vertical axis indicates the distance from the center of the rotor (value 0.0) i n the vertical direction.

At the bottom: Wind speed deficit U/U_0 in the wake at a distance of (2.5; 5; 7.5; 10; 15)D behind the wind turbine. The horizontal axis indicates the distance from the center of the rotor (value 0.0) in the horizontal direction. Numerical modeling results and experimental data based on: D. Smith, G.J. Taylor, Further analysis of turbine wake development and interaction data, Proceedings of the 13th British Wind Energy Association Conference, Swansea 1991, pp. 325-331.s. 325–331.

Source: own study.

When analyzing the results from Figure 6, it is evident that at a distance of 10 diameters (10D) from the rotor of the wind turbine, the wind speed deficit is around 20%. This means that a turbine located 10D behind another turbine will have access to 1.56 times less wind kinetic energy, and consequently, it will produce proportionally less electricity. In locations where there is no prevailing wind direction, wind turbines should be spaced 10D apart in every direction to ensure minimal losses in electricity production. However, if a location has a prevailing wind direction, turbines can be placed approximately 5-7D apart perpendicular to the wind direction, but still 10D in line with the prevailing wind direction. **It should be noted that modern wind turbines have diameters significantly exceeding 100 meters, meaning that the distance between turbines can significantly exceed 1 kilometer**. Table 2 presents examples of wind farms, average distances between turbines, and the associated losses in electricity production.

Table 2. Losses of offshore wind farms (WF), characterized by significantly different distances between individual turbines

Wind farm	S_w	S_p	Loss	Turbine
Lillgrund, ***offshore***	4.4D	3.3D	23.0%	SWT-2.3-93; 2.3 megawatts (MW)
Horns Rev, ***offshore***	10D	7D	12.4%	Vestas V80; 2 MW
Margonin, ***onshore***	n.a.	n.a.	20.0%	Gamesa G90; 2 MW

Legenda: S_w – distance between turbines in downwind direction; S_p – distance traverse to wind direction

Source: own compilation based on: J. Dahlberg, S. Thor, op. cit. pp. 14-16; K.S. Hansen, R.J. Barthelmie, L.E. Jensen, A. Sommer, op. cit. pp. 183-196; T. Sørensen, M.L. Thøgersen, op. cit.; Z.M. Malecha, Economic analysis and capacity utilization for an offshore wind farm in the Baltic Sea, "Instal" 2023, no. 1, pp. 4-11.

Table 3 presents direct and indirect land requirements for electricity production from coal, natural gas, nuclear, hydro, wind, and solar energy in the United States. For each source, the approximate land used for feedstock production, for plant construction, for transportation and transmission, and for waste storage is given. The results consider both one-time and ongoing land use requirements. Land needed for power plant construction refers to the area occupied by buildings and the required open space around the power plant. It can be seen that gas, coal, and nuclear power plants have the smallest land requirements (physical footprint) of 0.14; 0.28 and 0.36 hectares per installed MW (ha/MW), respectively. Solar and wind power plants, on the other hand, require significantly more land, 24.28 and 3.28 hectares/MW, respectively.

189 *L. Stevens, B. Anderson, C. Cowan, K. Colton, D. Johnson, The footprint of energy: land use of U.S. electricity production, rap. tech., June 2017.*

Table 3. Comparison of land requirements for different types of power plants expressed in ha/MW (1 ha = 0.01 km²)

POWER PLANT				
Coal	Gas	Nuclear	Wind farm	PV
0.28	0.14	0.36	24.28	3.28

Source: own compilation based on L. Stevens, B. Anderson, C. Cowan, K. Colton, D. Johnson, op. cit.

Table 4. Land requirements for power plants considering only construction requirements and taking into account the capacity factor C_F

Power plant	ha/MW	C_F	ha/MW/C_F	Relative to nuclear	km²/GW
Coal	0.28	1.00	0.28	0.80	8
Gas	0.14	1.00	0.14	0.40	4
Nuclear	0.36	1.00	0.36	1.00	10
Wind onshore	24.28	0.25	97.12	269.80	2,698
Wind offshore	24.28	0.45	53.96	149.90	1,499
PV	3.28	0.11	29.8	82.80	828

Source: own study.

Table 5. Corresponding wind and solar farm capacity needed to cover 60 GW capacity installed in stable sources and land requirements

PV to WF ratio	FW GW	PV GW	FW+PV GW	Land km²	Rel. to PL %
0.0	200	0	200	50,000	16.0
0.1	193	19	212	48,810	15.6
0.5	169	85	254	44,789	14.4
1.0	146	146	293	40,976	13.1
2.0	115	231	346	35,769	11.5
5.0	71	353	424	28,235	9.0

Legend:
WF – wind farms; PV – solar farms;
Land –requirements for space;
Rel. to PL – area in relation to the area of Poland.

Source: own study.

Table 4 presents a comparison of the land requirements for the considered types of power plants, taking into account only construction requirements and the capacity factor (CF). It is assumed that CF = 1 for power plants whose operation does not depend on weather conditions (in reality, the values are slightly lower than one, but this does not affect the presented estimation). It should be noted that the land requirements for onshore and offshore wind farms are hundreds of times higher than for conventional and nuclear power plants.

Table 5 presents the land requirements, assuming that the entire installed capacity in Poland at the level of 60 GW (as of 2022[191]) would be provided by onshore wind farms and photovoltaic farms (assuming CF = 0.3 for wind farms and CF = 0.11 for photovoltaic farms).

It should be noted that the results presented in Table 5 do not account for additional losses related to operation and the negative impact of wind turbines on each other. In reality, an even greater demand for space should be expected.

In the context of large-scale wind farms, it is also important to mention their impact on the environment and weather. Studies have shown that meeting the electricity demand for the United States of America with onshore wind energy would raise the temperature of the areas occupied by wind farms by more than 0.5°C, and the surface of the continental part of the country by about 0.24°C[192].

This is related to the creation of a turbulent wake behind wind turbines and the distribution of heat by increasing mixing intensity in the boundary layer (the layer of air adjacent to the ground). It should be noted that the warming of areas where wind farms are located is a measurable fact and has been reported in many places[193]. The *study Matching demand with supply at low cost in 139 countries among 20 world regions with 100% intermittent wind, water, and sunlight (WWS) for all purposes* also highlights that wind turbines reduce wind speed, thus decreasing surface evaporation in the aerodynamic shadow created behind a wind farm[194]. This contributes to surface warming since evaporation is an energy-absorbing

191 *B. Derski, Rekordowa produkcja energii elektrycznej w Polsce w 2022 [Record Electricity Production in Poland in 2022], https://wysokienapiecie.pl/81733-produkcja-energii-elektrycznej-w-polsce/, accessed 17.06.2024 [Polish only].*

192 *M. Lee, D. Keith, Climatic impacts of wind power, "Joule" 2018, no. 2, p. 12.*

193 *R.A. Harris, L. Zhou, G. Xia, Satellite observations of wind farm impacts on nocturnal land surface temperature in Iowa, "Remote Sensing" 2014, vol. 6 (12), pp. 12234-12246; L.M. Slawsky, L. Zhou, S.B. Roy, G. Xia, M. Vuille, R.A. Harris, Observed thermal impacts of wind farms over northern Illinois, "Sensors" 2015, vol. 15 (7), pp. 14981-15005; C.M. Smith, R.J. Barthelmie, S.C. Pryor, In situ observations of the influence of a large onshore wind farm on near-surface temperature, turbulence intensity and wind speed profiles, "Environmental Research Letters" 2013, vol. 8, no. 3, 034006; L. Zhou, Y. Tian, S. Baidya Roy, C.D. Thorncroft, L. Bosart, Y. Hu, Impacts of wind farms on land surface temperature, "Nature Climate Change" 2012, vol. 2, pp. 539-543; L. Zhou, Y. Tian, S. Baidya Roy, Y. Dai, H. Chen, Diurnal and seasonal variations of wind farm impacts on land surface temperature over western Texas, "Nature Climate Change" 2013, vol. 41, pp. 307-326.*

194 *M. Jacobson, M. Delucchi, M. Cameron, B. Mathiesen, Matching demand with supply at low cost in 139 countries among 20 world regions with 100% intermittent wind, water, and sunlight (WWS) for all purposes, "Renewable Energy" 2018, vol. 123, pp. 236-248*

process. Simultaneously, water vapor condensation in the atmosphere is reduced, which cools the air on a larger scale (because condensation is an energy-releasing process).

06.5

ESTIMATION OF INVESTMENT COSTS OF GENERATION SYSTEMS BASED ON INTERMITTENT RES

According to estimates by the International Renewable Energy Agency (IRENA)[195] for the year 2020, and other studies[196], the investment and operational costs of individual RES and energy storage systems were as presented in Table 6.

If one defines the equivalent installed capacity (EP_z) as the installed capacity that a RES installation must have in order to produce the same amount of electricity in a year as a conventional power plant (e.g., nuclear), based on the above data, it can be shown that:

- an onshore wind farm must have an installed capacity approximately 3–4 times greater than a nuclear power plant, resulting in CAPEX costs of 4,065 to 5,420 USD/kW;
- an offshore wind farm must have an installed capacity approximately 2–3 times greater than a nuclear power plant, resulting in CAPEX costs of 6,370 to 9,555 USD/kW;

Table 6. Investment and operational costs of individual RES and energy storage technologies

PHOTOVOLTAIC PANELS (PV) AND WIND TURBINES (WT)	VALUE
CAPEX-PV (US$ kW^{-1})	883
Fix O&M-PV (US$ $kW\text{-}yr_{-1}$)	15
Lifetime (years)	25
CAPEX-WT (US$ kW^{-1})	1355 *onshore* 3185 *offshore*
Fix O&M-WT (US$ kW-yr-1)	20–40 *onshore* 70–130 *offshore*
Lifetime (years)	20
BATTERY STORAGE	**VALUE**
Capex (US$ kWh^{-1})	246
Fix O&M (US$ $kWh\text{-}yr^{-1}$)	11
Lifetime (years)	10
Round trip efficiency (%)	90
PUMPED STORAGE	**VALUE**
Reservoir cost (US$ kWh^{-1})	83
Cost of pumps and turbines (US$ kW^{-1})	1612
Fix O&M (US$ $kWh\text{-}yr^{-1}$)	20
Lifetime (years)	60
Round trip efficiency (%)	80
INWERTER	
Capex (US$ kW^{-1})	336
Lifetime (years)	20

Source: own compilation based on International Renewable Energy Agency, op. cit.; O.J. Guerra, J. Eichman, P. Denholm, op. cit.; F.A. Canales, J.K. Jurasz, M. Guezgouz, A. Beluco, as cited; M.S. Javed, T. Ma, J. Jurasz, J. Mikulik, as cited; G. Bekele, G. Tadesse, as cited; M.S. Javed, A. Song, T. Ma, as cited; T. Ma, H. Yang, L. Lu, as cited; D.M. Gioutsos, K. Blok, L. van Velzen, S. Moorman, as cited; M.S. Javed, T. Ma, N. Mousavi, S. Ahmed, H. Lund, H. Yang, Y. Dai, op. cit.; C.A. Hunter, M.M. Penev, E.P. Reznicek, J. Eichman, N. Rustagi, S.F. Baldwin, op. cit.; P. Marocco, D. Ferrero, E. Martelli, M. Santarelli, A. Lanzini, op. cit.; J.A. Dowling, K.Z. Rinaldi, T.H. Ruggles, S.J. Davis, M. Yuan, F. Tong, N.S. Lewis, K. Caldeira, op. cit.

195 *International Renewable Energy Agency, Renewable Power Generation Costs in 2020, Abu Dhabi 2021.*

196 *O.J. Guerra, J. Eichman, P. Denholm, Optimal energy storage portfolio for high and ultrahigh carbon-free and renewable power systems, "Energy & Environmental Science" 2021, vol. 14 (10), pp. 5132-5146; F.A. Canales, J.K. Jurasz, M. Guezgouz, A. Beluco, Cost-reliability analysis of hybrid pumped-battery storage for solar and wind energy integration in an island community, "Sustainable Energy Technologies and Assessments" 2021, vol. 44, 101062; M.S. Javed, T. Ma, J. Jurasz, J. Mikulik, A hybrid method for scenario-based techno-economic-environmental analysis of off-grid renewable energy systems, "Renewable and Sustainable Energy Reviews" 2021, vol. 139, 110725; M. Guezgouz, J. Jurasz, B. Bekkouche, T. Ma, M.S. Javed, A. Kies, op. cit.; G. Bekele, G. Tadesse, Feasibility study of small Hydro/PV/Wind hybrid system for off-grid rural electrification in Ethiopia, "Applied Energy" 2012, vol. 97, pp. 5-15; M.S. Javed, A. Song, T. Ma, Techno-economic assessment of a stand-alone hybrid solar-wind-battery system for a remote island using genetic algorithm, "Energy" 2019, vol. 176, pp. 704-717; T. Ma, H. Yang, L. Lu, Study on stand-alone power supply options for an isolated community, "International Journal of Electrical Power & Energy Systems" 2015, vol. 65, pp. 1-11; D.M. Gioutsos, K. Blok, L. van Velzen, S. Moorman, Cost-optimal electricity systems with increasing renewable energy penetration for islands across the globe, "Applied Energy" 2018, vol. 226, pp. 437-449; M.S. Javed, T. Ma, N. Mousavi, S. Ahmed, H. Lund, H. Yang, Y. Dai, Quantifying techno-economic indicators' impact on isolated renewable energy systems, "iScience" 2021, vol. 24, 102730; C.A. Hunter, M.M. Penev, E.P. Reznicek, J. Eichman, N. Rustagi, S.F. Baldwin, Techno-economic analysis of long-duration energy storage and flexible power generation technologies to support high-variable renewable energy grids, "Joule" 2021, no. 5, 2077-2101; P. Marocco, D. Ferrero, E. Martelli, M. Santarelli, A. Lanzini, An MILP approach for the optimal design of renewable battery-hydrogen energy systems for off-grid insular communities, "Energy Conversion and Management" 2021, vol. 245, 114564; J.A. Dowling, K.Z. Rinaldi, T.H. Ruggles, S.J. Davis, M. Yuan, F. Tong, N.S. Lewis, K. Caldeira, Role of Long-Duration Energy Storage in Variable Renewable Electricity Systems, "Joule" 2020, no. 4, pp. 1907-1928.*

- a solar farm, considering inverters, must have an installed capacity approximately 10 times greater than a nuclear power plant, resulting in CAPEX costs of 12,190 USD/kW.

If only the investment costs are compared, it is evident that they are significantly higher than the investment costs of completed nuclear power plants (see Figure 7).

Due to the unpredictable and unstable operation of the considered RES, especially the lack of sunlight and multi-day periods without sufficient wind speed, it is necessary to cover 100% of the electricity demand during such periods with conventional power plants. These backup generation units must have short start-up times and significant operational flexibility. Such technologies include gas-steam power plants, whose investment costs amount to approximately 1,000 USD/kW[197]. This amount should be considered an integral part of the investment costs associated with the considered RES technologies and added to the above-mentioned amounts.

For a comprehensive estimation and comparison of the investment costs of various generating units, their lifespan must also be considered. It is worth noting that the lifespan of the considered RES does not exceed 20 years (in the case of solar farms, the lifespan of inverters must also be considered), while the lifespan of conventional technologies is significantly longer. For example, the lifespan of currently built nuclear power plants is over 60 years. This means that to ensure the same amount of generated electricity, it would be necessary to build three times as many RES units, taking into account the equivalent generating capacity.

For a comprehensive estimation and comparison of the investment costs of various RES generating units, the need for storage must also be considered, as unstable units cannot meet the requirements of energy systems without storage (similarly to how conventional power plants cannot operate without mines). As stated above, assuming the existence of flexible and stable backup units, the need for storage is related to the occurrence of temporary overproduction of electricity by RES, which can amount to several hours of operation at the maximum capacity of the RES system (3 hours was assumed). Small battery storage systems installed with prosumer installations (with capacities around 10 kilowatt-hours [kWh]) are used locally, increase prosumers' self-consumption, and have no significant impact on the storage capacity at the level of the entire power system.

Table 7. Investment costs of intermittent RES, expressed in USD/kW, taking into account the capacity factor for each technology. Lifespan in relation to conventional power plants, assuming a 60-year lifespan.

Generating unit	Generating unit alone	+ back-up power plants	+ PSP / energy storage units	Considering RES lifespan
Onshore wind farm	4065–5420	5065–6420	7258–8862	15 388–19 702
Offshore wind farm	6370–9555	7370–10555	9314–12748	22 054–31 858
Solar farm	12 190	13 190	17 126	41 506

Source: own study.

Table 7 compiles and compares the investment costs of the various RES technologies discussed above, taking into account backup power plants, lifespan, and energy storage.

It should be noted that the investment costs of intermittent RES are significantly higher (even several times, considering the necessary additional infrastructure) than the costs incurred for the construction of new nuclear power plants shown in Figures 7 and 8[198].

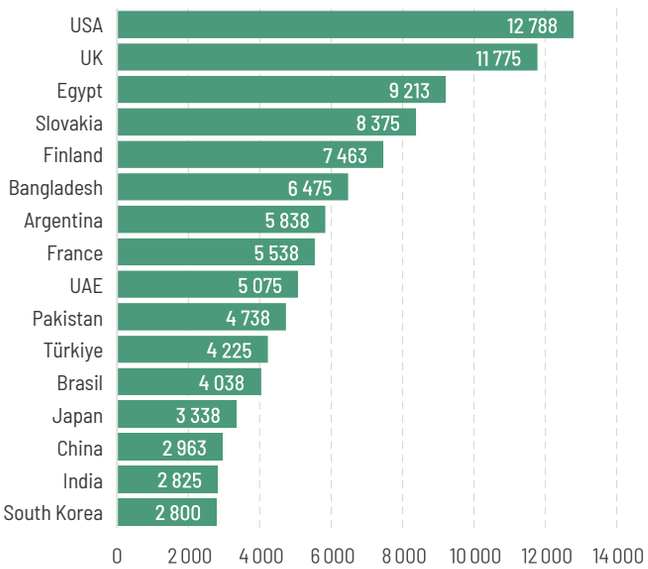
In the context of the above cost analysis, it should be added that the operational and maintenance costs of solar power plants and onshore wind farms are comparable to those of nuclear power plants, while the maintenance costs of offshore wind farms are comparable to those of nuclear power plants, along with fuel costs[199].

197 *D. Morawiec, Jednostkowy koszt wytwarzania energii elektrycznej (LCOE) jako wskaźnik porównawczy kosztów produkcji różnych źródeł [Unit cost of electricity generation (LCOE) as a comparative indicator of production costs of different sources], "Energetyka" 2019, no. 2 (776), pp. 71-76.*

198 *S. Dumitriu, B. Hopkinson, Notes on Growth. Infrastructure Costs: Nuclear Edition, https://www.samdumitriu.com/p/infrastructure-costs-nuclear-edition, accessed 16.05.2024; World Nuclear Association, https://world-nuclear.org/, accessed 16.05.2024; International Atomic Energy Agency, https://pris.iaea.org/PRIS/home.aspx, accessed 16.05.2024.*

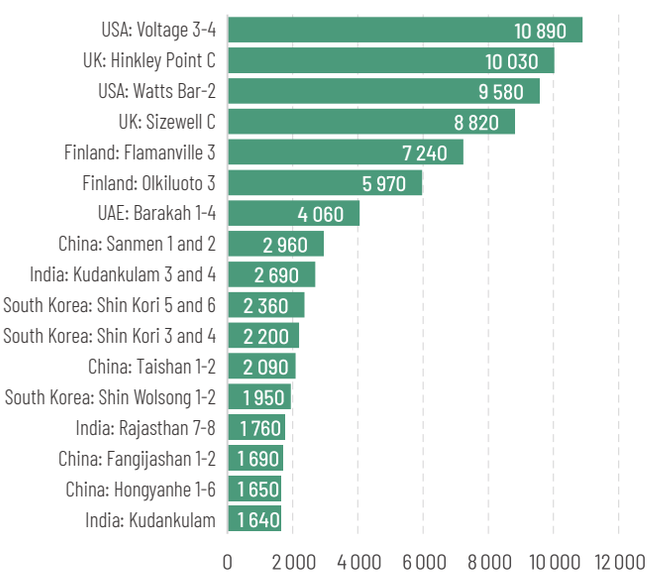
199 *D. Morawiec, op. cit.*

Figure 7. Porównanie kosztów budowy elektrowni jądrowych. Średni koszt budowy (skorygowany o inflację) w USD za kW mocy zainstalowanej dla elektrowni zbudowanych od 2000 r.



Source: own compilation based on: S. Dumitriu, B. Hopkinson, op. cit.; World Nuclear Association, op. cit.; International Atomic Energy Agency, op. cit.

Figure 8. Comparison of nuclear power plant costs. Average construction cost (adjusted for inflation) in USD per kW of installed capacity for selected nuclear power plants



Source: own compilation based on: S. Dumitriu, B. Hopkinson, op. cit.; World Nuclear Association, op. cit.; International Atomic Energy Agency, op. cit.

In addition, it should be emphasized that the construction time for nuclear power plants does not have to be long, and according to data on already existing plants of this type, as presented in Table 8, it should not exceed 15 years. The current delays in the construction of new nuclear power plants resulted from changing regulations, especially after the Fukushima disaster in 2011. Stricter regulations led to increased costs, investment delays, and a loss of motivation for their efficient completion.

Table 8. Construction time of nuclear power plants, including operating, shut down, and decommissioned (data as of March 2023). Median is 6.3 years, average construction time is 7.5 years

Number of power plants	Construction time
21%	under 5 years
68%	under 8 years
83%	under 10 years
95%	under 15 years

Source: own compilation based on: S. Dumitriu, B. Hopkinson, op. cit.; World Nuclear Association, op. cit.; International Atomic Energy Agency, op. cit.

06.6

SUMMARY AND DETAILED CONCLUSIONS

The European Green Deal is a complex set of interrelated regulations and directives that are being justified by the necessity to reduce greenhouse gas emissions to prevent climate change. Without engaging in a debate with individuals and entities advocating for theories of anthropogenic causes of currently observed climatic phenomena and the possibility of significantly impacting the climate by reducing greenhouse gas emissions through a transition to energy technologies mainly using intermittent RES, we point out the disastrous consequences for the economy and societal well-being of

such an approach. Overestimating the share of RES in the Polish power system will lead to the collapse of the system, loss of competitiveness for a significant part of the industry, and the impoverishment of society. This does not mean that the energy transition should be delayed. On the contrary, it is urgent to make some 200 MWe class coal units more flexible, transform the heating sector, and obtain cogenerated electric power dynamically matched to RES. Over the next decade or so, nuclear power plants should be introduced into the base of the energy system, replacing decommissioned coal units. The transformation of the power industry should not be subordinated to the escalating goals of the Green Deal, but both the proportions of installed generation technologies and the dynamics of these transformations must result from Poland's energy policy, as described in the strategic document PEP2040[200], which should be updated.

In particular, the following conclusions can be drawn from this study:

1. To ensure the competitive and secure functioning of the economy and the well-being of society, the amount of electricity produced by intermittent energy sources should not exceed 50% of the total electricity production.

2. The number of intermittent energy sources in the energy system should also be limited by the potential for constructing large-scale energy storage systems. For Poland, whose potential for building pumped-storage power plants is limited to approximately 7.5 GWe and 20 GWh, this means that the production of electricity by intermittent RES should not exceed 30%.

3. The rate of integrating new capacities of unstable energy sources into the power system should be coordinated with the rate of commissioning additional capacities of pumped-storage power plants. Currently, the system "defends itself" against the increasing number of intermittent RES by refusing to connect new intermittent sources to the grid.

4. The remaining part of the generating capacity of the power system should be based on nuclear and hard coal power plants (including the combustion or co-combustion of biomass).

5. In practice, it is necessary to cover 100% of generation needs with stable technologies, with at least 60% of the base load covered by stable sources. The remaining portion must consist of quickly starting and flexible units that duplicate intermittent energy sources (gas-steam power plants, flexible coal-fired units, cogeneration units with heat or cooling accumulators).

6. In practice, it is necessary to cover 100% of generation needs with stable technologies, with at least 60% of the base load covered by stable sources. The remaining portion must consist of quickly starting and flexible units that duplicate intermittent energy sources (gas-steam power plants, flexible coal-fired units, cogeneration units with heat or cooling accumulators).

7. It is necessary to maintain and develop electricity generation technologies based on modern, high-efficiency hard coal power plants, as this can bring significant benefits to the Polish economy. The fact is that globally, hundreds of new coal power plants will be built. Polish industry's competence in building modern coal-fired units bring benefits both to the economy of our country, and to the environment and human well-being on a global scale.

8. The total capital costs associated with solar farms, onshore wind farms and offshore wind farms are significantly higher than the capital costs of nuclear power plants (with comparable operational costs).

9. Due to the low concentration of solar and wind energy, an energy system utilizing these technologies would need to be installed over an area equal to several percent of the total area of Poland.

200 *Portal Interoperacyjności i Architektury [Interoperability and Architecture Portal], Polityka Energetyczna Polski do 2040 r. (PEP2040) [Poland's Energy Policy to 2040 (PEP2040)], https://www.gov.pl/web/ia/polityka-energetyczna-polski-do-2040-r-pep2040, accessed 17.06.2024 [Polish only].*

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07

ASPECT OF RESOURCES AND EXTRACTION LIMITATIONS WITH PARTICULAR EMPHASIS ON THE ECONOMIC COSTS OF CEASING EXTRACTION

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Efficient resource management is key to implementing the European Green Deal. This includes both ensuring supply – availability of raw materials, semi-finished products, production capacity, protection of supply chains and terms of trade – and regulating demand, where complex factors beyond traditional management methods play an important role. The latter, in turn, covers the consumption of goods, the interrelationships between the marketing, sales, and production sectors, and their impact on consumer behavior.

The complexity of the situation in terms of the Green Deal in Poland must take into account a wide range of opportunities, social needs, and constraints. At the economic level, a strong attachment to existing dependencies is evident, making change difficult and often ineffective. The pursuit of compromise may encounter social resistance, as society expects quick results. However, in order to elaborate on what is meant by social needs in terms of the Green Deal, it is necessary to define what is meant by *resources and natural resources.*

States, transnational corporations, non-governmental organizations, and individuals have at their disposal **resources**, which are defined mainly by the process of their accumulation and intentions for future use. Resource management can be open, available to all under international law (like access to air or water), or closed, restricted by property rights. Resources can take different forms:

- natural resources, referred to as natural resources because of their origin; and
- artificial, where the role of humans in their processing is emphasized.

They can be:

- material (raw materials, finance, products of human and machine labor, such as Google translator or Copilot based on artificial intelligence) or
- intangible (knowledge, human capital, licenses, patents, trademarks, value of companies in the market).

Natural resources were formed as a result of long-term geological processes, are used at the current stage of development of civilization and are non-renewable. Their extraction and processing bring economic benefits, as they enable the production of a variety of goods, but at the same time they cause environmental, infrastructural, and technical damage. One can point to the example of the tar sands in the Canadian province of Alberta, which illustrate the negative effects of such activities. The extraction of oil from these hard-to-reach deposits, where it exists in the form of a contaminated intermediate product, requires the use of large quantities of potable water for its purification, highlighting the conflict between economic profit and ecological damage. Another example of the environmental impact of natural resource exploitation is the cutting down of rubber trees, the removal of soil layers and the use of chemicals in the Amazon basin. After production, waste is left behind, thus creating areas that require reclamation by future generations.

The Green Deal strategy, initially designed for the industrial sector, is not reflected in consumer realities despite the problems and challenges with the application of the zero waste principle by individual users. As a society – with a particular focus on information overload, willingness to make sacrifices, and the risk of failure – we should, first and foremost, with such a huge commitment to the Green Deal strategy, actively support policymakers in creating legislation that will counteract the waste of raw materials and allow for the implementation of natural resource conservation methods by all segments of the production chain.

According to the United Nations, in 2022 the number of people in the world without access to electricity was about 760 million[201]. However, it is dynamic and depends on many factors, such as technological progress, government policies and demographic changes. It is worth noting that most of these people live in Sub-Saharan Africa. The lack of access to electricity is dependent not only on fossil fuels, but also on the aforementioned government policies. The lack of access to new IT technologies, on the other hand, will depend on the availability of raw materials such as rare earth elements.

It is astonishing that mankind, having for more than 400,000 years at its disposal only such elements as fire, wind, and water power, has managed not only to survive, but also to achieve its goals, including conquering unknown lands, erecting buildings, and farming. Only less than 200 years ago, in the 19th century, mankind began to use the steam engine and conducted the *first industrial revolution* based on a fossil fuel – the coal. In the twentieth century, it abandoned this invention and fell in love with the internal combustion engine, which increased the power of four-wheelers, ships cutting the waves of the boundless oceans, and even managed to rise into the Earth's orbit. This time was called for a reason the s*econd industrial revolution* based on oil.

When mankind entered the 21st century and recognized the consequences that the environment had suffered as a result of the exploitation of fossil fuels on an unimaginable scale, and when the concerned eyes of the whole world turned to the issue of climate change, most likely caused by the generation of energy from fossil fuels, work began on more efficient, cleaner sources of green energy, i.e. on its production through solar panels, wind turbines, electric batteries, as well as storing energy in special storage facilities. And so we have embarked on the path of the *third energy industrial revolution*, still based – ironically – on coking coal, a fossil fuel. Although we are already in the 21st century, few people know that the development of new technologies depends not only on the perfect mind of man, but also on that part of the world from which entire lands and continents are made, namely the rocks, in which raw materials such as iron, gold, silver, copper, lead, aluminum, used by us for a very long time, as well as minerals with catalytic, optical, and magnetic properties, are accumulated.

201 *UNIC Warsaw – United Nations Information Center, Cel 7: Zapewnić wszystkim dostęp do źródeł stabilnej, zrównoważonej i nowoczesnej energii po przystępnej cenie, [Goal 7: Ensure affordable access to sources of stable, sustainable and modern energy for all], https://www.un.org.pl/cel7#, accessed May 5, 2024 [Polish only].*

However, the whole secret of the third industrial revolution is based on rare earth metals, i.e. 17 elements such as scandium, yttrium, and all lanthanides, as well as on raw materials critical for the European Union (hereinafter: EU), which include lithium and niobium. It is worth knowing that to obtain a kilogram of vanadium, 8.5 tons of rock must be purified, cerium is obtained from 16 tons of purified rock, and in order to obtain a kilogram of gallium, as much as 50 tons of rock must be purified. Obtaining a kilogram of lutetium, on the other hand, requires purifying as much as 1,200 tons of rock material!

The foundation of all three industrial revolutions is steel, and each ton of steel is made using 400 kilograms of coke, which is produced from 560 kilograms of metallurgical coal[202].

After this lengthy explanation, it is time to ask momentous questions:

What do the European Green Deal and the Fit for 55 package involve?

In 2020, the EU decided to pursue a strategy known as the European Green Deal. Its main aim is to bring the EU to a situation where by 2050 it will emit only as much greenhouse gas as it can neutralize, thus achieving zero net emissions. Under the plan, the initial target is to reduce emissions by 40% by 2030 compared to 1990 levels.

In 2021, the European Commission (hereinafter: EC) presented a package called Fit for 55, which sets a new, more ambitious intermediate goal. Namely, by 2030, greenhouse gas emissions are to be reduced by 55% compared to 1990. A comprehensive set of regulations has been developed for these purposes, affecting all sectors of the economy. Among other things, the package plans to introduce a new emissions trading system[203] for land transport and construction, as well as to eliminate concessions for the aviation sector. In addition, it is envisaged that cars produced in Europe from 2030 will emit 55% less carbon dioxide (hereinafter: CO_2) compared to 2021, and from 2035 all newly registered cars are to be zero-emission. It should be noted that the policy aimed at a green transition is not just an EC initiative. The EU, through its actions, fits into a global trend. In December 2015, as part of the Paris Agreement, as many as 195 countries committed to measures, such as reducing emissions, aimed at achieving carbon neutrality in the second half of this century.

For Poland, the transformation towards a low and then zero-emission economy will bring costs of approximately 2.5–3% of gross domestic product (hereinafter: GDP) in the next decade, or about PLN 60 billion at today's prices[204]. These are extra investment costs and ongoing expenses that need to be covered in addition to those that would be incurred without climate policy. European funds will finance a significant part of the cost of this transition.

202 *JSW SA, Europejski Zielony Ład zaczyna się w JSW [European Green Deal Begins at JSW], published 26.11.2021, https://www.jsw.pl/biuro-prasowe/aktualnosci/artykul/europejski-zielony-lad-zaczyna-sie-w-jsw, accessed 03.07.2024 [Polish only].*

203 *ETS2.*

204 *Ministry of Climate and Environment, Krajowy Plan w dziedzinie Energii i Klimatu do 2030 r. (aktualizacja KPEiK z 2019 r.) – projekt z 29.02.2024, [National Energy and Climate Plan to 2030 (2019 update of the NAPE] – draft dated 29.02.2024, https://commission.europa.eu/document/download/5118b15e-d380-49ae-b8bb-41cc81a28e15_pl?filename=PL_NECPupdate_Projekt_aKPEiK_tekst_ostateczny.pdf, accessed 03.07.2024 [Polish only].*

What do we need to do as part of the Green Deal?

There is an urgent need to accelerate the reduction of greenhouse gas emissions. In the decade from 2010 to 2019, emissions hardly changed – they remained at about 400 million tons (CO_2 equivalent)[205]. On the one hand, we have seen a decrease in emissions in the energy and household sectors, and on the other hand, an increase in transportation and processing. Poland, therefore, needs to accelerate emission reductions in those areas where a decline is currently being observed, as well as curb growth in those sectors where emissions continue to rise.

One of the instruments of European energy policy to promote the transition is the ETS – a system of fees for greenhouse gas emissions in industry, including the power sector. Its main goal is to reduce the business profitability of using high-emission solutions, while raising public funds for green investments. The mechanism requires each company in the sectors covered by the system to hold emission rights, which can be purchased on the market or at government auctions. Under the Fit for 55 package, the EU will introduce a separate ETS for land transport and construction, most likely starting in 2026. This will be a revolutionary change, and these sectors, like industry today, will be under pressure to reduce emissions.

Poland is one of the countries where a relatively large number of workers are employed in sectors that will be most affected by the Green Deal. In Poland, this percentage is almost 10.0[206], while the EU average is 6.2%[207]. Therefore, the energy transition may bring potential risks of negative social consequences if the activities of these sectors are severely disrupted. To prevent such consequences, public support for investments in the regions most affected by these changes will be necessary.

How much will the Green Deal cost?

To meet the challenges of the Fit for 55 package, according to an analysis by Bank Pekao, by 2030 Poland needs to make investments of about EUR 527 billion worth[208]. A large part of these investments would have to be made anyway, and the additional costs represent less than half of this amount.

In order to meet the climate goals, by 2030 Poland needs to invest about 7% of its GDP[209]. Some of these investments would be made even without the requirements of the Green Deal and Fit For 55 as part of the normal process of renewing productive assets. Experts estimate that the additional costs associated with the initiatives in question amount to about 2.5-3% of GDP (about PLN 60 billion per year)[210]. This is the amount by which investments must increase compared to a scenario without climate policy. The largest investments are still needed in the energy sector, which needs to move away from coal. Next on the list are investments in reducing energy consumption by households, followed by emission reductions by transportation sector and industry.

What about coal mining in Poland? What costs will we incur in the era of transitioning away from fossil fuels?

Well, the costs associated with moving away from coal in Poland are significant and include various aspects.

Firstly – support for workers. The EC has approved Poland's EUR 300 million state aid program to mitigate the social costs associated with the closure of power plants and coal mines.

Secondly – coal imports. Despite the reduction in domestic production, Poland imported (intra-EU purchases) in 2023 10,140,931 tons of coal[211], which is associated with additional costs and emissions from transport.

Thirdly – costs of transition. The total cost of maintaining coal-fired power generation is estimated at 2144 PLN billion,

205 *Statistics Poland, Green Economy Indicators in Poland 2022, https://stat.gov.pl/en/topics/environment-energy/environment/green-economy-indicators-in-poland-2022,3,5.html, accessed 03.07.2024.*

206 *Statistics Poland, Yearbook of Labor Statistics, Warsaw 2023, https://stat.gov.pl/en/topics/statistical-yearbooks/statistical-yearbooks/yearbook-of-labour-statistics-2023,10,9.html, accessed 03.07.2023.*

207 *Eurostat, Employment and unemployment (LFS). Information on data, https://ec.europa.eu/eurostat/web/lfs/information-data#LFS%20main%20indicators, accessed 03.07.2023.*

208 *Bank Pekao, Wpływ pakietu Fit for 55 na polską gospodarkę [Impact of the Fit for 55 package on the Polish economy], December 2021, https://www.teraz-srodowisko.pl/media/pdf/aktualnosci/11316-Pekao-Wplyw-Fit-for-55-na-polska-gospodarke.pdf, accessed 03.07.2023 [Polish only].*

209 *Ibid.*

210 *Ibid.*

211 *Agencja Rozwoju Przemysłu SA [Industrial Development Agency SA] – Katowice Branch, Import i przywóz (nabycie wewnątrzunijne) węgla kamiennego (stan na 11 kwietnia 2024 r. [Imports and intra-EU purchases of hard coal (as of April 11, 2024)], December and January-December 2023, https://polskirynekwegla.pl/sites/default/files/StPu/202312/S.12.23_o%20imporcie%20w%C4%99gla%20kamiennego%20-%20korekta.pdf, accessed 03.07.2024 [Polish only].*

that is PLN 393 billion more than the costs associated with the accelerated development of renewable energy sources[212].

Fourthly – public health. Diseases resulting from coal pollution cost the state budget about EUR 30 billion annually[213].

Moving away from coal is a lengthy process and requires significant investment, but it is a necessary step towards a green transition and sustainable development. Nevertheless, it should be noted that opinions on the Green Deal are divided, and there are growing doubts as to whether the targets set by the EU are not too ambitious, especially when considering how global warming is being addressed in other countries around the world. On the one hand, EU countries have pledged to achieve climate neutrality by 2050 and thus fulfill their obligations under the Paris Agreement. On the other hand, according to the European Emissions Database for Global Atmospheric Research (EDGAR), in 2022 the EU accounted for 6.67% of global greenhouse gas emissions. This is significantly less than what China produces (29.16%), slightly more than half of what the United States of America produce (11.19%), and less than what India alone produces (7.33%)[214].

When one analyzes the literature on the labor costs of mines in Poland[215], covering not only the period when mines are in operation, but also the period when they are closed and decommissioned, and then the post-mining areas are restored to the environment and society[216], one finds that this is a long and costly process due to the large scope of the work. Such calculations were carried out by Spółka Restrukturyzacji Kopalń SA for the period 2015-2023[217].

The research methodology was based on calculations that have been adopted in this company within the framework of updated mine decommissioning programs. 3 parameters were adopted that best correlate in terms of the relationship between cost and time when the decision to decommission a mine is made, and these are: the total length of underground excavations, the volume of all mine shafts and the number of all facilities of the mining plant. On this basis, a preliminary method was developed for estimating the time and cost of mine decommissioning according to the determined parameters[218]. Out of 19 mining plants, hypothetical 4 plants were analyzed and grouped into 4 types of mines: micro (P1), medium (P2), medium smaller (P3), and medium larger (P4). And so, taking into account the type of mine, the costs of their decommissioning were estimated. These range from PLN 213.3 million to PLN 460.4 million. What is important, depending on the size of the mine, this will take from 2 to more than 6 years, while incurring the costs of maintaining such a mining facility.

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212 *A. Juszczak, M. Pilszyk, M. Miniszewski, K. Kania, T. Tomasiak, M. Wiącek, Koszty braku dekarbonizacji gospodarki [Costs of non-decarbonization of the economy], Warsaw, December 2023, https://pie.net.pl/wp-content/uploads/2023/12/Dekarbonizacja.pdf, accessed 03.07.2024 [Polish only].*

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214 *M. Crippa, D. Guizzardi, F. Pagani, M. Banja, M. Muntean, E. Schaaf, W. Becker, F. Monforti-Ferrario, R. Quadrelli, A. Risquez Martin, P. Taghavi-Moharamli, J. Köykkä, G. Grassi, S. Rossi, J. Brandao De Melo, D. Oom, A. Branco, J. San-Miguel, E. Vignati, GHG emissions of all world countries, Luxembourg 2023, doi:10.2760/953322, JRC134504.*

215 *K. Berezowski Jak będzie wyglądała likwidacja ruchu Piekary? Co dalej z jego załogą? [What next for its crew?], "Trybuna Górnicza," published 24.01.2020, https://nettg.pl/gornictwo/163428/jak-bedzie-wygladala-likwidacja-ruchu-piekary-co-dalej-z-jego-zaloga, accessed 05.05.2024 [Polish only]; J. Frankowski, J. Mazurkiewicz, J. Sokołowski, P. Lewandowski, Zatrudnienie w górnictwie węgla kamiennego w Zagłębiu Górnośląskim [Employment in hard coal mining in the Upper Silesian Basin], IBS Research Report 01/2020, September 2020 [Polish only]; J. Frankowski, J. Mazurkiewicz, Województwo śląskie w punkcie zwrotnym transformacji [Silesian province at the turning point of transformation], IBS Research Report 02/2020, October 2020 [Polish only]; D. Kiewra, A. Szpor, J. Witajewski-Baltvilks, Sprawiedliwa transformacja węglowa w regionie śląskim. Implikacje dla rynku pracy [A fair coal transition in the Silesian region. Implications for the labor market], IBS Research Report 02/2019, May 2019 [Polish only]; J. Podsiadło, Restrukturyzacja KWK Piekary i KWK Bobrek. Mit czy rzeczywistość? [Restructuring of KWK Piekary and KWK Bobrek. Myth or Reality?], Materials of the XXX Conference „Zagadnienia surowców energetycznych i energii w gospodarce krajowej" ["Issues of Energy Resources and Energy in the National Economy"], Zakopane 2016 [Polish only]; J. Sokołowski, J. Frankowski, J., Mazurkiewicz P. Lewandowski, M. Antosiewicz, Dekarbonizacja i zatrudnienie w górnictwie węgla kamiennego w Polsce [Decarbonization and Employment in Coal Mining in Poland], IBS Research Report 01/2021, January 2021 [Polish only]; Spółka Restrukturyzacji Kopalń SA, Restrukturyzacja zatrudnienia [Restructuring Employment], srk.com.pl, accessed 05.05.2024 [Polish only]; M. Turek, A. Karbownik, Ocena skuteczności Górniczego Pakietu Socjalnego w restrukturyzacji zatrudnienia w górnictwie [Evaluation of the Effectiveness of the Mining Social Package in Employment Restructuring in Mining], "Zeszyty Naukowe Politechniki Śląskiej" (series: Organizacja i Zarządzanie) 2015, z. 27, pp. 7-14 [Polish only]; M. Tyrybon, M. Szczepanski, Odprawieni górnicy i ich świat społeczny [Laid-off miners and their social world], "Wiadomości Górnicze" 2014, vol. 55, no. 6, pp. 254-261 [Polish only]; J. Frankowski, J. Mazurkiewicz, J. Sokołowski, Mapping the indirect employment of hard coal mining: A case study of Upper Silesia, Poland, "Resources Policy" 2023, vol. 83, June, 103693, https://doi.org/10.1016/j.resourpol.2023.103693.*

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217 *Spółka Restrukturyzacji Kopalń SA [Mine Restructuring Company SA], www.srk.com.pl.*

218 *A. Chmiela, J. Smoliło, The method for preliminary estimation of expenditures and time necessary for liquidation of a mining plant, "Mining Machines" 2023, vol. 41, no. 2, https://doi.org/10.32056/KOMAG2023.2.1.*

There are still costs that cannot be estimated at the time when the decision to close the mine is made, due to the lack of a scenario that could be evaluated. A good example of unforeseen costs that cannot be calculated is the area of the former Siersza mine in Trzebinia (Małopolskie Voivodeship). Over 20 years after its closure, the land deformation in the area where it was located has incurred, and will continue to incur, costs that cannot be estimated and that we all bear. These costs have both cultural and environmental dimensions.

It looks like Poland faces many challenges, but also opportunities related to Green Deal and Fit for 55. Here are some key points:

ADAPTATION COSTS – by 2030, the costs of adapting the Polish economy to the goals of the Green Deal and Fit for 55 may amount to EUR 527 billion. Additional costs, beyond the normal level of investments, could amount to about PLN 60 billion annually, totaling around PLN 500 billion by 2030[219];

FINANCIAL SUPPORT – as part of the Cohesion Policy and the Recovery and Resilience Facility, Poland may receive about EUR 170 billion between 2021 and 2027, and about PLN 250 billion by 2030. Poland and Polish companies will also be able to benefit from other sources of funding;

NATIONAL AND REGIONAL STRATEGIES – the EU requires the preparation of national and regional strategies, which additionally encourage transformation efforts and allow for monitoring their implementation;

THE NEED FOR STRATEGY AND REFORM – money alone is not enough to carry out the energy transition. A strategy and appropriate reforms, such as regulations concerning wind power, are also needed. No decisions have yet been made on how to fill the coal gap that will arise from the abandonment of coal.

The exact cost of implementing the Green Deal for the mining sector in Poland is difficult to estimate, as it is influenced by many factors. Deputy Minister for Climate and Environment Miłosz Motyka stressed that "legislation cannot be prepared in isolation from economic costs"[220]. However, according to former Energy Minister Krzysztof Tchórzewski, achieving climate neutrality will cost us EUR 500 billion by 2050[221].

It is important to remember that the Green Deal touches many sectors of our lives: energy, mining sector, construction, transportation and mobility, waste, and circular economy, agriculture[222]. Therefore, the costs will depend on many factors, including the pace of the transition and the availability of low-carbon technologies.

Poland is in favor of adjusting the Green Deal in such a way as to secure the interests of farmers, rather than abandoning environmental protection. Moreover, the cost of implementing the Green Deal may change depending on negotiations and adjustments[223].

In conclusion, the effectiveness of fund spending and the entire green transformation of the Polish economy depend on how Poland handles these challenges. This is crucial for the future of our country.

However, in order to answer the difficult – as I emphasize – questions and to foster a regional policy debate on just transition processes, here – in Upper Silesia, Europe's largest coal mining region, in the coal heart of Europe, as well as the most industrialized, urbanized, and second largest administrative region in Poland in terms of population, with the vast majority (89%) of all employees in hard-coal mining companies – it should not be forgotten that coal from Silesia accounts for a significant share of Poland's energy production, and phasing-out is a key element in the decarbonization process. Quite recently, just 3 years ago, the government signed an agreement with the miners' unions declaring a coal phase-out by 2049, excluding coking coal, but due to methane emissions, the mining sector also faces decarbonization.

219 *Bank Pekao, op. cit.*

220 *K. Wajszczuk, Wiceminister klimatu: Jesteśmy za korektą Zielonego Ładu. Trzeba uwzględnić koszty gospodarcze [WYWIAD] [Deputy Climate Minister: We are in favor of revising the Green Deal. Economic costs must be taken into account (INTERVIEW)], published 02.04.2024, https://300gospodarka.pl/300klimat/wiceminister-klimatu-jestesmy-za-korekta-zielonego-ladu-trzeba-uwzglednic-koszty-gospodarcze-wywiad, accessed 19.06.2024 [Polish only].*

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222 *J. Szałata, Zielony Ład i polskie lasy [Green Deal and Polish forests], published 11.03.2021, http://zlpwrp.pl/blog/2021/03/11/zielony-lad-i-polskie-lasy/, accessed 19.06.2024 [Polish only].*

223 *K. Wajszczuk, op. cit.*

If one takes stock of what has happened over the past 30 years of coal sector restructuring, as well as considering the agreements signed, coal mining is still seen as the foundation of the energy system, a carrier of long-term regional identity, and a driver of socioeconomic prosperity and employment outcomes[224].

I would like to conclude with a few loose thoughts, just to stimulate further discussion, and you, the Reader, are free to agree or disagree with them, because this is what democracy is all about, that each of us can have a say, while taking social, or even simply human, responsibility.

First I will use data that is not disputed, after all, how could one dispute the *Balance of Mineral Deposit Resources in Poland,* which has been published for 70 years, and Polish Geological Institute has been its publisher continuously since 1988. This *Balance* is prepared on the basis of approved geological documentation of mineral deposits, sent by geological administration bodies – the minister responsible for the environment, voivodeship marshals, and heads of counties, among others, to the National Geological Archive of the Polish Geological Institute – National Research Institute. Data on the volume of extraction and movement of resources are submitted by deposit users in accordance with the provisions of the Act of June 9, 2011 – Geological and Mining Law[225] on reporting forms, the template of which is specified in the Regulation of the Minister of Environment as of November 15, 2011 on the cadastral report and templates for information on changes in mineral deposit resources[226].

Such a unique collection of information, to which every citizen has access, is collected not only in Poland, but also, for example, in the United States of America, where each year the U.S. Geological Survey (USGS), an agency under the Department of Interior Resources tasked with studying mineral deposits, publishes a report entitled *Mineral Commodity Summaries*.

It is geologists like me who have emerged from their laboratories and institutes and started speaking out, presenting dozens of reports, that it is not Western countries or distant America that possess the raw materials necessary to develop the industries and produce what the future of Europe and the entire world will rely on. As annoying as this reality is for us, it is China that is the leading producer of coking coal and the holder of most rare earth elements. And therefore, horror of horrors, it is they who decide whether these raw materials will flow to the countries that need them most. This is evidenced by a USGS report, which states that Beijing accounts for 66% of indium consumed globally, 68% of vanadium, almost 65% of fluorspar, 77% of natural graphite, and 48% of antimony[227]. The EC, which has its own data, reports that China is responsible for the production of 76% of silicon, 83% of germanium, 86% of tungsten, and as much as 100% of heavy rare earth elements (HREEs), and 85% of light rare earth elements (LREEs)[228]. Moreover, we read in an EC communication as recently as 2017 that "China is the most influential country in terms of global supply of the majority of critical raw materials"[229].

And at this point I will stop quoting any more reports, communications, and instead just look out the window at the speeding cars, flying airplanes, and the wonderful nature that has embraced and continues to embrace our technological projects, along with our desire for a greener world, limited only by the power of human imagination. There will come a time when we will be constrained in this endeavor only by the critical raw materials we will have to manage.

224 *J. Frankowski, J. Mazurkiewicz, J. Sokołowski, op. cit.*
225 *Consolidated text Journal of Laws 2023, item 633 as amended.*
226 *Consolidated text Journal of Laws 2021, item 998.*
227 *U.S. Geological Survey, Mineral commodity summaries 2023, Reston, Virginia 2024, https://doi.org/10.3133/mcs2024.*
228 *European Commission, Study on the critical raw materials for the EU 2023 – Final report, Luxembourg 2023, https://data.europa.eu/doi/10.2873/725585.*
229 *Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the 2017 list of Critical Raw Materials for the EU, Brussels, 13.09.2017, COM(2017) 490 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017DC0490, accessed 19.06.2024.*

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08

CATASTROPHE OF THE EUROPEAN GREEN DEAL

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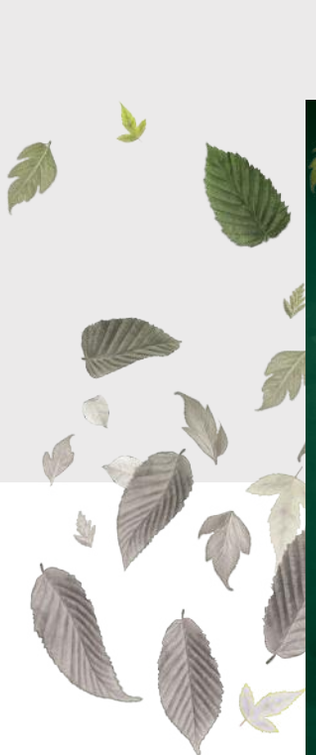


The European Green Deal is a grand plan for central control of the European Union's (hereafter: EU) economy by officials in Brussels. The official goal is to stop natural climate change by achieving so-called zero emissions (decarbonization of the economy). In reality, it is a plan to ruin the economy and take away people's property and freedom. The path to zero emissions is to be gradual. Eurocrats have planned that by 2030 the EU will reduce net greenhouse gas emissions by at least 55% compared to 1990 levels, by 90% by 2040 and by 100% by 2050[230].

230 *Delivering the European Green Deal https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en accessed 14.06.2024.*

08.1

THE UNREALISTIC GOALS OF ZERO EMISSIONS AND DECARBONIZATION

Eurocrats are not bothered by the fact that, according to Wojciech Naworyta, B.Eng., Ph.D., D.Sc., head of the Department of Surface Mining at the Faculty of Civil Engineering and Resource Management of AGH University of Science and Technology in Cracow, this "zero-emissions" standard is entirely unachievable.

"To manufacture wind turbines or photovoltaic (PV) panels, raw materials are needed which not only have to be extracted but also transported, usually from overseas, because these raw materials are not available in Europe. The carbon footprint of a PV installation or a wind power plant is large and stems precisely from these activities, which need to be undertaken to produce, transport and build a PV installation or a wind farm. At every stage, energy is consumed and oil burned. There is much talk about reducing the carbon footprint of cement production – a product essential to the development of our civilization. Meanwhile, as of now, there is no technology for producing clinker without using a large amount of heat, which is obtained by burning fossil fuels and waste, such as old tires. Also, so-called biofuels are by no means zero-emission. After all, both rapeseed and wood chips have to be either grown or sourced from somewhere. At every stage of the process of cultivation, felling, and transport CO_2 is emitted in the process of burning fossil fuels. In my opinion, zero-emissions is a wonderful, but unfortunately utopian slogan," explains Naworyta, B.Eng., Ph.D., D.Sc.[231].

In the case of Poland, total decarbonization is also impossible.

"Achieving full decarbonization is unrealistic not only in 2040, but also 30 years later. There is simply nothing that could replace hard coal power plants," explains Władysław Mielczarski, Professor of Technical Sciences and lecturer at the Institute of Electrical Power Engineering at Łódź University of Technology, in an interview with Tysol.pl. "No matter from which side we analyze the problem of energy transformation, we always come to the same conclusion: decarbonization is unrealistic[232].

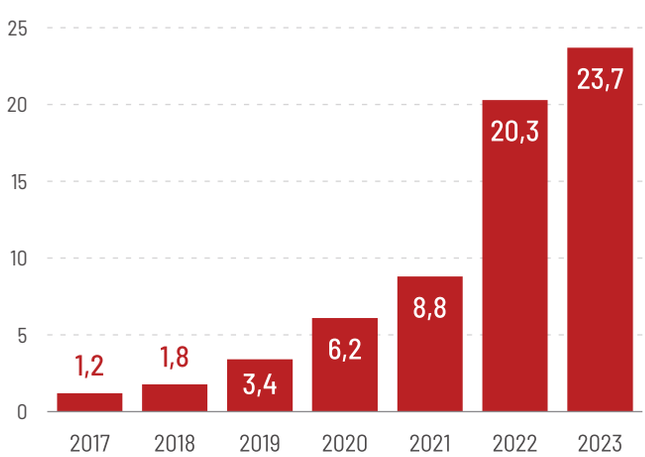
Nevertheless, this entire climate revolution will affect every area of our lives: energy, industry, construction, transportation, agriculture, and scientific research.

08.2

ENERGY SECTOR

On the front lines are the Polish power and heating industries, which use coal. They have been forced to waste resources on purchasing virtual carbon dioxide (hereinafter: CO_2) emission allowances under the ETS. According to a response of Secretary of State at the Ministry of Climate and Environment Krzysztof Bolesta, to an inquiry by MP Janusz Kowalski, the deficit of CO_2 emission allowances in the ETS in 2023 amounted to approximately PLN 12.5 billion, and the total amount for the period 2021-2030 is estimated to be as much as PLN 141 billion[233].

Chart 1. CO_2 emission allowance costs paid by the PGE Group SA in 2017-2023 (in PLN billion)



Source: own compilation based on data from PGE Polska Grupa Energetyczna SA.

231 *Author's conversation with Wojciech Naworyta, B.Eng., Ph.D., M.Sc., August 4, 2021.*

232 *T. Wójcik, Ekspert nie ma złudzeń: zielony ład oznacza biedę. Druzgocąca diagnoza profesora Mielczarskiego [Expert has no illusions: Green Deal means poverty. Professor Mielczarski's devastating diagnosis], https://tysol.pl/a120525-ekspert-nie-ma-zludzen-zielony-lad-oznacza-biede-druzgocaca-diagnoza-profesora-mielczarskiego, published 19.04.2024, accessed 14.06.2024 [Polish only].*

233 *Response by Secretary of State at the Ministry of Climate and Environment Krzysztof Bolesta to Inquiry No. 471 by MP Janusz Kowalski on the balance of emissions and allowances (EUAs) in the EU ETS, Warsaw, 28.04.2024, DSA-WZE.050.11.2024.2.KDK, https://www.sejm.gov.pl/Sejm10.nsf/InterpelacjaTresc.xsp?key=D53HFC, accessed 18.07.2024 [Polish only]. The response cites data from the National Emissions Management Center.*

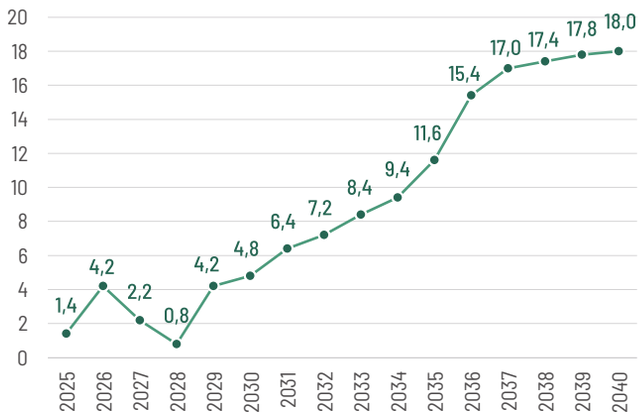
In reality, the costs burdening the economy are many times higher, but the lower balance sum is due, among other things, to the fact that the State Treasury sells "free" allowances, and some of these go to energy-intensive industries[234]. One of the more disadvantaged entities in this regard is PGE Polska Grupa Energetyczna SA (PGE Group SA), which only in 2023 paid PLN 23.7 billion on this account, and over 7 years (2017-2023), a total of more than PLN 65 billion.

According to the plans, coal-based power and heating must be decommissioned along with coal mining. The baseline scenario in the draft *National Energy and Climate Plan to 2030* assumes that by 2030, more than 8 gigawatts (hereafter: GW) of coal-fired power plant and cogeneration plant capacity could be shut down, with further decommissioning taking place after 2030[235]. Additionally, the last coal mine, is expected to cease coal extraction in 2049.

The problem is that coal-fired power would have to be replaced by something. Renewable energy sources (hereinafter: RES) cannot fulfill this role by their very nature. This is because they are not controllable. They cannot be used to produce energy when there is demand, and in the amount that is needed. Dependent on weather conditions and time of day, RES produce energy when they want, not when there is demand. Nor is it technologically possible to store energy on such a scale. The laws of physics simply do not allow for long-term storage of electrical energy[236]. Therefore, in the current situation, in order to sustain the viability of the system, coal can only be replaced by gas (which we do not have in sufficient quantities) or nuclear power (we do not have uranium either).

Unfortunately, even the timely implementation of optimistic plans to build nuclear power plants in Poland will not prevent power shortages. This is because in the meantime coal-fired power units will be shut down, and new (more efficient and less emissive) ones are not being built. As a result, the blind implementation by successive governments of the EU's policy of phase out coal-fired power will lead to massive power shortages in the coming years. According to the draft *Development Plan for Meeting Current and Future Electricity Demand for 2025-2034*, presented by Polskie Sieci Elektroenergetyczne (hereafter: PSE), by 2025, Poland will lack 1.4 GW of dispatchable capacity required to meet generation resource adequacy indicators. It will only get worse in subsequent years: in 2030 we will lack 4.8 GW, 11.6 GW in 203, and as much as 18 GW in 2040[237].

Chart 2. Required additional net dispatchable capacity in the National Power System in 2025-2040 (in GW).



Source: Polskie Sieci Elektroenergetyczne (PSE), Development Plan for Meeting Current and Future Electricity Demand for 2025-2034, April 2024.

What is more, the deadlines for putting the first nuclear power plants units into service are constantly being postponed, which could at least partially improve the situation. For example, in May 2024, Minister of Industry Marzena Czarnecka said that the year 2033 is untenable and the realistic date for launching the first nuclear power plant is 2040[238]. According to the *Polish Nuclear Energy Program*, in 2040, depending on various scenarios, the atom's share in electricity generation was expected to be 12-16%[239].

"The goal of climate policy is to make energy expensive and scarce. The rising energy costs, soon to be accompanies by shortages, are not the result of accidental errors; this is the intended goal of the energy transformation. Renewable sources are the cheapest way to make energy expensive for society," says Professor Władysław Mielczarski. "This will cause disruptions in the functioning of the economy and degradation of social life"[240], he warns.

235 *Ministry of Climate and Environment, National Energy and Climate Plan to 2030, updated 29.02.2024 [Polish only].*
236 *T. Wójcik, op. cit.*
237 *Polskie Sieci Elektroenergetyczne (PSE), Plan rozwoju w zakresie zaspokojenia obecnego i przyszłego zapotrzebowania na energię elektryczną na lata 2025-2034 [Development Plan for Meeting Current and Future Electricity Demand for 2025-2034], April 2024 [Polish only].*
238 *Money.pl, Pierwsza duża elektrownia atomowa w Polsce powstanie później, niż zakładano [Poland's first major nuclear power plant to be built later than expected], https://www.money.pl/gospodarka/pierwsza-duza-elektrownia-atomowa-w-polsce-powstanie-pozniej-niz-zakladano-7025282614156256a.html, accessed 14.06.2024 [Polish only].*
239 *Polish Nuclear Power Program, Ministry of Industry of 2020, item 946, pp. 43-44 [Polish only].*
240 *T. Wójcik, op. cit.*

08.3

INDUSTRY

European Commission (hereafter: EC) officials explicitly state their aim is to increase the competitiveness of European industry in carbon-neutral technologies: "The aim of the Green Deal Industrial Plan is to secure Europe's place as the home of industrial innovation and clean tech"[241]. In other words, they primarily want German companies to implement new technologies, which will then be purchased by the economies of other EU countries to achieve the climate targets set by the Eurocrats. And it is known that new technologies are always expensive and, at the same time, provide higher profits for the manufacturer compared to profits from old and well-known technologies.

EU planners have completely lost their way in their concepts. On the one hand, electric cars and electric heat pumps are meant to become widespread, which means an increase in energy consumption, while on the other hand, they want to... reduce energy consumption: "reducing energy consumption is essential to bring down both emissions and energy costs for consumers and industry"[242]. This would be possible only if they deliberately used high electricity prices and blackouts to cause the complete destruction of industry in the EU.

Eurocrats want to increase the competitiveness of European industry, but the effects of their actions will be exactly the opposite. As part of sustainability, costly ESG (environmental, social responsibility, corporate governance) reporting is being introduced into companies. It robs companies of money, time and resources that would have been used to run the business, improve production and products, offer consumers better goods, and find customers. Instead, companies have to deal with absurd issues and their bureaucratic reporting. As a result, companies that deal with ESG must necessarily be less effective and less efficient than companies that do not. Thus, they will become less competitive, not more competitive, as the Eurocrats would like.

Eric Heymann, an analyst at Deutsche Bank, wrote that "the claim that climate neutrality can be a strategy for economic growth is wishful thinking," and that implementing the European Green Deal will mean a loss of competitiveness for EU industry and the need to subordinate the lives of citizens and household budgets to an "eco-dictatorship"[243].

08.4

TRANSPORTATION AND CONSTRUCTION

To achieve zero-emission in transportation by 2050, registration of new internal combustion cars will be banned after 2035. In addition, from 2027, road transportation will be included in the ETS2[244], which means new taxes on fuel. What's more, as we read on the EC's official website: "Carbon pricing also applies to the aviation sector. Until now, it applies to flights within the EEA[245] and departing flights to Switzerland and the UK. From 2024, non-domestic flights to and from outermost regions are covered too. [...] Carbon pricing has also been extended to the maritime sector"[246].

Another issue is the revolution in construction. Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings[247] forces their owners to install insulation, replace old windows or doors, upgrade heating systems, and install photovoltaic panels. Some will waste their own money on this. Others will obtain loans for this, which they will then have to pay back for years, and if they do not, their homes will be taken away from them. Buildings that do not undergo proper climate renovation will not be able to be sold or rented (in France, buildings classified in lower energy classes are already to be gradually withdrawn

241 *European Commission, Delivering the European Green Deal, op. cit.*
242 *Ibid.*
243 *T. Cukiernik, Dwadzieścia lat w Unii. Bilans członkostwa [Twenty years in the Union. Balance of Membership], Siemianowice Śląskie 2024, p. 200 [Polish only].*
244 *European Commission, Delivering the European Green Deal, op. cit.*
245 *European Economic Area.*
246 *European Commission, Delivering the European Green Deal, op. cit.*
247 *OJ L 153 of 18.06.2010, pp. 13-35.*

from the rental market). On top of this, owners will have to pay financial penalties for failure to renovate. How will those who have no money for renovation or penalties pay? Will there be mass expropriations in such a situation? Owners will not be able to rent out their properties to earn money for unnecessary renovation. As if that was not enough, starting in 2027, buildings will also be covered by the Emissions Trading System (ETS2)[248]. This is nothing more than a new tax imposed on the fuels we use to heat our homes.

08.5

AGRICULTURE

The EU, which has led to the destruction of biodiversity itself with its agricultural subsidies, now wants to rebuild natural resources and allow biodiversity to flourish again as part of its Biodiversity Strategy 2030[249]. To this end, it is hitting agriculture. There is an idea that in order to "restore nature," Poland should flood almost 400 thousand hectares of agricultural land, which will lead to a decrease in food production, and perhaps as a result of restoring marshlands and wetlands, we may also face the return of diseases such as malaria. According to Salon24, new European regulations in the form of the obligation to restore habitats in accordance with EU requirements by 2050 will require investments in Poland worth over EUR 500 million[250].

The result of EU agricultural policy will be the transformation of farmland that is now used for food production into barren wastelands that can be used as a bargaining chip by industrial interests to offset greenhouse gas emissions. The report *The Silent War on Farming. How EU Policies Are Destroying Our Agriculture* leads to some very disturbing conclusions[251]. According to its author, Richard J. Schenk, the capture of agricultural policy in the context of environmental and climate goals is nothing less than the end of agriculture as we know it. Farmers across the EU are bearing the heavy burden of impractical, ideological EU regulations. Ultimately, this policy will lead to the liquidation of many farms and, as a result, will cause food shortages and higher food prices. At the same time, according to the report's author, these rules will not lead to achieving the emission targets imposed by Brussels.

If the EU continues on this path, it risks a huge dependence on foreign agricultural imports – from Ukraine and South America, whose markets have been taken over by multinationals. Of course, moving agricultural production abroad will not help the global climate, but that does not matter, because that is not the point. Schenk stresses that central planning in agriculture through price fixing, subsidies, quotas, and prohibitions never leads to an optimal result[252]. Is the objective for international corporations to make billions on the corpses of family farms and also have control over what is consumed in the EU?

248 *European Commission, Delivering the European Green Deal, op. cit.*
249 *See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. EU Biodiversity Strategy for 2030. Bringing nature back into our lives, Brussels, 20.05.2020, COM(2020) 380 final.*
250 *T. Cukiernik, Dwadzieścia lat w Unii..., op. cit. p. 244.*
251 *R.J. Schenk, The Silent War on Farming. How EU Policies Are Destroying Our Agriculture, Brussels 2024, https://brussels.mcc.hu//uploads/default/0001/01/04f86037371449eac010a9583db2b84b65139b5d.pdf, accessed 14.06.2024.*
252 *Ibid.*

08.6

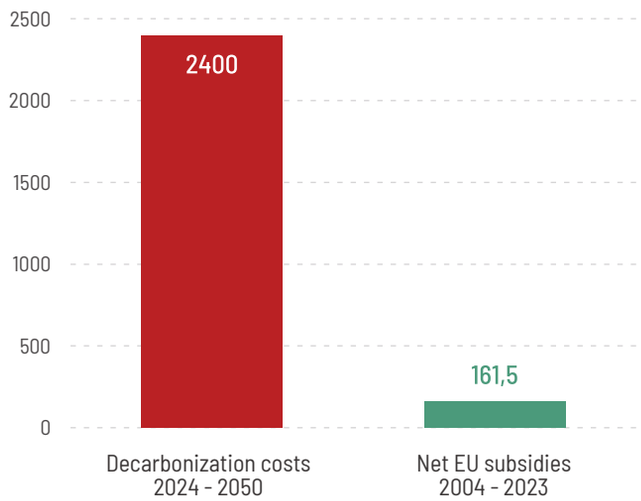
FUNDING

According to the EC's official position, "One third of the EUR 1.8 trillion investments from the NextGenerationEU Recovery Plan, and the EU's seven-year budget will finance the European Green Deal"[253]. The problem is that these sums will not cover all the costs of achieving zero emissions by 2050. As calculated by the French Institut Rousseau, the cost of decarbonization across the EU by 2050 will be as much as EUR 40 trillion (public and private spending)[254], or about EUR 1.5 trillion every year for 27 years (2024-2050). This amount is absolutely unimaginable. The current gross domestic product (hereafter: GDP) of EU is around EUR 15 trillion, and this means that an average of 10% of GDP is to be spent on decarbonization every year.

Poland is even worse off than the EU average. Institut Rousseau has calculated that to achieve zero emissions, our country will have to spend as much as 13.6% of its GDP from public and private money every year for 27 years[255]. And specifically, EUR 2.4 trillion, or more than PLN 10 trillion. This will cost each Pole, including infants, the unemployed, and pensioners, about PLN 270 thousand. Statistically it is PLN 660 thousand or, in other words, PLN 25 thousand a year for every working Pole. This is 10 times more than all the EU subsidies (EUR 245.5 billion) Poland has received for 20 years (2004-2023). At the same time, it is 15 times more than all the net EU subsidies (after subtracting Polish contribution to the EU) Poland has received over those 20 years (EUR 161.5 billion)[256].

Who will pay for all this? As calculated by the Institut Rousseau, in the case of Poland, the total public and private "investments" for this purpose will amount to EUR 90 billion per year, of which the former accounts for EUR 34 billion.

Chart 3. Comparison of the estimated cost of decarbonizing Poland in 2024–2050 with the value of net EU subsidies received by Poland in 2004–2023 after deducting Poland's contribution to the EU (in EUR bln).



Source: own compilation based on data from the French Institut Rousseau and the Polish Ministry of Finance.

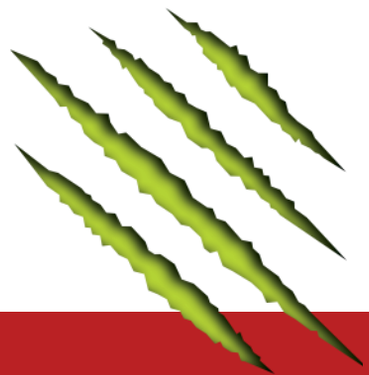
Apart from the EU, which after all has money from our wallets (membership fee, plus taxes imposed on us, the revenues of which would partly go directly to the EU budget, e.g., ETS and ETS2) or from loans that will be repaid from our pockets, someone will have to finance all this. Thus, these will be the budgets of member states and local governments, which are also indirectly financed by us. In addition, EU's whims will have to be financed by private and public companies, so they will raise the prices of goods and services. Individuals will also participate in this expenditure to a large extent.

In the end, it is all of us who will pay for the European Green Deal directly and indirectly through taxes, and higher prices of goods and services, which will lead to a drastic decrease in our standard of living.

253 *European Commission, The European Green Deal. Striving to be the first climate-neutral continent, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en, accessed 14.06.2024.*
254 *Institut Rousseau, Road to Net Zero. Bridging the Green Investment Gap, January 2024, https://institut-rousseau.fr/road-2-net-zero-en/, accessed 14.06.2024.*
255 *Ibid.*
256 *Ministry of Finance, Transfery finansowe Polska – budżet UE [Financial Transfers Poland – EU Budget], https://www.gov.pl/web/finanse/transfery-polska-ue-unia-europejska, accessed 14.06.2024 [Polish only].*

08.7

SUMMARY



Poland will bear the highest cost of decarbonization in relation to GDP. We will rapidly impoverish as a society. As is usually the case, the poorest will pay for the whims of the richest. For example, the EU's AFIR Regulation[257] will force the construction of a dense network of recharging infrastructure for electric cars, the cars, which, after all, will be bought by the wealthy, not the poor, using the tax money from all of us. But what is even more important, **as a result of the further implementation of the EU's decarbonization policy and the European Green Deal, our country may completely lose its energy security (energy shortages), energy sovereignty (because it will phase out coal-based energy generation, despite having coal reserves), as well as food security (due to the collapse of agricultural), and food sovereignty (due to food imports), thus becoming dependent on external factors.**

The problem is that while in the case of Western Europe the political goal of the Green Deal is legitimate (raw material independence from external factors) and the economic goal is beneficial for corporations in particular, the situation in Poland is quite different. Western European countries, if they reduce their use of gas and oil in favor of RES and nuclear power, they can theoretically indeed become independent for these raw materials. But for Poland, the effect will be exactly the opposite. Our country does not need any energy transformation, because by producing electricity and heat from coal and lignite, which it has in huge quantities (for 800 years![258]), it is energy independent, and if it abandons this raw material, it will become dependent on foreign countries.

In addition, we will lose economically. This is because decarbonization means the elimination of thousands of jobs in the mining and energy industries. The Bełchatów mining and energy complex alone employs more than 13 thousand people, generates hundreds of millions of PLN in taxes flowing to local governments annually, and produces about 20% of the cheapest and most stable electricity supply in Poland, not to mention Upper Silesia, Turów, or the Lublin basin. Decisions on group layoffs have already been announced by producers of diesel cars, such as Volvo in Wrocław, Scania in Słupsk, and Stellantis in Bielsko-Biała. Trade unions at Jastrzębska Spółka Węglowa are sounding the alarm that the green revolution in the automotive industry alone will result in the elimination of 52 thousand jobs in Poland. At the same time, we neither produce solar panels nor electric cars, but only a limited number of wind turbines and heat pumps, and we do not have new technologies in these sectors. All this we will have to import at great cost.

The West needs Polish workers and Poland as a market for goods, but does not want Polish companies to become competitive. **Increasing electricity prices are already causing a loss of competitiveness in many industries**. This year, there has been a wave of company closures, mass layoffs, and relocations of businesses mainly outside the EU, for example to Morocco or India. And it will only get worse. Because even if we stuck to coal, we would still have to pay the ETS tax, and soon ETS2 will extend these fees to construction and transportation. As a result, electricity, heating, and transport will become significantly more expensive. **Blackouts will complete the job – more industries will collapse due to lack of energy.**

The European Green Deal manifests the EU's megalomania, where officials believe they can forcibly change the world against logic, common sense, and the will of the people, following the directions spouted by lobbyists. The European Green Deal (and other EU regulations) takes away our right to free choice and deciding for ourselves. We are prohibited from using combustion engine cars, told what to produce energy from, what to heat our homes with, and what to cook our meals on. This is not what freedom is about. This is not the right to dispose of private property. **With the EU invoking the ideology of Italian communist Altiero Spinelli, we are returning to the rightly bygone days of the People's Republic of Poland, where the omnipresent state could do to its citizens anything it wanted.**

257 *Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU, OJ L 234 of 22.09.2023, pp. 1-47.*

258 *T. Cukiernik, Węgla kamiennego mamy na 800 lat [We have hard coal for 800 years], interview with Jerzy Markowski, "Forum Polskiej Gospodarki" 2022, no. 7-8 [Polish only].*

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09

EUROPEAN GREEN DEAL – REAL IMPACT ON THE AGRICULTURAL SECTOR AND AGRI-FOOD INDUSTRY IN POLAND

Cezary Wincenciak, M. Sc.
Independent expert

The European climate law establishes regulations concerning the goal set out in the European Green Deal, according to which, by 2050, the economy and society in Europe will become climate-neutral. This legislation also sets an intermediate target of reducing net greenhouse gas emissions by 55% by 2030 (compared to 1990 levels). The European Union (hereafter: EU) seeks to ensure that climate issues are also taken into account in other policy areas (e.g., transportation and energy) and promotes low-emission technologies and adaptation measures.

Below are the individual links between the provisions contained in the Green Deal regulations and the forecast of negative changes and events that will be generated in Poland in the next 5-15 years.

09.1

EUROPEAN GREEN DEAL – THREATS AND NEGATIVE IMPACT ON THE POLISH FOOD SECTOR

It should be emphasized that the threats discussed in this study are not fictitious; they are changes that will simply occur as a consequence of the adopted regulations. They will therefore be a direct result of implementing and enforcing assumptions, that are nonsensical and harmful for entire economies. The fact that these are goals – not dreams – of the European Commission (hereafter: EC) is confirmed by the following quote:

> "New measures on their own will not be enough to achieve the European Green Deal's objectives. In addition to launching new initiatives, the Commission will work with the Member States to step up the EU's efforts to ensure that current legislation and policies relevant to the Green Deal are enforced and effectively implemented"[259].

The agricultural and agri-food sector will undergo significant changes that will impact the entire sector of this economy and consumers, who are directly connected as recipients of food from the production and processing sector. This will also have a substantial effect on all agricultural households in Poland, regardless of their size. It is important to remember that regulations themselves do not directly affect the consumer but they shape consumer habits— in this case, dietary habits. In such an interconnected system, through specific laws and regulations, it is possible to influence consumer habits.

Below are the key issues – a general overview and a forecast of the impact on the agricultural and agri-food sector and ultimately on the economy as a whole. This is the minimum that will happen when the flagship regulations of the Green Deal are introduced. Unfortunately, it is absolutely impossible to rule out that the negative effects will be even more severe in the long term.

Clarification: The term food sector is used below as a mental shortcut. This section of the economy consists of the farm sector, food processing and food manufacturing sectors, and the food supply chains between the aforementioned sectors.

09.1.1. IMPOSITION AND RESTRUCTURING OF DIETARY HABITS OF THE POPULATION IN POLAND

Consumer habits in Poland are shaped by many factors. They remain fairly consistent but show a slight inclination to evolve under the influence of:

- availability of individual products;
- prices of individual products;
- marketing action.

Polish food sector produces huge amounts of food, but relies heavily on internal consumption. Foodstuffs are also exported, which is significant, for example, in the beef sector, where 87% of beef carcasses are exported[260].

The situation is slightly different in the pork market. Domestic consumption in 2022 was 41 kilograms of pork per capita. However, a huge amount of this product is imported. The trade balance in the pork sector is strongly negative. Polish pork exports account for only 38% of production (as of 2021). The import/export balance is negative and amounted to EUR 776 billion in 2022. And the situation is worsening[261].

Polish agriculture is diverse, i.e. it produces a variety of products – from basic ones, such as plant-based goods that provide the consumer with all kinds of cereal products. At the same time, it is a major player – a producer in Europe of all kinds of meat products: poultry, pork, and beef[262].

259 *Communication from the Commission to the European Parliament, the European Council, the Council, the Economic and Social Committee and the Committee of the Regions – The European Green Deal, Brussels, 11.12.2019, COM(2019) 640 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0640, accessed 19.06.2024.*

260 *A. Hałasiewicz, J. Jasiński, M. Rzytki, Rynek żywności w Polsce w roku 2022 [Food Market in Poland in 2022], Warsaw, March 2023, https://efrwp.pl/wp-content/uploads/2023/03/rynek-zywnosci-w-polsce-w-roku-2022-1.pdf, pp. 13-14, accessed 19.06.2023 [Polish only].*

261 *Ibid, pp. 19-20.*

262 *ING, Drób [Poultry], October 2023, https://www.ing.pl/spolki/raporty-agro/2023-10-drob, accessed 19.06.2023 [Polish only].*

It is also important to remember the huge milk production, and therefore a wide range of dairy products. The entire dairy sector in Polish agriculture, and especially in agri-food processing, is one of the strongest branches of the country's agricultural economy.

This is due to the very large share of Polish capital in the milk processing sector. The reform, carried out quite correctly, ultimately led to the creation of a very large number of dairy cooperatives, where there is a mutual capital and relational connection between farmers, i.e. milk producers, and recipients, i.e. district dairy cooperatives.

This entire sector is very stable and allows for the sustainable and even development of farms. This is particularly evident in the aspect of analysis and observation of the structure of farms, where for a dozen or so years the strong financial position of domestic milk producers has been visible, resulting from the high profitability of farms in areas where there are resilient and stable companies in Poland that receive the raw material, i.e. raw milk. An example is Podlaskie Voivodeship, which is a leader compared to other regions and voivoideships in Poland, if only in terms of milk purchase prices and average prices for the purchase of agricultural land by farmers[263].

This is extremely important, because if you look at the profitability and profits of agricultural producers, farms involved in the production of milk and beef have the most stable financial situation over the last 10-15 years. This is due to the fact that this sector in Europe has been very receptive for many years. Despite many changes in EU regulations, there is no overproduction of milk and dairy products. On the contrary, the departure of the young generation from the passion for cattle breeding and its management is becoming increasingly noticeable in EU countries, which in this segment ultimately means that Polish dairy and meat products (beef) find buyers without any problem – both in Europe and in the rest of the world.

The assumptions of the Green Deal have indicated from the very beginning that the production and keeping of ruminants, including primarily dairy and beef cattle herds, generate a huge negative impact on the process of global warming, because cattle is presented as a source of methane emissions into the atmosphere. I would like to point out that the thesis of the direct impact of methane on the rise and changes in the Earth's temperature has still not been reliably documented. It is evident that all the EC's work in this area up-to-date is heading toward passing the so-called Methane Directive and balancing the carbon footprint by establishing various types of indicators and conversion factors for cattle herds.

In such a situation, the cattle farming sector becomes climate enemy number one. Ultimately, it is highly likely that taxes will be levied on cattle farmers for environmental emissions of methane and carbon dioxide (hereinafter: CO_2). This will have a direct impact on the declining profitability of production on dairy and beef farms.

It should be mentioned that for several months now, large-scale marketing activities have been underway to promote false theories. In this message, meat is presented as a carcinogenic and environmentally harmful product. Thus, its producers, i.e. farmers and their farms, are also perceived negatively. At the same time, the consumption of carbohydrates (including simple sugars) has been increasing for years[264].

Such disinformation of the public ultimately means a remodeling and imposition of nutrition. First, there will be a decline in the consumption of dairy and beef products produced primarily in Poland. The result will be an overproduction of this assortment on the domestic market, which will result in a drop in purchase prices for both raw milk and beef livestock. As a result, many farms (the number is difficult to estimate) will limit, phase out or end their production (which is already happening today), and this will ultimately lead them to switching to a different type of breeding or farming. This process is already underway, although the effects of the implementation of the Green Deal are still ahead of us[265].

263 *Krajowy Związek Spółdzielni Mleczarskich Związek Rewizyjny [National Association of Dairy Cooperatives Revisional Association], Ceny skupu mleka w kwietniu 2024 r. [Milk procurement prices in April 2024], published 23.05.2024, https://mleczarstwopolskie.pl/ceny-skupu-mleka-w-kwietniu-2024-r/, accessed 21.06.2024 [Polish only].*

264 *L. Kłosiewicz-Latoszek, Jaka ilość cukru jest bezpieczna dla zdrowia? [How much sugar is safe for health], https://ncez.pzh.gov.pl/abc-zywienia/jaka-ilosc-cukru-jest-bezpieczna-dla-zdrowia/, accessed 21.06.2024 [Polish only].*

265 *D. Kolasińska, W Polsce maleje pogłowie bydła. Co to oznacza dla hodowców? [Poland's cattle population is declining. What does this mean for cattle breeders?], published 19.09.2023, https://www.topagrar.pl/articles/aktualnosci-branzowe-bydlo/w-polsce-maleje-poglowie-bydla-co-to-oznacza-dla-hodowcow-2492844, accessed 21.06.2024 [Polish only].*

09.1.2. BEEF MARKET

It should be noted that a classic farm maintaining a herd of cattle "removes" excess goods not cultivated by itself as a byproduct. This is because these farms usually cultivate permanent grasslands and fodder crops for their own cattle. Very often, they do not bring products such as cereal grains, sugar beet roots, or potato tubers to market. Due to the reduction, phasing out, and cessation of beef and milk production, the crop structure on these farms will change entirely, leading to the cultivation of different species.

If the aforementioned farms finally stop breeding cattle, then instead of corn, various meadows and pastures, and various types of cereals grown for internal consumption, the land they own will be sown with classic, most popular types of crops – those whose main final yield will be intended for sale on external markets. These will probably be winter cereals, such as rye, triticale, barley, and wheat. Additionally, there will be more crops of species such as corn, sugar beet, and potatoes. Ultimately, it can be clearly stated that this will greatly disrupt the current crop structure and increase the volume of the produced goods, which Poland already "has a problem" with today as a producer with such, and not other, neighbors, i.e. "cheaper producers"[266].

09.1.3. PORK MARKET

The situation is slightly different when it comes to the consumption and thus the production of products from meat raw materials supplied by farms raising pigs. This sector was very much broken up in Poland a long time ago, and as a result, the scale of its production was suppressed[267]. Currently, pig herds in our country are maintained by three types of farms.

The first type is family farms with a long-standing breeding tradition, where – often regardless of profitability – a larger or smaller herd of pigs is maintained. The second type is small-scale farms that treat pig breeding as an supplement to other types of production. It also happens that it is merely an addition to the salaried work of the farm owner. This group also includes farms that have the ability to produce "periodically", i.e. they start a production cycle during favorable price periods, which they end almost immediately during periods of low or negative profitability. The third group is farms that conduct so-called contract fattening. It is defined differently, but generally, it means that farms sign very extensive contracts – often with international corporations – to sort of lease out their production capacity.

All these farms share one feature: the pig herds they have maintained for many years consume feed, thereby using large amounts of grain and thus "taking off" surpluses of this raw material from the Polish market. It should be emphasized that the first two groups of farms mentioned are of the greatest importance in this respect, as they almost always use domestic grain as a feed base.

Nevertheless, the trade of grain in the context of pig farming is extremely important, as Poland lacks solutions that would allow it to use the surplus of all grains grown on its own territory. It should be noted that in recent years, during periods when feed grain prices were very low for an extended period, there was a strong upward trend in the size of the pig population maintained by farmers in Poland[268]. This is evidence that it was a kind of safety valve. As a result of the increase in pork production by Polish farmers, there was a certain regulation of the grain market, which thus partially stabilized.

If we lead to a further escalation in the perception of meat products, and the pork sector more broadly, as having a negative impact on the environment and climate, there will be a decline in the consumption of the most popular meat from 20 years ago in Poland. This will ultimately disrupt the demand-supply relationship.

If consumers begin to reduce their consumption of pork, whether of better or worse quality, in various forms, the scale of pork production in Poland will decrease. In turn, a decline in the pig population will lead to a decline in the consumption of cereals and related goods, resulting in a surplus in their production. Farms that eliminate or reduce their herd sizes will not only stop buying certain volumes of feed for their herds

266 *Supreme Audit Office, Zboże i rzepak z Ukrainy – kto na tym zarobił, a kto stracił (zapis konferencji prasowej) [Grain and rapeseed from Ukraine – who made money on it and who lost (transcript of press conference)], published 23.11.2023, https://www.nik.gov.pl/aktualnosci/import-zboza-z-ukrainy.html, accessed 21.06.2024 [Polish only].*

267 *B. Wojtaszczyk, W rok straciliśmy ⅛ pogłowia świń. Statystyki najgorsze od 70 lat [In one year we lost ⅛ of the pig population. Statistics worst in 70 years], published 15.09.2022, https://www.farmer.pl/produkcja-zwierzeca/trzoda-chlewna/w-rok-stracilismy-1-8-poglowia-swin-statystyki-najgorsze-od-70-lat,123229.html, accessed 21.06.2024 [Polish only].*

268 *Przykładowe receptury pasz dla trzody chlewnej [Sample feed recipes for pigs], see Warmińsko-Mazurski Ośrodek Doradztwa Rolniczego [Warmia and Mazury Agricultural Advisory Center] based in Olsztyn, Przykładowe receptury dla grup technologicznych [Sample recipes for technology groups], https://wmodr.pl/files/hzP9sfZ7dNhDvILOCItNFDMvIVgdkS9jSdiUmKAX.pdf, accessed 21.06.2024 [Polish only].*

but will also redirect seeds produced for internal needs to the external market, i.e. for sale. This will increase the volume of plant-based products on the Polish market, meaning that the existing surplus will become even larger. Under these circumstances, there will be a disruption, destabilization and, ultimately, a decrease in purchase prices for these species. As a result, the income of Polish farms engaged in the production of plant species yielding seeds for external sale will fall[269].

09.1.4. POULTRY MEAT MARKET

It is also worth mentioning the poultry meat market, whose production in Poland is a strong branch of the economy. How it will behave remains to be seen. Poland is currently the European leader in all aspects of the poultry meat production and export. At the same time, there is a noticeable trend in marketing and regulatory efforts to ensure that this market does not experience significant disruption leading to the limitation or cessation of meat production[270]. However, since this sector is not directly attacked in marketing activities, there is a chance that the consumption of poultry products will remain at an unchanged level, and production and export will have an upward trend.

09.1.5. SYNTHETIC MEAT MARKET

It is worth mentioning a threat that is becoming a reality in Europe. The industrial production of synthetic meat is developing very dynamically. More and more companies operate in this industry. It is known that in this regard, Polish industry and agriculture are completely behind in terms of technology. They do not constitute any competition for companies that already exist and have their own technology. This refers to companies selling their customers the technology for producing fully synthetic meat.

This industry is treated by the EC as a salutary solution replacing traditional meat production. This means that it will have the green light when it comes to all kinds of subsidies and easier access to various sources of funding for both progress and the production process itself. If we add to this the promotion of synthetic meat and its products, they could ultimately become an element of the Polish consumer's diet very quickly[271].

Let us note that so far the supplier of meat has been a farmer – a Polish small-, medium- or large-scale farm owner. This market is also characterized by high structural fragmentation. Its competition will be a company (even a corporation) that may, but does not have to, produce substitute products in Poland. It may also have various tax reliefs in the country or produce entirely abroad, thereby neither providing employment nor generating tax revenue for the state budget Ultimately, it can be concluded that there is a very real threat that beef or pork produced by Polish farmers will be gradually displaced from consumers' refrigerators by more environmentally friendly substitutes, i.e. synthetic meat.

Currently, there is no comparison of the health impact of natural meat consumption versus synthetic meat consumption. However, there is no doubt that the production of so-called substitute meat and related products may contribute to the processes described above, i.e. the reduction or cessation of beef and pork production by Polish farmers and the simultaneous development of corporate synthetic meat factories.

The procedures and the production technologies used in such facilities will be unknown. However, it is known that this is an industry that will get the green light from the EC as – let us call it – "less harmful to the environment", because statistical charts can accommodate anything. I emphasize – it is impossible to indicate the level of health or harmfulness of such a product today. In order to be able to determine this, extensive research is needed over at least several decades by independent scientific institutions.

As a result of this assumption, Polish farmers – producers of beef and pork – will operate under national conditions, while their competitors will produce "ecological meat" in areas where the conditions for such activities are simply more favorable. Ultimately, in the future, a situation may arise – which today still seems impossible – that synthetic meat will be cheaper than natural meat produced by domestic food producers, i.e. farmers. This entire process will not be completed in a year, but it has already begun, and depending on the EC regulations, it will either accelerate or slow down.

269 *See Energetyka24, Holandia wypowiada wojnę reklamom mięsa. Kolejne miasto wprowadza zakaz [Netherlands declares war on meat ads. Another city introduces ban], published 16.11.2023, https://energetyka24.com/klimat/wiadomosci/holandia-wypowiada-wojne-reklamom-miesa-kolejne-miasto-wprowadza-zakaz, accessed 21.06.2024 [Polish only].*

270 *ING, Drób [Poultry], op. cit.*

271 *A. Wysoczańska, Sztuczne mięso coraz tańsze. Teraz kosztuje kilkanaście dolarów, a kiedyś 250 tys. [Artificial meat getting cheaper. It now costs a dozen dollars, and used to cost 250 thousand], published 30.09.2023, https://www.bankier.pl/wiadomosc/Sztuczne-mieso-coraz-tansze-Teraz-kosztuje-kilkanascie-dolarow-a-kiedys-250-tys-8616851.html, accessed 21.06.2024 [Polish only].*

It should be remembered that the average consumer consumes dozens of different types of products from dozens of different types of product groups each year, and most of them are related to agriculture. The mere reduction in consumption of red meat, i.e. beef and pork, causes a series of subsequent changes – almost like a chain reaction – that are difficult to predict. It should be emphasized again – that it is currently impossible to determine how the overall health level of the population will change. This should be observed and assessed in 20-30 years. Today, after such a period, we can see how much harm the policy of promoting carbohydrates as healthier than meat products has caused.

09.2

INCREASED DEPENDENCE OF SECTOR PROFITABILITY ON EU SUBSIDIES

The Green Deal in the agricultural sector involves a complete overhaul of the system of area subsidies. The so-called eco-schemes are introduced, which are essentially subsidy packages for farms, encompassing specific directions of production promoted and indicated by the EC[272].

The Green Deal policy also entails a significant energy reform, leading to increased prices for all agricultural production inputs, particularly those produced in Poland by domestic enterprises, as well as those produced in other EU countries. Consequently, in every sector of agricultural production, including meat, milk and dairy products, and grain products, production costs per hectare or per kilogram of produced goods will rise. For example, it is already noticeable that rising energy prices and the introduction of the obligation to purchase CO_2 emission allowances under the ETS have led to an increase in costs for fertilizer manufacturers. This has caused destabilization of prices for these products. This was felt by domestic producers, such as the Polish Grupa Azoty – one of the largest producers of artificial fertilizers for agriculture in this part of Europe. Consequently, the increase in the cost of fertilizer production has inevitably led to an increase in fertilizer prices for the end user, and as a result, the entire agricultural sector experienced an increase in production costs.

No matter how you analyze it, agricultural production involves both fixed costs and variable costs. A standard Polish farm incurs expenses for:

- fuel (diesel fuel for machinery);
- mineral fertilizers;
- organic fertilizers;
- pesticides;
- seeds;
- all sorts of materials related to investing in permanent infrastructure, such as building materials.

272 *Ministry of Agriculture and Rural Development, Ekoschematy obszarowe [Area Ecoschemes], https://www.gov.pl/web/rolnictwo/ekoschematy3, accessed 21.06.2024 [Polish only].*

The prices of many of these commodities are strongly dependent on CO_2 limits. Ultimately, one can draw a simple conclusion: the more the regulations force the increase in energy costs, the higher the production costs will be for the agricultural sector.

Income and profit on farms are in fact strongly dependent on the final price of the produced products. Our economy – since we are an EU member state – operates according to the rules of the global market, meaning the prices of agricultural products sold by farmers directly to the domestic or foreign market are determined by supply and demand. The most common determinants are prices on the international agricultural products exchange MATIF, which in turn is strongly dependent on the Chicago stock exchange. These are output indicators – the source of prices for basic agricultural products, such as wheat, corn, rapeseed, and others. And since the Green Deal applies only in the EU, of course the rest of the world is not covered by this set of regulations and rules. Thus, within the EU, within the framework of the free market and various quotas, Polish agricultural producers, for example of wheat, will compete with agricultural producers from the United States of America, Ukraine, Russia, and other countries that are strong players in this sector. As a result, this means an increase in production costs for Polish farmers, while at the same time they will not be able to pass on this increase in costs to the final consumer by raising prices, e.g., the aforementioned wheat. Profitability, i.e. profit per ton or hectare of a given crop, will decrease. This process has been noticeable since Poland's accession to the EU, as the prices of mineral fertilizers, fuels, and energy carriers have increased significantly, with an incomparably smaller increase in the prices of final products.

If we assume that production costs for farms in Poland are rising regularly, while at the same time the prices of final goods sold by farmers are rising irregularly, unpredictably, and often to a negligible degree, then the destabilization of the profitability of farms is clearly visible.

If we assume that production costs for farms in Poland are rising regularly, while at the same time the prices of final goods sold by farmers are rising irregularly, unpredictably, and often to a negligible degree, then the destabilization of the profitability of farms is clearly visible.

The EU has created a system of various subsidies to "theoretically" level the playing field for European producers with the rest of the world. However, if we assume that the role of area subsidies is gradually growing as a source of increasing profits per hectare, then we can draw a clear conclusion that the profitability of farms is becoming increasingly dependent on the level of area subsidies, which only confirms that there is no free market in Europe[273].

Why is this phenomenon so dangerous? Up to now, within the framework of the common agricultural policy, at least there were declarations that the EU seeks to unify the level of area subsidies. It has been promised for many years at European Parliament meetings that in order to maintain an equal pace of development in the agricultural sector, the EU would aim for a common level of area subsidies.

The Green Deal changes this completely, as the aforementioned procedures for new subsidies, the so-called eco-schemes, have been shaped on the basis of national strategic plans. Each country can – and has – created its own solutions, based on the factual assumptions that determine the amount of subsidies for individual farms. In the coming years, this will mean a complete departure from the common agricultural policy of the previous budgeting period, when the narrative was entirely different[274].

Moreover, recent years have shown that for the issue of subsidies for European farms, it was important for officials who participate in the process of obtaining all kinds of subsidies in the agricultural sector to be, firstly, friendly, secondly, creative, and thirdly, professional, i.e. to have the appropriate knowledge to be able to advise. In other words, to be able to show farmers the way to obtain European funds for the development of farms, their maintenance, and investments in the simplest and easiest way possible. Unfortunately, in recent years, officials tasked with providing farmers with information obtained from state entities, which in turn obtained this information from the EC, have often shown harmful overzealousness, perhaps due to ignorance, i.e. they have tried not to advise on increasing farm financing so as not to expose themselves to EU control. It can be assumed that the same staff will be involved in assisting farms in preparing documentation and obtaining EU funds according to a new set of regulations and rules.

273 *R. Sass, K. Tabaczyński, Wpływ płatności bezpośrednich na dochody gospodarstw rolnych [Impact of direct payments on farm income], "Zagadnienia Doradztwa Rolniczego" 2020, no. 3, https://cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.desklight-10ec69a5-c404-4177-8e40-5b88881b65e1/c/R._Sass__K._Tabaczynski_-_Wplyw_platnosci_bezposrednich_na_dochody_gosp._rolnych.pdf, accessed 21.06.2024 [Polish only].*

274 *Friends of the Earth Europe, CAP Strategic Plans: Green Deal or No Deal? In-depth analysis of seven country cases, June 2022, https://friendsoftheearth.eu/wp-content/uploads/2022/06/FRI-22-Pac-UK6.pdf, accessed 21.06.2024.*

This assumption allows us to conclude that countries where officials and advisors are more "savvy" and skilled will be able to obtain greater financial resources for farms than other countries. This is clearly visible in the examples of Poland and Germany, because in our country farmers themselves often have greater knowledge than officials – unlike in Germany. However, it is the German officials who exhibit a high level of professionalism when it comes to obtaining funds for agriculture.

Finally, if we assume that there will be a growing trend in the share of all kinds of subsidies for farm activity in their budgets, then in the face of the large-scale reform imposed by the EU, including the forcing of energy transformation, e.g. investments in ecological energy (renewable energy sources), a clear conclusion can be drawn that Polish agriculture will be increasingly dependent on area subsidies and other subsidies from the EU. Poland will find it more difficult to keep up with the pace of development of the agricultural sector under the new principles and in new capital allocations. This means that the phenomenon of a two-speed Europe will deepen.

In the agricultural sector, this has been noticeable for many years, for example, in companies developing technologies for agriculture. There are investments in Poland made thanks to EU funds. However, if we compare the pre-accession period in our country to the period after accession, including analyzing the flow of capital to companies developing technologies for agriculture, as well as innovations in the country, and then compare the results with data from other EU countries, such as Germany, we will notice that it looks completely different there. The flow of information, the time and the pace of capital flow were and are completely different, despite the fact that we are talking about member states of one organization – the EU[275].

The final conclusion is simple – the dependence of agriculture through a one-way presence on the global market within the World Trade Organization (hereinafter: WTO) means that officials in both individual countries and Poland have an increasing influence on the profitability of such a powerful sector as agriculture, not to mention the agri-food and processing sectors, in which farmers could be very strong players. We are moving toward new regulations, which experience shows that officials, who are, as it were, distributors of European capital, will be learning for years to come. It is clear that the pace of their learning will be directly proportional to the rate at which farms in Poland raise capital and the size of that capital. In this matter, a very simple rule applies: the sooner the correct path to investing in a farm and its development is indicated, the sooner the capital is acquired for these purposes, the sooner this process will be completed and the sooner the agricultural sector will achieve an increase in profitable production in the new reality called the Green Deal.

Similarly, if we assume that subsidies are only a part of the net profit for the farmer, we can also assume that many farms would be able to survive without these subsidies, and therefore many of them would be able to give up this income. Unfortunately, currently, it looks the other way around – the share of subsidies in farm profits is increasing, and the profit derived directly from production is decreasing. A socialist trend is noticeable here, consisting in the fact that additional socio-political premises appear in the development and existence of these farms[276]. To put it simply – through the policy of promising various subsidies, one influences the decisions of this huge group of voters in all types of elections, whether local government or parliamentary.

Such a situation is very dangerous and unacceptable in current times, but unfortunately, this trend is noticeable and growing. For example, in 2023, Poland had a problem with illegal duty-free imports of agricultural goods from Ukraine. It was not solved by curbing this phenomenon, but by introducing a new type of subsidy for farmers to compensate for the decline in the profitability of their business. It is known that in order to finance such support (to start with – PLN two billion), the state budget has to raise additional funds, and in order to do so, for example, another social group has to be taxed. Ultimately, there is a huge transfer of capital, which further destabilizes the national economy. This will continue until the trend is reversed, i.e. when the farmer's net profit again comes primarily from profitable production.

275 *European Parliament, Financing of the CAP: facts and figures, https://www.europarl.europa.eu/factsheets/en/sheet/106/financing-of-the-cap-facts-and-figures, accessed 22.06.2024.*

276 *R. Sass, K. Tabaczyński, op. cit.*

09.3

PROMOTION OF THE DEVELOPMENT OF LARGE MULTINATIONAL CORPORATIONS

The topic of multinational corporations in terms of the Green Deal is very broad, and a separate expert study of this issue, including a forecast, should be prepared. Nevertheless, there are a few observations that should be made at the very beginning.

At present, the agricultural sector in Poland includes domestic companies, foreign companies, and multinational corporations that possess the most capital and, thanks to their spheres of influence, the greatest dynamics in terms of operational effectiveness. An analysis of the Green Deal leads to the conclusion that it will translate into increased production costs of every commodity produced in the agricultural sector in Poland. I want to emphasize again that this will apply to all types of seeds, such as rapeseed, corn, other grains, oilseeds, legumes, as well as meat and dairy products. In short, goods purchased by the average Polish consumer. If, as a result of the energy transformation, the cost of production of each of these goods increases, then in the current reality the profitability of each farm will decrease[277].

The pace of farm development, the rate of investment in them and – note! – the pace and ability to adapt to the new regulations and principles set out in the Green Deal are gradually slowing down. In this case, the assumption of this policy can serve as an example, according to which – as has been clearly and distinctly indicated – the use of pesticides in the EU will be reduced by almost 50%[278].

As a result, farmers will have fewer resources and options available to them to control various types of pests, diseases, and weeds. It should be noted that the EC claims in media and marketing messages that pesticides will be replaced by a huge group of substitute products and solutions, such as biological protection methods and mechanical methods, for example mechanical weed control, etc. However, it should be mentioned that as of today, the new technologies are still insufficient and it is not known when they will be. If they do become available, their purchase will pose a major financial challenge for Polish farms, as new biological agrotechnical methods are simply very expensive, as they are almost always developed outside the country. This will lead to a decrease in the production volume of specific products over a period of time. To put it bluntly – in Europe, the total production of cereals, the volume of pork, as well as beef, may decrease.

In such a situation, since we are still a country open to external markets outside the EU within the framework of WTO, international corporations will enter the game very effectively, as they will have huge resources useful at this time: capital, human resources, knowledge, and information. This is already happening. An example is the duty-free, illegal import of agricultural raw materials from Ukraine into the entire EU, with a special focus on Poland. I predicted this over two years ago, which at the time seemed unrealistic to many. Another example is the long-standing import of soy in various forms (soybean meal and derivatives) into the EU, including Poland, from countries such as Argentina and Brazil, where – attention! – completely different agricultural production regulations apply. The same goes for beef imported from South America – a multibillion-dollar quota is set every year[279].

If we assume that the productivity of the agricultural sector will decline both in Poland and in other EU countries, this will mean a green light for international corporations that are already engaged in large-scale imports of agricultural products from all over the world to Europe, including Poland.

A good example is the domestic rapeseed market. Namely, in recent years, the American concern Bunge, which owns an oil mill and a huge acquired factory in Kruszwica, producing the famous Kujawski Oil, has imported rapeseed by sea from Romania and Australia[280].

277 *E. Chrząszczewski, Droższe nawozy, czyli wyższe koszty produkcji [More expensive fertilizers, or higher production costs], published 18.02.2022, https://www.wodr.poznan.pl/doradztwo/ekonomika/drozsze-nawozy-czyli-wyzsze-koszty-produkcji, accessed 22.06.2024 [Polish only].*

278 *European Commission, Pesticides and Plant Protection, https://agriculture.ec.europa.eu/sustainability/environmental-sustainability/low-input-farming/pesticides_en, accessed 22.06.2024.*

279 *wk, Bezcłowy import wołowiny do UE zagraża europejskim hodowcom. Pojawia się poważny problem [Duty-free beef imports into the EU threaten European ranchers. A serious problem is emerging], published 15.09.2023, https://www.topagrar.pl/articles/aktualnosci-branzowe-bydlo/bezclowy-import-wolowiny-do-ue-zagraza-europejskim-hodowcom-pojawia-sie-powazny-problem-2492812, accessed 22.06.2024 [Polish only].*

280 *Supreme Audit Office, op. cit.; A. Bąk, Australia jest drugim dostawcą rzepaku do UE [Australia is the second supplier of rapeseed to the EU], https://www.ewgt.com.pl/e-wgt-category/112—biopaliwa/21553-australia-jest-drugim-dostawca-rzepaku-do-ue, accessed 22.06.2024 [Polish only].*

If we assume that as a result of – note! an important word – limiting the amount of available insecticides, herbicides, and fungicides in connection with the Green Deal, the pressure of all kinds of pathogens on plants will increase and, ultimately, a decrease in the production of these crops, then these companies will also be partly, so to speak, forced to pursue a policy of becoming independent from local producers by importing products from outside the EU (diversification of raw material supplies).

Ultimately, this will undoubtedly lead to new channels of information exchange, new business connections. It is not difficult to foresee that more than one domestic company will come to a simple conclusion: relying on imports of raw material for further processing and food production makes more economic and logistical sense than relying on domestic suppliers, who will perhaps deliver a product of inferior quality or in insufficient quantity.

Here I would like to point out that this requires an entirely separate expert opinion, because the scope is very large and the food market is global. It is no secret that the EU has already followed the practice of introducing "privileged rules" for some importers of food and agricultural goods from outside the EU. It happened that despite the absence of any rationale, certain companies were given the green light, while others could not count on it An example is Ukraine and its huge import of cereal seeds to Poland. It is no secret that if these changes come into force, such actions as in the case of trade between Poland and Ukraine may become a daily occurrence in this sector within 5 to 15 years. This in turn will result in even greater independence of domestic processors in the food production sector from Polish farmers, because the emerging alternative will be a short-term but very sensible solution and a chance to increase profits or make up for the decrease in production profitability.

09.4

FORCEFUL RECONSTRUCTION AND DESTRUCTION OF LONG-STANDING SECTORAL TIES IN FAVOR OF GLOBAL AGRI-FOOD SECTOR STRUCTURES

This issue has already been partially discussed above in terms of the movement of goods between the EU and external countries. Firstly, it should be recalled: despite high production costs and, ultimately, high food prices, EU countries were able to establish themselves on the global stage as producers of expensive but high-quality food. The situation – despite operating on the border of the law and free market principles, and despite capital and economic ties – seemed to be in some way stabilized and as if subject to natural regulation. Today, it is known that the introduction of the Green Deal principles will lead to the disruption and, to a large extent, the severance of the existing business and capital ties.

First of all, the above-mentioned changes in energy prices, which are already taking place and will take place in individual EU countries, will lead to a situation where companies operating in the same segment of agricultural and agri-food processing will incur different costs related to the same means of production. As a result, the divergence of prices of the final product will increase. It is not important here what kind of product it will be. What is important is that legal regulations will lead to price differentiation[281].

At the same time, large global companies with subsidiaries in different parts of the world, including Poland and other EU member states, will be put to a major test. Companies that have, for example, several plants producing the same food assortment, spread out in different places around the world, constantly monitor their expenses and investment costs. If it turns out that conducting any production in the EU, including Poland, becomes expensive, then it makes sense and is justified from the point of view of decision-makers in such

281 *B. Derski, Hurtowe ceny prądu w Polsce w 2023 należały do najwyższych w UE [Wholesale electricity prices in Poland in 2023 were among the highest in the EU], published 06.01.2024, https://wysokienapiecie.pl/96099-ceny-pradu-w-polsce-w-2023-najwyzsze-w-ue/, accessed: 22.06.2024 [Polish only].*

companies to move production to other countries, e.g., those offering cheaper electricity or cheaper raw materials or semi-finished products for food production, such as meat resources, and resources of raw materials from plant production. This will be taken into account in a situation – as I mentioned earlier – when, for example, live pigs or pig carcasses produced in Poland become unattractive in terms of price for a large international company with processing plants in Poland[282].

It may be decided that this plant, even if not liquidated, will use semi-finished products from other countries, e.g., those where the Green Deal rules do not apply, as this saves and reduces the cost of production of the finished product in question. Once again, it should be borne in mind that the EU will not clearly and firmly enforce compliance with the regulations it has adopted on external countries and companies that will import their products into the EU, including Poland.

It should be noted that such a reconstruction and such an impact on production costs and the flow of goods creates a need for many companies to re-examine structures in order to optimize both costs and supplies. Recent examples have shown that in other sectors of the economy, global companies with branches in Poland are making decisions to discontinue production in our country.

In the agricultural and agri-food sector, it will be different – it is highly likely that the processing plants in Poland, which have capital and international origins, will not close immediately. However, the sources of their supply of intermediate products or raw materials of agricultural origin will change for purely economic reasons – in order to maintain jobs. Greater energy-related expenditures will generate the need to seek savings. Unfortunately, it is likely that this saving will hit domestic suppliers and agricultural producers. Actions will be taken to diversify production – the existing chains of connections will be broken, e.g., between a local processing company with international capital and local suppliers, i.e. Polish farmers.

Instead, the process of diversification will continue, e.g., half of semi-finished products or raw materials will come from countries where production is cheaper, because there is no need to comply with the new rules set by the EU. In the long run, this will lead to a disruption of the demand-supply relationship and a loss of position on the local or national market. The negotiating position of the farmer will be significantly weakened, for example, when it comes to setting prices with recipients of the goods he produces[283].

There will be a disruption of sectoral connections that have been established and lasted for years, and within which certain settlement mechanisms and mutual business ethics have been developed. Instead, a stronger, more aggressive capitalism will enter, enforced by EU regulations, which from the point of view of decision-makers in large international corporations may prove essential for the survival of a given company. Unfortunately, Polish suppliers and producers, including farmers, will ultimately lose out.

09.5

FORCED COMPLETE OVERHAUL OF AGRICULTURAL PRODUCTION INFRASTRUCTURE – CAPITAL FLOW TO FOREIGN TECHNOLOGY COMPANIES

To explain this issue, it is necessary to first describe the processes that took place in Poland after joining the EU. At the time of accession, quite a few significant changes occurred in the agricultural and agri-food sector.

First of all, many farmers and entrepreneurs gained access to innovative – at that time – broadly understood technologies. Through their purchase and introduction into the Polish market, they gradually started to be treated as certain development and technological standards. At the same time, after accession to the EU, already existing in Poland, as well as new business entities emerging at that time, guided by the principle of the free market, began to create their own solutions, which were sometimes based on ideas borrowed from the countries of old EU-15. Sometimes the need to develop them was also conditioned by the necessity of Polish companies to survive in the new market.

282 *KFHDiPJ Editorial Office, Coraz bliżej do podpisania umowy UE z Mercosurem [Getting closer to signing EU agreement with Mercosur], published 10.05.2024, https://drobiarze.pl/2024/05/10/coraz-blizej-do-podpisania-umowy-ue-z-mercosurem/, accessed 22.06.2024 [Polish only].*

283 *A. Bąk, op. cit.*

The whole process, which lasted for many years, led to a situation in which domestic players in the agricultural and agri-food sector, in order to make up for years of technological delay and stagnation, at the cost of enormous effort and work created their own equivalents of various technologies designed for agriculture. The direction of development and creation of innovations was then determined by specific legal regulations, which were quite open and free for that time.

If this is now juxtaposed with the changes announced as part of the Green Deal by the EC, it is apparent that these new rules force a reconstruction of management methods in the agricultural sector, i.e. a transformation of most of the current rules, methodologies, technologies, and solutions adopted by the farmers themselves. Let's call a spade a spade – many farms will have to make huge investments to change their machinery fleet, crop management and protection technology, modernize the livestock buildings where various types of animals are kept, and transform the ways in which these farms are managed[284].

In the end, it can be clearly indicated that a huge turnover of capital will be forced in the form of investments that farmers, including in Poland, will be obliged to make. It should be emphasized that they will only be motivated by the new rules resulting from the Green Deal policy. Today, it is already known that stronger and often larger companies with international capital are to some extent already prepared to meet the new needs of farmers in the EU, including in Poland, triggered by the new regulations.

We are talking about such solutions as biological products in agriculture instead of chemical pesticides, autonomous machines and so-called smart devices, which can replace, for example, old cultivation technologies. They already exist, but their creators and owners are companies with foreign capital. We can say that Polish companies must start a new version of an "arms race", i.e. they must develop an entirely new range of products, tailored to the new regulations at lightning speed[285].

A certain convergence can be clearly observed – companies with French, Austrian, Czech, and German capital seem to have sensed the usefulness of work on new technologies in terms of the upcoming future. This pseudo-future is undoubtedly the Green Deal. There is a certain coincidence – a group of companies in the countries of the old EU-15 already has a portfolio of solutions that fully meet the product and technological needs related to the changes that are to be carried out on farms. Meanwhile, a very large group of companies with Polish capital and Polish solutions are not yet ready for such a technological leap – to meet the needs of local customers.

Therefore, from the EC's declaration one can conclude that when huge funds appear to finance the forced reform in agriculture towards being eco-friendly, they will largely go to foreign companies. Only specific products will meet the restrictive rules of the Green Deal, which means that a huge part of the money earmarked for necessary investments in farms and the agri-food industry will flow to those suppliers of products and services who, as a precautionary measure, have already prepared for this.

No documents will confirm this; however, such a chain of connections and sequence of events is already evident today. It can therefore be clearly and distinctly stated that although the funds in the EU budget are shared and jointly spent, the money will again be redirected to countries such as Germany, France, Austria, or the Czech Republic, as companies operating there will fulfill a huge number of individual orders from farms all over Europe. This will result in a similar flow of capital as when Poland joined the EU.

284 *European Commission, Digitalization of agriculture and rural areas in the EU, https://agriculture.ec.europa.eu/sustainability/digitalisation_en, accessed 24.06.2024.*

285 *See K. Pawłowski, Top 13 na Agritechnice 2023. Co podobało się nam najbardziej? [Top 13 at Agritechnica 2023: What did we like best?], published 18.11.2023, https://www.farmer.pl/technika-rolnicza/maszyny-rolnicze/top-13-na-agritechnice-2023-co-podobalo-sie-nam-najbardziej,138399.html, accessed 24.06.2024[Polish only] – thanks to this article you can quickly identify the capital creating new technologies in the agricultural sector.*

09.6

ACTIONS AIMED AT FORCING GENERAL APPROVAL FOR GMO FOODS

To enable the Reader to understand the essence of the matter, I will use a compilation of some information. In 2018, the German Bayer – the largest chemical company in the EU, and one of the main players producing agricultural production agents – purchased the American company Monsanto, which (pay attention!) was absolutely not in bankruptcy. One could even say that its financial position was very strong at that time. In the agricultural community and beyond, it was considered a world leader in GMO technology, i.e. the creation of genetically modified plant varieties of various species. However, despite its significant global position, Monsanto was unable to enter the EU market with its seed products (in my opinion – primarily corn). Today, Bayer has these products in its portfolio. This story is complemented by the aforementioned process of reducing the use of chemical pesticides by 50% in accordance with the Green Deal[286].

As I mentioned, the message being promoted now is that the decline in the number of available products is to be compensated by the introduction of biological and mechanical solutions to control weeds, diseases, and pests. I also mentioned that these solutions are not yet sufficient and it is not known how long it will take to develop them. Thus, a new problem was generated; a problem that cannot be dealt with quickly and easily.

This situation will now become more complicated. According to the assumptions of the Green Deal, a very large group of products must be phased out. Therefore, there will be numerous difficulties that farmers will not be able to overcome or have solutions for. A certain mass expectation will develop – for the introduction of "some solution." Imagine farmers in Poland in 5 or 10 years, when, as a result of the withdrawal of pesticides, crops will be destroyed by pests or weeds. This is already happening. This process will accelerate.

At such a critical moment, the idea of liberalizing the regulations to allow the cultivation of transgenic (GMO) crops will be presented to farmers as a remedy. I do not want to comment on GMOs themselves here, as this is a topic for a separate study. However, when a kind of critical mass is reached in the agricultural sector, GMO crops will be presented as a necessary solution due to the lack of an alternative. Initially, agriculture will be satisfied[287].

Nevertheless, the approval of the cultivation of transgenic crops in Europe from the very start will give a huge advantage to the company most advanced in this matter, with the greatest knowledge and resources, namely German Bayer, which will be ideally positioned for this. Coincidentally, it had previously purchased the American company Monsanto along with its products. This sounds like a conspiracy theory, but remember that the EU is the only region of the world where there is no clear formal approval for the cultivation of transgenic crops. This decision to ban is beneficial because it means that traditional methods of creating new varieties are considered the only ones in force, thanks to which a lot of capital is invested in them, including human resources. Today, traditional genetics is still doing well, but this will not last forever, because the abrupt withdrawal of pesticides from the market, even though there is no alternative to them, will help create a message that will quickly convince people of the need for a new technology that is ultimately harmful to them and the environment.

286 *Friends of the Earth Europe, op. cit.*

287 *Ł. Janeczko, Alarmująca decyzja Parlamentu UE. Jest zgoda na nowe GMO. Kiedy przepisy wejdą w życie? [Alarming decision by the EU Parliament. There is approval for new GMOs. When will the regulations come into force?], published 30.04.2024, https://instytutsprawobywatelskich.pl/alarmujaca-decyzja-parlamentu-ue-jest-zgoda-na-nowe-gmo-kiedy-przepisy-wejda-w-zycie/, accessed 24.06.2024 [Polish only].*

09.7

THE DECLINE IN THE ECONOMIC ADVANTAGE OF EUROPEAN FOOD PRODUCERS OVER OTHER GLOBAL PRODUCERS

In order to understand the complexity of this process and, unfortunately, its final result, it is necessary to summarize the current state of affairs with regard to the agricultural sector in the EU and in the main regions of the world that have export capacity in this regard. To date, EU agriculture has produced the most expensive food in the world, partly because the cultivation of transgenic crops is prohibited[288].

Regulations that have been in effect for several years make energy carriers very expensive in the EU, which means high production costs, including mineral fertilizers, pesticides, and other products used in agriculture. This translates into increased production costs for farmers.

The relatively high standards of food products, in comparison to the rest of the world are reflected in their prices. In the EU, production methods are subject to a fairly strict regime, unlike elsewhere in the world (e.g., China, India, South and North American countries), where the food produced is thus of much lower quality, but cheaper.

When one analyzes the changes in the EU and the provisions of the Green Deal, it is very easy to notice what I described above. There will be a further increase in production costs, and this will happen both at the level of farmers, i.e. farms, and at the level of the entire processing sector. Mention should be made of energy certificates, emission standards and everything related to the "religion of CO_2 reduction," phenomena present only in the EU.

In the context of these changes, already very expensive European food will become even more expensive, i.e. you will have to pay more not only for large batches of goods, such as millions of tons of wheat, but also for the end products of agri-food processing. This is extremely important, as the EU has and will continue to have food production surpluses in the coming years if it maintains its current production levels, which is why it is and will be forced to export its products[289].

Otherwise, these surpluses will generate further price declines – first on the French MATIF exchange, and this will translate into declines in individual EU member states and collapse the profitability of many farms throughout the Community, including in Poland.

If we juxtapose the two events, we will notice that this small advantage of the EU, which concerned only a few commodities and was manifested in food exports, will melt away year by year. Today, it is already clear that the EU will not close itself to food supplies from countries outside the Community any more than is has been so far. This confirms the above assumptions and forecasts[290].

288 *See wheat prices on the MATIF (France) and CBOT (United States) exchanges: Kaack Terminhandel GmbH, MATIF-Wheat No. 2 (Euronext, Paris), https://www.kaack-terminhandel.de/en/euronext/wheat, accessed 24.06.2023; Business Insider, Notowania surowców. Pszenica (USD) [Commodity quotes. Wheat (USD)], https://businessinsider.com.pl/gielda/surowce/profil?id=pszenica, accessed 24.06.2023 [Polish only].*

289 *ING, Wheat, March 2024, https://www.ing.pl/spolki/raporty-agro/2024-03-pszenica, accessed 24.06.2023 [Polish only].*

290 *M. Małek, Umowa z Mercosurem o wolnym handlu oznacza koniec rolnictwa w UE? [Free trade agreement with Mercosur means the end of agriculture in the EU?] published 10.03.2024, https://nowyswiat24.com.pl/2024/03/10/umowa-z-mercosurem-o-wolnym-handlu-oznacza-koniec-rolnictwa-w-ue/, accessed 25.06.2024 [Polish only].*

I PREDICT THAT:

1. First, there will be a decrease in exports of more expensive food to countries that produce cheaper food. As a result, there will be an even stronger disruption in trade between individual EU countries and their current recipients. An example is grain exports. It has been observed many times that France, a major exporter of wheat, more expensive than Polish, but of comparable quality, thanks to economic and political arrangements, sold it to African and Middle Eastern countries, while Polish companies, offering cheaper grain, were unable to win tenders for its export;

2. secondly, as a result of the decrease in price advantage, which is crucial in terms of EU's export capacity, the import of cheaper products to Europe will increase, which will in time increase the advantage of global companies with almost unlimited capital and logistical possibilities in the trade of agri-food products. Since the EU does not plan to introduce an embargo on goods produced by third countries, where similar regulations as those included in the Green Deal do not apply, it can be clearly stated that on the one hand, these countries will be able to expand into the European market in a legal manner, and on the other hand, many international corporations will be tempted to hold talks with decision-makers in the EC, including secret ones – "not quite legal", in order to get the green light to import goods on which these corporations will simply make money due to the increased price advantage.

Since products originating from the EU will be expensive, the prices of competitive products produced outside the EU, in countries that do not introduce rules such as those included in the Green Deal, will become even more attractive. As a result, importing goods to Europe will become even more profitable, so conditions will arise in the business environment that favor corruption, as this phenomenon will simply be more profitable than before.

09.8

LIMITATIONS ON ACCESS TO TOP QUALITY FOOD

The consumer in Poland, as in any other EU country, can choose from a wide range of foodstuffs. They make their own decisions about which product to buy. In doing so, they are guided by various factors (e.g., price, quality, origin), but it can be observed that consumer awareness is growing[291].

When making food purchases, more and more people in Poland are analyzing the composition and unit price of the product. Thus, the group of conscious consumers is growing. However, it should be noted that in Poland, usually good quality products with a clear and healthy chemical composition and better taste are more expensive than others. This is due to a number of reasons. A good example is cold cuts. A huge group of consumers is aware that average-priced cold cuts, purchased in large retail chains, have worse composition and taste, as well as a shorter shelf life than products of comparable price, but produced and sold by small local companies, often owned by farmers.

This state of affairs is quite obvious and is due to certain production assumptions, such as the margins adopted and the origin of the base product – in this case, raw meat for the production of cold cuts. Due to the application of the Green Deal policy principles, the production costs of this product will increase. The main growth factors will be the unit cost of energy and any new restrictions on transportation or the energy intensity of industrial buildings. At the same time, it should be added that the increase in costs will be felt both by the processors themselves and by the suppliers of the base product, i.e. farmers producing live pigs or beef, selling it to a local cold cut production plant. We have a "doubling" of the increase in costs. Of course, the price of the final product will increase both in large retail chains and in small local agricultural plants.

291 *Foundation of Polish Promotional Emblem "Teraz Polska" (Fundacja Polskiego Godła Promocyjnego „Teraz Polska"), Polacy wybierają wysoką jakość i polskie pochodzenie produktów [Poles choose high quality and Polish origin of products], published 13.11.2023, https://terazpolska.pl/pl/a/Polacy-wybieraja-wysoka-jakosc-i-polskie-pochodzenie-produktow, accessed 25.06.2024 [Polish only].*

When analyzing the economic situation of the latter group, a certain analogy can be seen. Small, sometimes "technologically backward" factories do not have much room to maneuver when it comes to reducing production costs. They often base production on local or their own raw material, so they do not look for cheaper solutions – unlike large corporations and retail chains, which, in order to reduce production costs, are able, for example, to import raw materials from other countries, including those outside the EU. In addition, large corporations have the means to commission research for, for example, a quick change in the composition of their products, so that production costs can be reduced. It is also no secret that large operators employ skilled personnel who can quickly develop a new product formula.

Ultimately, the prices of goods from both the local manufacturer and the large retail chain will increase. However, these increases will not be the same either in percentage terms or in terms of PLN.

All this should be supplemented with comments on the consumer's situation. According to all analyses, as a result of the introduction of further taxes, which is related to the National Strategic Plan and the Green Deal regulations they will probably have capital with less purchasing power, i.e. he will simply look for savings, and this will affect food purchasing decisions, for example, they will simply look for savings, and this will affect decisions regarding food purchases, e.g., they will be forced to choose lower quality products that are cheaper. Already today in Poland there is a noticeable phenomenon that consumers with less financial resources are changing their consumer habits and starting to buy lower quality products. Currently, price is a key decision criterion when buying food[292].

It is impossible to define the impact of this process on the health of the population in one or two sentences. What is known is that the consumption of lower quality products is a kind of "delayed ignition bomb" that will explode at some point. On top of all this is and will continue to be the price advantage of similar, competitive products imported into the EU from countries where the Green Deal rules do not apply.

It is becoming almost certain that local companies, often with a long tradition, offering high-quality products, will feel the changes related to the new EU policy the most, since a simple rule applies: a higher price is almost always paid for a good product in Poland, both in previous years and now. If we get to the point where small companies with a local scope, which also often give employment to local residents and pay taxes to the local government, are gradually pushed out of the market and eventually eliminated from it, this will have very broad negative economic consequences not only for given region. In addition, there will be secondary consequences for consumers, as the range of food produced will be limited.

09.9

DECREASE IN THE COMPETITIVENESS OF POLISH AGRICULTURE VIS-À-VIS AGRICULTURE OF THE OLD EU-15

In order to present the consequences of the decline in the competitiveness of Polish agriculture, one must first explain the complexity of the food production process. One can use the first-of-its-kind argument in terms of Green Deal regulations, i.e. CO_2 limits, which translate into the final price of energy carriers[293]. Electricity is used to produce any food product – whether processed in a simple or complex way. It should be noted that the Green Deal will force an energy transformation in all EU countries.

Depending on the pace of change, the technology chosen and the degree of transformation achieved, as well as factors such as the type of energy infrastructure, the final price of electricity will depend. In addition, it should be recalled, as mentioned above, that many countries of the old EU-15 have taken – at the level of not only networks, energy suppliers and producers,

292 *Rzeczpospolita.pl, Mniej niż połowa Polaków zwraca uwagę na cenę przy zakupach [Less than half of Poles pay attention to price when shopping], published 31.05.2024, https://www.rp.pl/handel/art40515021-mniej-niz-polowa-polakow-zwraca-uwage-na-cene-przy-zakupach, accessed 25.06.2024 [Polish only].*

293 *T. Mileszko, Dlaczego rosną ceny prądu? Wyjaśniamy, co wchodzi w koszt energii elektrycznej [Why are electricity prices rising? We explain what goes into the cost of electricity], published 11.08.2022, https://www.komputerswiat.pl/artykuly/redakcyjne/dlaczego-rosna-ceny-pradu-wyjasniamy-co-wchodzi-w-koszt-energii-elektrycznej/bmqeepe, accessed 26.06.2024 [Polish only].*

but also processing companies and farms – various types of measures that have led to a significant reduction in the price of electricity consumed for food production[294].

Between 2000 and 2020 – despite their confidence in technology – Polish companies from the agri-food sector for the most part did not invest in energy. There were low costs of purchasing products and semi-finished products, low – in comparison to the countries of the old EU-15 – as well as employment costs and, for many years, cheaper energy carriers. This made Polish food very attractively priced.

Unfortunately, in the last five, seven years this argument of price is no longer relevant, as prices have leveled out due to the equalization of production costs. Today, we can clearly say that as a result of implementing the provisions of the Green Deal, with each passing month and year our dominance will disappear, and countries of the old EU-15 will gain. Maybe not all of them will have an advantage over us, nevertheless, let us not delude ourselves – economic entities from those countries, which have made numerous investments and reforms at the central level, thanks to which they already have cheaper energy today – will be more competitive than Polish ones.

This is extremely important, because for the agricultural sector to be strong, it needs efficient and effective recipients, able to pay a price for an agricultural product or semi-finished product at such a level that it guarantees the profitability of production for farms. The process is very complex, and also applies to agriculture itself. Those farms that in recent years have implemented new technologies of agricultural business are already to some extent prepared for the changes introduced under the Green Deal.

Today, we know that everything we have known so far as the management of plant and animal production is becoming less effective in the face of the reconstruction of the EU's Common Agricultural Policy (hereinafter: CAP). Farms that will have access in the EU to modern products replacing pesticides, to autonomous, intelligent machines and new technologies from the so-called Agriculture 4, or other smart solutions, will gain an advantage over the rest. They will be able to withstand a total or partial decline in the current level of production profitability. In addition, those farms that will have the opportunity to use the services of advisors familiar with solutions tailored to the new reality will also gain an advantage. In this respect, the countries of the old EU-15 have vast experience and very efficient structures[295].

In addition, let us not forget the issue of genetics. Seed breeding, which for many years was focused primarily on producing varieties whose key advantage was production efficiency, will redirect their work toward creating varieties that are resistant to diseases and pests. In addition, producers of modern pesticides will be forced to invent new products that meet new restrictive requirements. This means that there will be a forced change in the product range on the entire market of pesticides and other products used in plant cultivation and animal breeding.

Given that the centers of creating such innovations are located mainly in the countries of the old fifteen, such as Italy, France, and Germany, it is likely that these new technologies, products, and solutions will appear there first. This means that farms in these countries will be able to apply them earlier than farms in other countries. In the list of the world's largest producers of agricultural inputs, published by Topagrar.pl, there is not a single company with Polish capital[296].

Obviously, farmers from the above countries will be privileged in a way – they will be the first to gain knowledge and experience, which they will eventually translate into increased profitability or reduced declines in profitability of their current operations. This, in turn, will clearly translate into an advantage for farmers from these countries over farmers from Poland, where the level of innovation almost always results from the import of technology from Western Europe and beyond.

294 *B. Derski, op. cit.*

295 *R. Grabczyński, Przegląd systemów doradztwa rolniczego w wybranych krajach UE [Review of agricultural advisory systems in selected EU countries], published 14.01.2021, https://www.kalendarzrolnikow.pl/10008/przeglad-systemow-doradztwa-rolniczego-w-wybranych-krajach-ue, accessed 26.06.2024 [Polish only].*

296 *J. Daleszyński, TOP 20 największych producentów ś.o.r. na świecie. Kto był najlepszy w ostatnim roku? [TOP 20 of the world's largest producers of crop protection products. Who was the best in the last year], published 14.11.2022, https://www.topagrar.pl/articles/aktualnosci-branzowe-uprawa/top-20-najwiekszych-producentow-s-o-r-na-swiecie-kto-byl-najlepszy-w-ostatnim-roku-2455669, accessed 26.06.2024 [Polish only].*

09.10

ABANDONMENT OF THE PROCESS OF HARMONIZATION OF THE AGRICULTURAL SECTOR IN THE EU

This issue has already been described above. It is worth recalling, however, that the system of area subsidies, which have existed in the EU for many years and which are a source of additional profit for owners of agricultural land and livestock, is undergoing a complete reconstruction. Until now, EU countries had, to a certain extent, unified rules for granting area subsidies, based on the same legal basis; where only the rates differed significantly in individual countries[297]. With the reservation that, for example, the legal regulations concerning organic farms in Poland and France were different.

Today, it is already clear that the aforementioned eco-schemes and new regulations specifying the principles for granting agricultural subsidies are the result of the national CAP strategic plans, and this is a significant change in the rules applied in the EU so far.

In its CAP Strategic Plan, each EU member country individually describes the assumptions for its own agricultural sector. There is no obligation to standardize here, quite a lot of freedom is granted to shape the regulations. Such plans have already been created for all countries and submitted to the EC. The national CAP Strategic Plan and the resulting rules concerning, for example, eco-schemes have already been changed several times in the last 12 months, partly under the influence of pressure from farmers throughout the EU.

One very important thing should be emphasized – this national CAP Strategic Plan must be consistent with the provisions of the Green Deal. Any change by the EC to the basic assumptions of this policy therefore requires an amendment to the national CAP Strategic Plan. And since each country creates its own plan, this means that it must amend it accordingly – adapt it to the changed rules.

Countries that had the opportunity to obtain information in advance, for example, about how the EC would shape the Green Deal, were able to create national farm subsidy rules in a more astute and thoughtful manner. Today, it is already clear that all of this leads to a complete departure from any equalization of area subsidies and more. When individual countries developed their own Strategic Plans, they did not communicate with others, meaning that Poland, for example, had no insight into what Germany was creating[298].

The whole situation requires careful analysis and comparison of the rules adopted, for example, in Germany, France or Poland. This will be possible in about 6-12 months, when the content of the basic documents will stabilize and is not being changed every now and then.

It is worth noting that over the past 3 months, under pressure from farmers across the EU, the EC has made concessions and made some kind of adjustment, which translated immediately into national regulations both in Poland and in other countries. The situation requires further monitoring, but nevertheless it is already clear that if the rules are shaped individually in each country, then while they must comply with the basic tenets of the Green Deal, their impact on profitability, agricultural subsidies, will certainly be different and less comparable.

297 *Puls Biznesu – pb.pl, W 18 z 28 krajów UE dopłaty bezpośrednie dla rolników są wyższe niż w Polsce [In 18 of 28 EU countries direct payments to farmers are higher than in Poland], https://www.pb.pl/w-18-z-28-krajow-ue-doplaty-bezposrednie-dla-rolnikow-sa-wyzsze-niz-w-polsce-813145, accessed 26.06.2024 [Polish only].*

298 *Friends of the Earth Europe, op. cit.*

09.11

ABANDONMENT OF ALL FREE MARKET PRINCIPLES IN THE AGRICULTURAL SECTOR FROM THE CONSUMER'S PERSPECTIVE

At the outset of the analysis of this issue, it should be emphasized that from the point of view of both the consumer in Poland and other EU countries, and the food producer in Poland, there has been no real free market in the last 20 years. By free market I mean a state in which, primarily in the food market, the consumer with certain means decides independently what they want to buy, has freedom of choice in this respect. This is an important starting point for further analysis. Today it can be seen that this negligible free market area will be significantly reduced from the consumer's perspective. This is a consequence of the provisions of the Green Deal, which will very strongly interfere in the entire food production process, both at the level of farmers and at the level of processors.

Products from non-EU countries, where the same regulatory regime as in the EU does not apply, will become even more competitive compared to products from EU member states than before. It is known that the EC has clearly stated that there will be no consistent pressure to cooperate with third countries, but there will be attempts encourage them to implement similar reforms. Ultimately, this will mean that companies producing finished and semi-finished products according to their existing practices, including maintaining current production costs, will have access to Europe, including Poland. On store shelves, consumers will have a choice within a single product group of goods produced under the stringent regime in the EU, also imposed on Polish producers, as well as goods imported from countries that have not introduced or do not comply with similar regulations.

In addition, it should be borne in mind that the reconstruction of the area subsidy system, as mentioned above, and the introduction of completely different, often even divergent content in national recovery plans, mean that there will be no "common denominator" in the regulations. Moreover, until now, it was the consumer's independent decision what they would eat. It is known that the EU, through its extensive activities, will promote certain dietary patterns among the public, with an emphasis on limiting the consumption of meat products[299].

Green light will likely be given to substitute products, such as various types of insects, produced in Europe for indirect and direct consumption. Statements from the EC and other EU officials clearly indicate that actions, including marketing efforts, will be undertaken to transform consumer habits. Consequently, there will be a departure from the principles of the free market, where until now, the consumer decided whether, for example, to be a vegetarian, to eat meat once a week, or every day, and how to manage their diet.

Current statements by EC representatives evidently confirm that the sphere of influence of officials and decision-makers will be expanded to include the consumer habits of people living in the EU, i.e. Poland as well. The last 30-40 years of experience have shown that this way of managing society and rigidly controlling consumption habits leads to distortions in the economy or in the sphere of decision-making. An environment is created that is unfavorable to thoughtful innovation and, even worse, that destroys existing economic and business ties[300]. If, for example, in a given town, 80 out of 100 consumers consumed some meat and dairy products each day, then this level of consumption generated a certain production demand from local or larger producers of these products. And if, under the influence of messages aimed at changing consumer habits, 20 or 30 out of those 80 consumers decide to abandon meat products in favor of synthetic foods (including synthetic meat) or insects produced overseas, there will be a reconstruction of supply chains, a reduction in profit, and a weakening of the market position of individual companies. All this will be a consequence not of free market principles, but of the decisions of officials and the enforcement of those decisions.

299 *KFHDiPJ – Editorial Board, Zielony Ład i drób na EKG [Green Deal and Poultry at ECE], published 14.05.2024, https://drobiarze.pl/2024/05/14/zielony-lad-i-drob-na-ekg/, accessed 26.06.2024 [Polish only].*

300 *O. Wolf, SuperDrob na EEC 2024: czy jesteśmy gotowi na zmniejszenie spożycia mięsa? [SuperDrob at EEC 2024: are we ready to reduce meat consumption?], published 15.05.2024, https://www.portalspozywczy.pl/mieso/wiadomosci/superdrob-czy-jestesmy-gotowi-na-zmniejszenie-spozycia-miesa,255452.html, accessed 26.06.2024 [Polish only].*

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10

ECONOMIC BURDEN OF THE ETS

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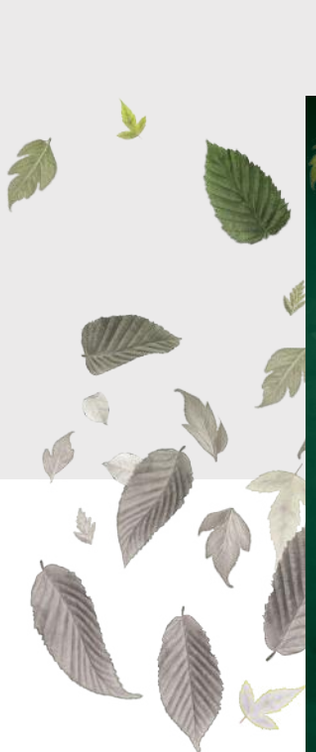

The ETS[301] is one of the primary tools of EU climate policy. Its classification as such may be considered somewhat controversial. After all, member states were supposed to have the freedom to decide on their energy mix. The ETS system, penalizing the use of emission sources, at least indirectly interferes with this sovereignty. However, it is classified as an instrument of climate policy rather than energy policy, which allows bypassing this rule. The system, in its simplest form, forces companies emitting carbon dioxide (hereinafter: CO2) in the course of their primary activities (hereinafter: Installations) to purchase allowances for the emission (European Union Allowance, hereinafter: EUA) of this gas. The impacts of the ETS system is felt primarily by sectors such as energy and heat production based on fossil fuel combustion, but also by the steel and concrete production sectors. Indirectly, by affecting the prices of energy and the aforementioned materials, which are essential for industrial production, it affects the entire economy.

301 *European Union Emissions Trading System.*

In the ETS system, allowances are divided into three pools. The first is allocated directly and free of charge to Installations. The second is made available free of charge to member countries, which can then sell them to Installations in need. Since the profits from these sales constitute budgetary incomes, supporters of Brussels' climate policy often use this fact in their arguments. However, it should be emphasized here that budget revenues do not constitute Poland's profit, and can only be treated in terms of one of the redistribution systems, operating similarly to taxes. Finally, if Installations operating within a country still do not have enough allowances, they must obtain them from a third pool, on the free (stock exchange) market. The most important of the exchanges where ETS can be traded is the Leipzig exchange. It is reasonable to assume that the guiding idea behind allowing EUAs to be traded on the secondary market was to enable exchanges between Installations with a surplus of EUAs and those with a shortage. However, the openness of exchange trading allowed various types of financial intermediaries (hereinafter: Investors) to join the allowance trade. The existence two different groups of buyers in the market with diametrically different strengths and positions requires a detailed discussion.

The first group of EUA purchasers are Installations, i.e. those companies that emit CO_2 in the course of their core business activities. By definition, they are covered by the ETS. They must purchase EUAs because the law does not provide for substitutes, so it is the only way for them to account for emissions from their operations. The second group of buyers are Investors, i.e. all kinds of companies in the financial sector. They do not emit CO2, so EUAs are not essential for them, and they are just one of many available financial instruments.

The availability of substitutes is one of the fundamental and key mechanisms by which the free market can regulate itself. If substitutes are available, then consumers can respond to an increase in the price of a good, i.e. reach for a substitute that better meets their needs. This may mean buying a cheaper solution with similar utility or a more expensive one (price-wise comparable to the new price of the base good) with higher utility. The availability of alternatives to emission allowances would thus protect Installations from a sudden increase in the price of EUAs, as they could then reach for a different type of allowance and thus account for their emissions. However, such a solution was not foreseen for the EU ETS. At the same time, Investors have a wide range of financial instruments they can trade. The readers interested in this subject are referred to the book by John C. Hull *Options, futures and other derivatives*.

Given the lack of substitutes, Installations could – in theory – try to respond to the EUA price increase by adjusting their production processes. However, this solution is time-consuming and costly. Paradoxically, the sharp increases in EUA prices have limited Installations' investment opportunities, as they have been forced to suddenly seek capital to account for their emissions. In Poland, the situation for such companies is even more challenging. This is because the national law implementing EU regulations[302] renders investments in emission reduction technologies pointless, as emissions are calculated mathematically from the combustion of a ton of fuel and not from the actual emission of CO_2 into the atmosphere. Finally, reducing production in such key industries for society as power and heating is impossible. While it is feasible in theory, any attempt to reduce the supply of heat during the heating season or electricity, would be met with massive public, and consequently, political resistance.

In addition to the obligation to purchase and the availability of substitutes, both groups also differ in entry barriers, which are much lower in the case of Investors. These entities can be divided into institutional, such as brokerage houses, and individual.

Institutional Investors, in order to start operating in financial markets, need to fulfill a number of formalities, including having adequate capital resources, qualified staff, etc. For a determined entity, this does not pose major difficulties, but it does take some time. To become an Individual Investor, usually, nothing is needed apart from opening an account with an Institutional Investor. The number of Individual Investors can therefore grow rapidly. The increase in customers willing to buy the commodity, in turn, creates price pressure.

One of the arguments cited by ETS defenders, as well as ESMA[303], was to explain the activity of financial market institutions by hedging, often on behalf of the Installations themselves. This argument can be accepted, but it should be remembered that hedging is a means of securing transactions against sudden changes in the price of the underlying instrument. In a stable market, hedging is simply unnecessary. Fluctuations in the ETS market, on the other hand, are due to the design flaws discussed above and differences in strength between the two groups of buyers. A comparison can be made here between the Chinese and European ETS. In China, the price of an allowance at the start of the system (July 2021) was around USD 7.35 per ton, rising to around USD 8.34 per ton in 2022 and remaining at

302 *Law of June 12, 2015 on the Greenhouse Gas Emission Trading Scheme, current version Journal of Laws 2023, item 589, consolidated text.*
303 *European Securities and Markets Authority.*

USD 8 per ton in 2023[304]. During the same period, the European system saw an increase from around EUR 50 per ton in July 2021 to more than EUR 100 in February-March 2022, and maintained this level in 2023[305]. In addition to the differences in growth rates, the price difference itself should be highlighted: in China, it is more than ten times cheaper to emit a ton of carbon dioxide than within the EU.

On the supply side of the ETS, there are two mechanisms designed to permanently reduce supply. The first is the LRF (Linear Reduction Factor). It works by reducing each year the number of available allowances by 2.20% (in the upcoming settlement period, the current period it was 1.74%). The second mechanism is the so-called MSR (Market Stability Reserve). Its role is to reduce the volume of auctions in case of an excessive surplus of allowances. One of the practical consequences of the MSR is that it prevents the purchase of allowances in stock in situations of oversupply, where the price would normally fall. However, it should be acknowledged that the MSR safeguard mechanisms introduced in 2023 by the European Commission (hereinafter: EC) use allowances accumulated in the MSR, which will be released in the event of a sharp price increase.

In conclusion, it should be emphasized that there is no natural, top-down price limit in the ETS. Such a safeguard could be the penalty for emissions without allowances, which is currently around EUR 100. However, the system is designed in such a way that the penalty does not exempt from the obligation to account for emissions. This means that a non-paying Installation will incur costs equal to the sum of the penalty value and the current price for allowance.

Taking the above into account, it can be concluded that Installations are forced to purchase allowances regardless of their price, which allows Investors to play for an increase in their value without any major risk. This creates favorable conditions for the formation of price bubbles, the presence of which should be tested with statistical methods. For this purpose, SADF (Supremum Augmented Dickey-Fuller) and GSADF (Generalized Supremum Augmented Dickey-Fuller) tests can be used. These were developed by Peter C.B. Phillips[306] and his team and have been published in numerous scientific articles[307]. These tests make it possible to detect changes in the prices of financial instruments that cannot be attributed to "normal volatility"[308]. They test the null hypothesis of the presence of a unit root in the series under study[309] against the alternative of its absence, which in turn indicates the explosive nature of the analyzed series, and, consequently the presence of bubbles. The procedure involves recursively checking changes in the analyzed time series, using regressions similar to the ADF (Augmented Dickey-Fuller) test on an expanding sample of data. The SADF statistic for the dataset is the highest among the ADF test values obtained for the constructed regressions. To study the presence of multiple bubbles, it is better to use the GSADF test. It is calculated similarly to the SADF, but instead of an expanding window, the so-called rolling window is used. The authors applied both tests to monthly S&P 500 data and accurately identified the formation of the so-called dotcom bubble[310].

For the purposes of this study, the implementation of both tests in R (using the "MultipleBubbles" package) was tested on the same data with satisfactory results. This means that the

304 *Y. Xiaoying, As China's carbon market turns two, how has it performed?, https://dialogue.earth/en/climate/china-carbon-market-turns-two-how-has-it-performed/#:~:text=The%20carbon%20price%20of%20China's,euros%20(%24110)%20per%20tonne, accessed 11.06.2024.*

305 *Data: Ember Climate.*

306 *Prior to that, P.C.B. Phillips co-authored the development of the KPSS time series stationarity test (Kwiatkowski-Phillips-Schmidt-Shin).*

307 *P.C.B. Phillips, Y. Wu, J. Yu, Explosive behavior in the 1990s NASDAQ: when did exuberance escalate asset values?, "International Economic Review" 2011, vol. 52, pp. 201-226; P.C.B. Phillips, S. Shi, J. Yu, Specification sensitivity in right-tailed unit root testing for explosive behavior, "Oxford Bulletin of Economics and Statistics" 2014, vol. 76, pp. 315-333; P.C.B. Phillips, S. Shi, J. Yu, Testing for multiple bubbles: historical episodes of exuberance and collapse in the S&P 500, "International Economic Review" 2015, vol. 56, pp. 1043-1078; P.C.B. Phillips, S. Shi, J. Yu, Testing for multiple bubbles: limit theory of real-time detectors, "International Economic Review" 2015, vol. 56, pp. 1043-1078.*

308 *Both tests have particular applications to commodity prices, such as the EU ETS, since the standard approach of comparing stock prices with discounted values of their future dividends cannot be used in their case. To verify the presence of bubbles in food prices, which have many similarities to emission allowances, the above-mentioned tests were used, for example by F.J. Areal, K. Balcombe and G. Rapsomanikis in their 2016 article "Testing for bubbles in agriculture commodity markets."*

309 *M. Lachowicz, EU ETS a bańki cenowe [EU ETS and price bubbles], Warsaw, April 2021, https://orka.sejm.gov.pl/opinie9.nsf/dok?OpenAgent&801_20210423_1, accessed 11.06.2024 [Polish only].*

310 *M. Lachowicz, EUA: bańki cenowe a konkurencyjność Polski oraz Unii Europejskiej [EUA: price bubbles and the competitiveness of Poland and the European Union], Warsaw, September 2021, https://zpp.net.pl/wp-content/uploads/2021/09/16.09.2021-Raport-ZPP-Banki-cenowe-a-konkurencyjnosc-Polski-oraz-Unii-Europejskiej.pdf, accessed 11.06.2024 [Polish only].*

tool was correctly constructed and can be used to investigate the presence of price bubbles on EUA. The analyzed data are monthly series, as this frequency was used by the test authors and can be considered standard. The study covers the period from May 1, 2017 to April 30, 2023[311]. EUA prices are sourced from investing.com. The results confirm that from 2017 to 2023, price bubbles repeatedly formed in EUA prices (99% confidence level of the GSADF test). Critical values for the tests were generated in the standard way using the Monte Carlo method with 2,500 replications. Previous results, published by this Author in two studies in 2021[312,313], were used to build the narrative of Mateusz Morawiecki's government about speculation in the emissions trading market. Research by ESMA, which looked into the matter at the request of the EC, however, did not confirm the speculation[314].

The preliminary analysis report[315] was published on November 18, 2021. The EU regulator found no reasons to intervene in the market, and indicated that Investors were not responsible for the sharp rise in prices. It also denied the presence of speculation. ESMA emphasized that a significant increase in the number of market participants[316] is not sufficient evidence of irregularities. According to ESMA, the causes of the sudden increase in EUA prices are economic and political issues. The full version of the report[317], published at the end of March 2022, maintains the narrative of the lack of speculation. According to ESMA, long positions are mainly held by Installations from the ETS system, which use them to hedge against price fluctuations. The issue of hedging was discussed above, and it can be reiterated here that if the instrument is stable, hedging is unnecessary, as it merely serves as protection against price fluctuations.

To further its decarbonization efforts, the EC has proposed, as part of its Fit for 55 package, an ETS reform including:

- **intensifying the reduction of allowances supply by tightening the LRF and MSR mechanisms**. The LRF is to increase from 2.20% to 4.30% in 2024-2027 and to 4.40% in 2028-2030;

- **a one-time reduction in the number of allowances by 117 million by 2026**[318], of which a one-time reduction of 90 million tons is planned for 2024 and a further 27 million in 2027. For comparison, Poland consumes approximately 130 million tons per year. The reduction is intended to compensate for the delayed implementation of Fit for 55;

- **extending the ETS system to maritime transport**. In the case of Poland, however, emissions from maritime transport are insignificant and do not directly affect the material situation of households, so their impact will be ignored in the calculations;

- **gradual phasing out of free allowances for sectors covered by CBAM (Carbon Border Adjustment Mechanism) from 2026 to 2034**[319];

- **reduction of free allowances for aviation** (EU Aviation Allowances – EUAAs). Aviation emissions are to be accounted for alongside the CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) system[320]. The issue of aviation emissions has been comprehensively discussed in the report by the think tank Forum Right for Development #Law4Growth [Forum Prawo dla Rozwoju #Law4Growth], with the Author's contribution[321].

311 *Of course, the same procedure can also be carried out on data of lower or higher frequency (e.g., quarterly or weekly), but it should be borne in mind that in time series analysis, higher frequency does not compensate for reduced range, as pointed out, for example, by T. Andersen, Some Reflections on Analysis of High-Frequency Data, "Journal of Business and Economic Statistics" 2000, vol. 18(2), pp. 146-153.*

312 *M. Lachowicz, EU ETS a bańki cenowe [EU ETS and price bubbles], Warsaw, April 2021, https://orka.sejm.gov.pl/opinie9.nsf/dok?OpenAgent&801_20210423_1, accessed 11.06.2024 [Polish only].*

313 *M. Lachowicz, EUA: bańki cenowe a konkurencyjność Polski oraz Unii Europejskiej [EUA: price bubbles and the competitiveness of Poland and the European Union], Warsaw, September 2021, https://zpp.net.pl/wp-content/uploads/2021/09/16.09.2021-Raport-ZPP-Banki-cenowe-a-konkurencyjnosc-Polski-oraz-Unii-Europejskiej.pdf, accessed 11.06.2024 [Polish only].*

314 *It should be noted that a price bubble is not the same as excessive speculative activity. ESMA has addressed the latter issue.*

315 *European Securities and Markets Authority, Preliminary report. Emission Allowances and derivatives thereof, November 15, 2021, ESMA70-445-7, https://www.esma.europa.eu/sites/default/files/library/esma70-445-7_preliminary_report_on_emission_allowances.pdf, accessed 11.06.2024.*

316 *The ease of entry of new Investors into the market and the consequences of their increased number were described above. Theoretical predictions are consistent with real observations, i.e. the price of EUA has risen and become more volatile.*

317 *European Securities and Markets Authority, Final Report. Emission allowances and associated derivatives, March 28, 2022, ESMA70-445-38, https://www.esma.europa.eu/sites/default/files/library/esma70-445-38_final_report_on_emission_allowances_and_associated_derivatives.pdf, accessed 11.06.2024.*

318 *"GO'250" 2021, no. 2, https://climatecake.ios.edu.pl/wp-content/uploads/2022/01/GO250.Klimat.Spoleczenstwo.Gospodarka_Nr-2.pdf, accessed 11.06.2024 [Polish only].*

319 *International Carbon Action Partnership, EU reaches landmark provisional agreement on ETS reform and new policies to meet 2030 target, https://icapcarbonaction.com/en/news/eu-reaches-landmark-provisional-agreement-ets-reform-and-new-policies-meet-2030-target, accessed 11.06.2024.*

320 *European Union Aviation Safety Agency, Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), https://www.easa.europa.eu/eco/eaer/topics/market-based-measures/corsia, accessed 11.06.2024.*

321 *M. Lachowicz, W. Dzięgiel, S. Harpeniuk, Wpływ polityki klimatycznej UE na branżę lotniczą [Impact of EU climate policy on the aviation industry], December 2023. The report can be downloaded by providing an email address at: https://law4growth.com/publikacje/ [Polish only].*

The most important element of the ETS reform is the introduction of the so-called ETS2 system. It is to cover CO_2 emissions from building heating and road transport. The EC assumes that the system will start operating in 2027. If exceptionally high electricity prices stand in the way, then the start of the system is to be postponed to 2028. From 2024 a linear reduction factor (LRF, operating analogously to the LRF in the original ETS system) will be in place, which will annually reduce the supply of ETS BRT (Buildings and Road Transport) allowances by 5.10%. From 2028, the LRF will increase to 5.38%. There will be no free allocation in ETS2. Trading of all available allowances will take place through auctions.

The EC, having learned from the experience of previous years, in the summer of 2023 introduced several mechanisms to counteract sudden increases in EUA prices. Already in the conceptual phase, the first line of defense in the ETS2 system was set at EUR 45. If the price of an ETS2 allowance exceeded EUR 45 per ton for 2 consecutive months, 20 million tons of CO_2 emission allowances would be released from the MSR reserve into the market.

This level should, however, be compared to actual emissions. In 2022, the entire European Union emitted over 3.60 billion tons of CO_2[322]. Transport and building heating account for 782 and 455 million tons, respectively[323]. With this scale of emissions, 20 million tons is not a significant value, that would halt the rise in allowance prices in the ETS2 system for long, should these prices exceed the level of 45 euros.

Additional safeguards have also been introduced in the ETS. If the average EUA price over the last 6 months turns out to be 2.4 times higher than its average price in the 2 previous years, an additional 75 million allowances will be released from the MSR. This volume is significant and roughly equal to the allocation assigned to maritime transport.

For ETS2, additional measures have also been introduced to combat speculation. Article 30h in Chapter IVa states that in addition to defending the price level of EUR 45 per ton, the EC plans to release allowances for an additional 50 or even 150 million tons[324]. The lower of these values will be applied if for more than three consecutive months, the average allowance price turns out to be more than twice (in 2027 and 2028 more than 1.5 times) higher than the average price for the previous six months. The higher value acts as a safeguard in case of a threefold exceeding of the average price. These provisions indicate that the EC is determined to defend the CO_2 allowance market against speculative activities.

On the basis of the above, as well as data from Statistics Poland (consumption of energy carriers in households)[325], emission factors from the National Center for Emissions Management (KOBIZE)[326], and estimated conversion of motor fuel emissions to terajoules (TJ)[327], it is possible to roughly estimate the costs of ETS and ETS2 systems up to 2030. It should be emphasized that the presented projections provide only an indicative view of the market condition. Forecasting the price increase of an instrument, on which price bubbles have historically formed multiple times is not so much difficult as impossible. The calculations are based on the ceteris paribus principle, i.e. other factors besides the ETS price do not change. Otherwise, it would be necessary to, among other things, present the trajectory of changes in the energy mix in Poland, which goes far beyond the scope of this study.

322 *Eurostat, Quarterly greenhouse gas emissions in the EU, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quarterly_greenhouse_gas_emissions_in_the_EU, accessed 11.06.2024.*

323 *European Environment Agency, EEA greenhouse gases – data viewer, https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer, accessed 11.06.2024.*

324 *See Directive (EU) 2023/959 of the European Parliament and of the Council of May 10, 2023, amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 on the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system, OJ L 130 of 16.05.2023, pp. 134-202.*

325 *Statistics Poland, Energy Consumption in Households in 2021, https://stat.gov.pl/en/topics/environment-energy/energy/energy-consumption-in-households-in-2021,2,6.html, accessed 11.06.2024.*

326 *National Center for Emissions Management [Krajowy Ośrodek Bilansowania i Zarządzania Emisjami (KOBIZE)], Wartości opałowe (WO) i wskaźniki emisji CO2 (WE) w roku 2018 do raportowania w ramach Systemu Handlu Uprawnieniami do Emisji za rok 2021 [Calorific values and CO2 emission factors in 2018 for reporting under the Emission Trading Scheme for 2021], https://www.kobize.pl/uploads/materialy/materialy_do_pobrania/monitorowanie_raportowanie_weryfikacja_emisji_w_eu_ets/WO_i_WE_do_monitorowania-ETS-2021.pdf, accessed 11.06.2024 [Polish only]; National Center for Emissions Management [Krajowy Ośrodek Bilansowania i Zarządzania Emisjami (KOBIZE)], Wskaźniki emisyjności CO2, SO2, NOx, CO i pyłu całkowitego dla energii elektrycznej na podstawie informacji zawartych w Krajowej bazie o emisjach gazów cieplarnianych i innych substancji za 2021 rok [Emission factors of CO2, SO2, NOx, CO and total dust for electricity based on information contained in the National database on emissions of greenhouse gases and other substances for 2021], https://www.kobize.pl/uploads/materialy/materialy_do_pobrania/wskazniki_emisyjnosci/Wska%C5%BAniki_emisyjno%C5%9Bci_dla_energii_elektrycznej_grudzie%C5%84_2022.pdf, accessed 11.06.2024 [Polish only].*

327 *Intergovernmental Panel on Climate Change, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1wb1.pdf, accessed 11.06.2024.*

Table 1. CO_2 emissions per household in Poland

Energy carrier	TJ	Total CO_2 emissions in tons	Per household in kilograms
Electricity	113 726.86	25 019 929	1 839.70
heat	225 896.37	49 697 241	3 654.21
District hot water	45 702.79	10 054 621	739.31
Natural gas	123 704.36	7 131 556	524.38
Liquid gas for domestic use	21 094.21	1 216 081	89.42
Heating oil	2 073.37	150 319	11.05
Hard coal	208 306.95	23 538 685	1 730.79
Firewood	180 607.73	18 241 380	1 341.28
Other types of biomass	26 456.87	3 042 540	223.72
Gasoline	191 434.01	12 443 210	914.94
LPG	48 882.61	2 818 083	207.21
Diesel oil	134 378.05	9 742 409	716.35
TOTAL	1 322 264.17	163 096 055	11 992.36
TOTAL ETS2	936 938.15	78 324 264	5 759.14
TOTAL MOTOR FUELS	374 694.67	25 003 702	1 838.51

Source: own compilation based on the aforementioned sources.

For the purposes of the forecasts, three scenarios of the rise in emission allowance prices have been prepared for both the ETS and ETS2 systems. A fixed EUR exchange rate at the average rate for 2022, equal to PLN 4.6872 is assumed. The study does not attempt to forecast the exchange rate up to 2030, as it would be far beyond the scope of this study. The proposed variants were compared with the market and with variants proposed by other institutions, such as the Veritas think tank.

THREE OPTIONS ARE CONSIDERED::

1. **POSITIVE SCENARIO.**
   It assumes a successful defense of the level of EUR 45 per ETS2 allowance and a gradual but steady increase in the ETS allowance price to EUR 120 in 2030.

2. **BASELINE SCENARIO**
   Although the defense of the level of EUR 45 will prove ineffective, other safeguards introduced by the EC will work, resulting in an ETS2 allowance price of EUR 75. The ETS allowance price will rise faster than in the positive scenario and will reach EUR 160.

3. **PESSIMISTIC SCENARIO.**
   Defense of the level of EUR 45 will prove completely unrealistic, and the price of allowances in ETS2 will reach EUR 100. The ETS allowance price will also rise significantly, to the level of EUR 200 per ton.

Table 2. Costs of ETS and ETS2 for a statistical household in 2030

	SCENARIO		
	POSITIVE	BASELINE	PESSIMISTIC
ETS2 allowance price (in EUR)	45.00	75.00	100.00
Adjusted EUA price (in EUR)	120.00	160.00	200.00
Emissions per household (in tons)	11.99	11.99	11.99
Emissions per household, in ETS2 (in tons)	5.76	5.76	5.76
Cost of ETS (in EUR)	747.60	996.80	1 246.00
Cost of ETS2 (in EUR)	259.20	432.00	576.00
Cost of both systems (in EUR)	1 006.80	1 428.80	1 822.00
Cost of ETS (in PLN)	3 504.15072	4 672.20096	5 840.2512
Cost of ETS2 (in PLN)	1 214.92224	2 024.8704	2 699.8272
Cost of ETS + ETS2 per household (in PLN)	4 719.07296	6 697.07136	8 540.0784

Source: own study.

When analyzing Table 2, it is important to keep in mind that presented calculations apply to the so-called average (statistical) household. In practice, some households will be more affected by ETS2 (e.g., those using combustion engine cars or heating with their own furnace), while others will be more affected by the first ETS system because they use district heating. Finally, the price experienced by consumers may not fully reflect the situation on the ETS and ETS2 market, as the government may choose to introduce appropriate protection programs.

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11

THREATS TO INTERNATIONAL TRADE COOPERATION

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International trade is an important indicator of Europe's prosperity and its place in the world. The European Union (hereinafter: EU) is deeply integrated with global markets in both the products it sources and the exports it sells. For example, it is the third largest trading partner of the Association of Southeast Asian Nations[328], behind China and the United States of America. The European Association of Chambers of Industry and Commerce (Eurochambres) indicates that more than 30 million jobs in the EU depend on foreign trade[329].

The EU's trade policy is a key element of the external dimension of the "EUROPE 2020 A strategy for smart, sustainable and inclusive growth," and is one of the main pillars of the EU's relations with the rest of the world. As the 27 EU member states share a common market and a single external border, they also have a single trade policy. EU member states speak and negotiate jointly both in the World Trade Organization, where international trade rules are agreed and enforced, and with individual trading partners. A common policy implemented in this way allows the EU to speak with one voice in trade negotiations, which is important in a globalized world where economies tend to merge into regional groups.

328 *Association of South-East Asian Nations – ASEAN. Currently, 10 countries are members of ASEAN (founding members Indonesia, Malaysia, Philippines, Singapore and Thailand, as well as Brunei, Vietnam, Laos, Cambodia, and Myanmar).*

329 *According to Eurostat, in 2023 the total number of employed people aged 20-64 in the EU was around 195 million, of which over 15% of jobs depend on foreign trade.*

However, despite its many advantages, it generates almost as many problems for individual member states. Joint negotiations are more complicated and time-consuming because they require the agreement of all countries. EU Member States have different economies and, consequently, different national interests, and therefore different trade priorities, which the common trade policy does not take into account. Moreover, a balance between openness to trade and protection of European economic interests is not always achieved. In addition, the changing global trade order, which manifests itself in the rise of protectionism and the risk of dismantling global trade institutions, undoubtedly constitutes a challenge for EU trade policy.

Finally, the EU plans to exert a significant "ecological impact" on other regions of the world, especially Asia, which will be forced to respond if they want to maintain economic relations with the EU. In December 2019 the European Commission (hereafter: EC) introduced the European Green Deal, which is an ambitious strategic policy package aimed at making the EU's economy environmentally sustainable, i.e. achieving climate neutrality by 2050, and turning this transition into an economic and industrial opportunity for Europe[330]. This agreement provides for a variety of policy measures and subsidies to reduce pollution and increase investment in environmentally friendly technologies. However, although the strategies contain chapters on global aspects, the EU seems to be focusing mainly on a sectoral approach to implementing the external dimension of the Green Deal. This approach has some drawbacks. First and foremost, it creates uncertainty among partner countries regarding compliance with new EU rules and regulations and the EU's support for adaptation thereto. In addition, there is a lack of clear governance mechanisms to deal with possible conflicting policy objectives and strive for greater coherence between national and external EU policies.

The Green Deal is first and foremost an attempt to significantly transform the European economy, as well as European consumption patterns (notably through the implementation of the Carbon Border Adjustment Mechanism[331], Sustainable Products Initiative[332], and Circular Economy Action Plan[333]). Since this involves a fundamental overhaul of the European energy system, which is high on the EU's political agenda, it will also change the relationship between the EU and its trading partners and redefine Europe's international economic policy priorities. As such, it is a foreign policy development with profound geopolitical implications, such as a structural change in international trade (e.g., resulting from the impact of Europe's shift to renewable energy sources (hereafter: RES) on the global oil market[334]), an impact on European investment, increased reliance on imports of products and raw materials for clean energy, a weakening of the international competitiveness of European manufacturers, the impact of the EU's green foreign policy on so-called global warming[335]. All of these factors mean that the EU will need to develop new trade and investment agreements, new models of financial and technical assistance, and in more general terms, a new approach to economic diplomacy (de facto "green diplomacy") that encourages sustainable investments and development.

This green activism is bound to affect relations with the United States of America and China, which have their own views on how to promote sustainable development and manage international climate negotiations. Relations with other countries whose export interests will be directly affected – including the Gulf countries and Russia – must also change. Interestingly, no comprehensive analysis capturing the official costs and benefits of the Green Deal from an international trade perspective has been found. And yet all of these actions will provoke a geopolitical reaction from the EU's international partners. Reactions could range from cooperation in

330 *European Commission, European Green Deal, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en, accessed 02.07.2024.*

331 *Carbon Border Adjustment Mechanism, hereinafter: CBAM. See Regulation (EU) 2023/956 of the European Parliament and of the Council of May 10, 2023, establishing a carbon border adjustment mechanism, OJ L 130, 16.05.2023, pp. 52-104; Commission Implementing Regulation (EU) 2023/1773 of 17 August 2023 laying down the rules for the application of Regulation (EU) 2023/956 of the European Parliament and of the Council as regards reporting obligations for the purposes of the carbon border adjustment mechanism during the transitional period, OJ L 228, 15.09.2023, pp. 94-195.*

332 *Sustainable Products Initiative, see Communication from the Commission to the European Parliament and the Council, New Consumer Agenda. Strengthening consumer resilience for sustainable recovery, Brussels, 13.11.2020, COM(2020) 696 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0696, accessed 13.06.2024.*

333 *Circular Economy Action Plan, see European Commission, Circular economy action plan, https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en, accessed 03.07.2024.*

334 *Europe accounts for about 20% of global oil imports. The decline in oil demand resulting from Europe's shift to RES will affect the global oil market by lowering prices and reducing revenues for major exporters, even if they do not trade heavily with the EU.*

335 *If one considers that climate change is a problem – and a global one at that – then the Green Deal is also a foreign policy. A shift away from carbon dioxide emissions (hereafter CO2) that would focus solely on Europe would do little to mitigate global warming, since Europe accounts for less than 10% of global greenhouse gas emissions. Worse still, if the Green Deal simply shifts greenhouse gas emissions from Europe to its trading partners, it will have no impact on climate change. If only for this reason, the EU is likely to push very hard for ambitious, enforceable multilateral agreements to halt global warming and will subordinate some of its other goals to this very priority. The EC has already admitted that it will have to either export its standards or create a border adjustment mechanism (whatever that means) to maintain European competitiveness and prevent carbon leakage.*

implementing complementary climate policies, to competing in efforts to redirect trade and investment flows, to outright hostile retaliation to counter the effects of the Green Deal (individual countries are already estimating the future balance of losses in trade with the EU, and will certainly want to compensate for these losses in other ways).

SELECTED EXAMPLES AFFECTING EXPORTS TO THE EU:

- CO_2 emission charges imposed on goods imported into the EU, such as cement, iron and steel, aluminum, fertilizer, and electricity (starting in 2022, fully implemented by 2026).
- Sustainable product requirements, which include durability, reusability, reparability, recyclability, and energy efficiency (ongoing and several new initiatives starting in 2022).
- Sustainable food must meet new common definitions, general principles, requirements, certification, and labeling systems (current changes and new legal frameworks from 2023).
- Preserving biodiversity requires organic farming, reducing the use of chemical pesticides, soil reclamation, and reducing nutrient loss from fertilizers (several ongoing initiatives, proposed deforestation regulations from 2021).
- Sustainability documentation in production must comply with the new EU taxonomy rules (starting in 2022).

11.1

INEVITABLE DECLINE IN COMPETITIVENESS OF EUROPEAN COMPANIES

The Green Deal will have an impact on Europe's international competitiveness, including, of course Poland, which recorded a record-high trade balance last year[336]. As of October 1, 2023, the transition period of the carbon border adjustment mechanism (CBAM) began, and it will last until December 2025. CBAM is designed to equalize the cost of CO_2 emissions for goods imported into the EU and EU goods covered by the ETS. It was intended to prevent leakage of greenhouse gas emissions from the EU to countries with lower climate and environmental policy standards. In the target period, that is from 2026, CBAM will be based on a system of certificates covering emissions embedded in products imported into the EU. The price of these certificates will reflect the price of ETS allowances.

Absorption of ETS or carbon taxes in Asia exists and is quite diverse. China, Indonesia, India, Japan, Malaysia, the Philippines, Singapore, South Korea, and Vietnam have implemented or are planning to implement ETS and/or a pricing mechanism. However, the EU ETS is ahead of anything happening in Asia. Currently, the EU's price per metric ton of CO_2 equivalent ($mtCO_2e$) is EUR 88.2 (USD 93.3) compared to CNY 65.4 (USD 8.9) in China or about KRW 17,000 (USD 12.5) in South Korea per $mtCO_2e$. Asian economies will need to significantly increase their energy efficiency, reduction of emissions, and domestic CO_2 prices in order to avoid the potentially high costs associated with CBAM certificates.

The purchase of emission certificates embedded in imported products is an additional cost that will certainly be passed on to consumers, leading to an increase in the price of imported goods.

336 *Poland's exports in 2023 amounted to EUR 351 billion, and imports to Poland amounted to EUR 340.5 billion, resulting in a record trade revenue surplus of more than EUR 10.6 billion. According to Statistics Poland, the fastest-growing sectors were beverages and tobacco (up 21%), machinery and transport equipment (up 10.4%), and food and live animals (up 8.6%). Industrial products also recorded an increase of 1.4%. The revenue of our exporters was 1.4% higher in 2023 than in 2022. A negative balance of almost EUR 20 billion was not avoided in 2022, with exports exceeding EUR 346.2 billion. EU countries are by far the largest trading partner, accounting for about 79% of exports (e.g., Germany, Czech Republic, France) and 64% of imports (e.g., Germany, Italy). See Statistics Poland, Foreign trade turnover of goods in total and by countries in January-December 2023, https://stat.gov.pl/en/topics/prices-trade/trade/foreign-trade-turnover-of-goods-in-total-and-by-countries-in-january-december-2023,1,140.html, accessed 02.07.2024.*

Importers or customs brokers are required to submit quarterly reports containing information on goods covered by CBAM. The first report had to be submitted by January 31, 2024, for goods imported in Q4 2023. Initially, CBAM covered cement, iron and steel, aluminum, fertilizer, and electricity, but ultimately after 2026 this mechanism is to apply to all goods imported into the EU, namely those allowed for free circulation on the EU single market, including packaging, so-called second-hand products and even the military sector. Some companies are already choosing to offset some or all of their CO_2 emissions by purchasing carbon credits on the market. The cost of these credits – as experts point out (e.g., Gregory Trencher, Ph.D., Assoc. Prof.[337]) – is significant, and it is expected that companies may choose not to pay them. For such manufacturers, failure to comply with CBAM reporting requirements will result in severe penalties set by each EU member state, and their severity will increase depending on the duration of the problem. Even if a company does not import its products into the EU, it will be affected, as direct importers are likely to shift the cost of non-compliance on their suppliers, i.e. indirectly passing the responsibility for CBAM violations to them. Consequently, failure to facilitate compliance could result in penalties for non-EU suppliers or the termination of contracts where problems cannot be fixed.

If European companies incur regulatory costs that their foreign competitors do not, they will become less competitive both at home and abroad. For example, analysts at the Asian Development Bank[338] believe that the cross-border CO_2 adjustment mechanism (CBAM) could increase the cost of raw materials, such as steel and fertilizer, for EU companies, and could even give them an incentive to move more production capacity abroad, including to Asia. And if the EU tries to limit this loss and avoid carbon leakage by imposing tariffs (or even penalties) on imports of carbon-rich products, it runs the risk of being accused of distorting international trade (a charge that is actually already resounding in many Asian circles). This leads to friction with major trading partners (especially those with high CO_2 emissions, such as India and China), who see CBAM as an illegal trade barrier.

Trade disputes, delays in deliveries are not the only effects of CBAM. Experts predict the increase of final prices for products produced both within and outside the EU. Low-income households will be particularly affected. The need to switch to local products could benefit local economies, but local producers will also be required to use clean energy, which must increase their production costs.

337 *See: https://interactive.carbonbrief.org/carbon-offsets-2023/companies.html.*
338 *Asian Development Bank – ADB.*

11.2

LESS AVAILABLE PRODUCTS

If non-EU exporters find the cost of complying with CBAM too high, they may decide to limit or even stop exporting to the EU. This threat is more real than one might think.

There is a common belief that Asia is dependent on exports to Europe. Nothing could be further from the truth. Trade data, of course, shows the basis of a solid trade relationship between Asia and Europe. This dynamic, however, is constantly changing. Asia's dependence on European exports is decreasing, while Europe's dependence on Asian imports is increasing (e.g., rare earth metals for clean energy production)[339]. The most important manufacturers supplying Asia, for example in 2022, are companies from Germany, France, Switzerland, Italy, and the UK (the value of German imports reached nearly USD 300 billion). In contrast, the main players supplying Europe were China and Japan. Chinese imports alone had a total value of USD 978 billion[340]. According to the HSBC report, major economies in Europe represent a potential of USD 660 billion for Asian exporters, while China, India and ASEAN represent a trade potential of USD 482 billion for European exporters in Asian markets[341]. One key opportunity has arisen through the Regional Comprehensive Economic Partnership[342], the world's largest free trade agreement between 15 Asia-Pacific countries and ASEAN. These countries account for approximately 30% of gross world product, the potential for European companies seems extremely great. Meanwhile, the EU is introducing barriers that not only make it difficult for dynamically developing economies to access its market, but above all limit domestic businesses from taking advantage of these new trade opportunities (e.g., prohibitive emission restrictions).

In addition, Asian countries, including China, India and ASEAN combined, are poised for significant projected growth (on average 4.5% through 2028), making attractive their domestic and neighboring markets. Meanwhile, growth in Europe's major economies is less promising (average projections of 0.9-1.7%)[343]. In addition, in 2022 China has launched a 5-year plan to strengthen its already dominant digital economy. It aims to stimulate domestic digital transformation and open the door to companies and investors from outside the country, which is expected to lead to increased foreign direct investment inflows. Many opportunities are also opening up for European business through ASEAN's digital economy. In 2022, it was worth nearly USD 200 billion, and forecasts indicate that by 2025 it will be worth USD 330 billion (a 40% increase)[344]. One would have to ask: does European business realize the extent to which it will lose from the EU's green revolution plans? Closing the gap that Asian sprinters will cover while European businesses pursue the green dream may prove difficult, or at least it will not happen anytime soon.

339 *According to Eurostat data, since 2008 the value of goods exported outside the EU has grown at a faster rate than the value of goods imported into the EU. The EU's international trade in goods peaked in 2008 with the value of imports at EUR 155 billion, while the value of exports was slightly lower at EUR 1421 billion. The impact of the global financial and economic crisis caused a sharp decline in the EU's international trade in goods, hence the value of exports outside the EU fell by 16.7% in 2009, and the decline in the value of imports outside the EU reached -23.2%. However, there was a rapid recovery in trade activity, as EU exports had already risen above their pre-crisis value in 2010, while the same pattern was observed for EU imports through 2011; both EU imports and exports continued to grow in 2012. Between 2012 and 2016, the value of non-EU imports fell year after year, while the value of EU exports continued to rise. After 2016, imports also began to rise again, and peaked at EUR 1941 billion in 2019. In the same year, the value of exports peaked at EUR 2132.0. In 2020, largely due to the COVID-19 pandemic, both imports (-11.5%) and exports (-9.3%) fell sharply. However, over the last two years the export value has increased even more, reaching EUR 2,573 billion, while the value of imports reached EUR 3002 billion. Since 2008, the value of EU exports of goods has generally increased at a faster rate than the value of EU imports; this has led to a significant change in the EU's trade balance in goods (the difference between exports and imports). In 2008 the EU recorded a goods trade deficit of EUR 134 billion, although this reversed by 2012, when a surplus of EUR 68 billion was recorded. The surplus peaked in 2016 at EUR 264 billion, declined to EUR 191 billion in 2019, and then increased to EUR 218 billion in 2020. In 2021, the surplus dropped to EUR 55 billion due to a large increase in imports. Due to soaring energy prices, the trade surplus turned into a trade deficit (!) of EUR 430 billion in 2022.*

340 *HSBC, Asia-Europe Corridor Outlook 2023: Forging deeper Connections, https://www.business.hsbc.uk/-/media/media/uk/pdfs/article/asia-europe-corridor-outlook.pdf, accessed 20.06.2024; HSBC, Asia and Europe: Strengthening a relationship, https://www.business.hsbc.uk/en-gb/corporate/insights/international/asia-and-europe-strengthening-a-relationship, accessed 20.06.2024*

341 *HSBC, Asia-Europe Corridor Outlook 2023: Forging deeper Connections, op. cit.*

342 *Regional Comprehensive Economic Partnership – RCEP. Association of South-East Asian Nations, The Regional Comprehensive Economic Partnership (RCEP), https://asean.org/our-communities/economic-community/integration-with-global-economy/the-regional-comprehensive-economic-partnership-rcep/, accessed 20.06.2024.*

343 *HSBC, Asia-Europe Corridor Outlook 2023: Forging deeper Connections, op. cit.*

344 *Ibid.*

CBAM could lead to a reduction in Asian exports to the EU, as the EU's intention to impose tariffs on imports of carbon-intensive products could harm developing Asian countries, but is unlikely to lead to significant reductions in greenhouse gas emissions, as stated in a report by the Asian Development Bank[345]. Analysts at the bank expect CBAM to lead to a reduction in Asian exports to the EU, especially from West and Southwest Asia. In their view, steel from India will be the "first victim" of the Green Deal. Moreover, it can be expected with great probability that the small reduction in emissions, however, will be quickly offset by a further increase in high-carbon production in the Asian region. Consequently, it seems reasonable to ask how the EU will compensate for the supply of products and raw materials, because the increasingly integrated Asia and the Pacific, whose economies are expected to generate 60% of gross world product as early as 2024[346], will certainly not give in to green hegemony without a fight and will at the very least ration raw materials and products in the developing trade war.

11.3 DELAYS IN DELIVERY

Delayed deliveries of imported goods are actually an optimistic scenario compared to a complete lack of product availability. Companies are already moving production to locations where decarbonization requirements are less stringent. This includes sectors such as steel and cement, which are adjusting the location of production to reduce CBAM costs[347].

According to a Goldman Sachs Investment Bank report, the European mechanism poses the greatest threat to Indian steelmakers due to high sales in the region and increased emissions at the country's steel mills[348]. They may face additional import charges of USD 102-190 per ton of steel over the next decade. This represents 15-28% of current hot-rolled steel prices and assumes a coal price of USD 70 per ton. With as much as 27% of India's iron, steel, and aluminum products exported to the EU, this places a significant burden on Indian companies. In January 2024 alone, India was the largest exporter of hot-rolled steel to Italy (192,152 tons)[349]. There is growing dissatisfaction among steel buyers in Italy over the 15% export tax imposed on Indian steel and stainless steel products, and Indian producers are now asking their European customers to pay the tax[350]. The same problem will affect Chinese steel and aluminum producers. Consequently, this will have a broader impact on supply chains and global trade dynamics.

345 *Asian Development Bank, Asian Economic Integration Report 2024: Decarbonizing Global Value Chains, February 2024, https://www.adb.org/sites/default/files/publication/945596/asian-economic-integration-report-2024.pdf, accessed 20.06.2024.*

346 *N.L. Yunshek, W.-H. Tang, Why we can expect the return of the 'Asian Century' amid weak global economic forecasts, published 08.01.2024, https://www.weforum.org/agenda/2024/01/asian-century-weak-global-economic-forecasts/, accessed 20.06.2024.*

347 *Taxation and Customs Union – European Commission, Carbon Border Adjustment Mechanism (CBAM). Questions and Answers, https://taxation-customs.ec.europa.eu/system/files/2023-12/Questions%20and%20Answers_Carbon%20Border%20Adjustment%20Mechanism%20%28CBAM%29.pdf, accessed 20.06.2024.*

348 *Goldman Sachs, Carbonomics. Updated cost curve shows diverging trends between power and transportation, November 27, 2023, https://www.goldmansachs.com/intelligence/pages/gs-research/carbonomics-updated-cost-curve-shows-diverging-trends/report.pdf, accessed 20.06.2024.*

349 *S. Poddar, Indian steel mills face greatest CBAM risk: Goldman Sachs, published 15.02.2024, https://eurometal.net/indian-steel-mills-face-greatest-cbam-risk-goldman-sachs/, accessed 20.06.2024.*

350 *Gerber Group, Stainless Espresso: Indian steel export tax, anger grows in Italy, published 13.07.2022, https://steelnews.biz/indian-steel-export-tax-anger-grows-in-italy/, accessed 20.06.2024.*

11.4

COMMERCIAL DISPUTES

One of CBAM's goals was to encourage countries outside the EU to adopt stricter climate policies. Ultimately, however, the mechanism triggers trade disputes with these countries, which could also affect the smooth flow of goods and services. In fact, they are already being felt by business and consumers.

The World Trade Organization's trade rules[351] are designed to remove barriers to trade, on the premise that the more liberalized a market is, the greater the overall economic benefit to all participants. At the heart of these rules was the fundamental principle of "non-discrimination," which states that a member of this organization cannot:

- treat "similar" products less favorably, depending on the trading partner (i.e. for example, favor certain partners by giving them "most favored nation" [MFN] status);
- treat its own products more favorably than "similar" foreign products (i.e. it cannot apply the "national treatment" standard to its own products).

Experts from Norton Rose Fulbright believe that CBAM violates the principle of most-favored-nation if imports from WTO member countries are treated differently from imports from other countries due to their carbon content. For example, LDCs[353] will have fewer resources to reduce greenhouse gas emissions, and thus will have to bear a higher CBAM-related cost at the border, potentially putting them at a trade disadvantage, which is inconsistent with the MFN clause.

The impact of CBAM on APAC countries[354] will vary depending on their trade patterns and local CO_2 pricing policies . Countries that export carbon-intensive goods to the EU will, of course, be the most affected, leading to concerns and criticism from trading partners (e.g., China in APAC, but also South Africa, Brazil, and India in BRICS[355]), who see CBAM as a discriminatory trade barrier[356]. Although Thailand and Indonesia are adjusting to the announced changes. The Indian government has announced complaints to the WTO and is reportedly considering an EU-specific carbon tax to repatriate losses. The exact nature of the response, however, remains speculative. China is expanding its emissions trading scheme to include export sectors such as steel. Both countries are highly critical of Europe's CBAM[357].

The EU's experience offers valuable lessons. APAC countries want to implement policies similar to CBAM, the UK and Australia have announced their own policy analyses for implementing the CO_2 emission border adjustment mechanism. Australia's approach focuses on striking the right balance between national zero net emissions ambition, trade relationships, consistency with international trade rules and possible interoperability with other CBAM schemes. This will require a reassessment of existing trade agreements and will affect terms of trade; countries will seek to renegotiate agreements to take into account new realities. This will create new opportunities, but also risks.

351 *World Trade Organization, hereafter referred to as the WTO.*
352 *Norton Rose Fulbright, https://www.nortonrosefulbright.com/en/about/our-firm, accessed 20.06.2024.*
353 *LDCs – least developed countries (translator's note).*
354 *An acronym derived from Asia-Pacific.*
355 *An acronym derived from the country names Brazil, Russia, India, China, South Africa.*
356 *J. Cash, China urges EU to ensure new carbon tax complies with WTO rules, published 14.09.2023, https://www.reuters.com/sustainability/china-urges-eu-ensure-new-carbon-tax-complies-with-wto-rules-2023-09-14/, accessed 13.06.2024.*
357 *H. Yermolenko, European CBAM will do little to significantly reduce emissions – ADB, published 26.02.2024, https://gmk.center/en/news/european-cbam-will-do-little-to-significantly-reduce-emissions-adb/, accessed 20.06.2024.*

11.5

PRICE INCREASE

As CO_2 prices rise in more and more countries – thanks to emission trading schemes, taxes on CO_2 emissions and border adjustment mechanisms – the pressure to decarbonize is increasing. The regulatory costs associated with CO_2 prices will have a serious impact not only on the competitiveness of high-emission products, but also on the green EU industry[358].

While the EU explains that high-carbon producers outside the EU may become less competitive in the EU market due to the inclusion of CO_2 costs in their exports, logic dictates that the opposite will happen. It is EU producers that will certainly become less competitive due to higher energy costs, which must lead to a decline in the exports of individual EU economies to their major Asian markets. And EU end users will face unavoidable higher prices. Moreover, while they will seek alternative products from non-EU trading partners, they may simply not find them in the European market.

The situation is further complicated by the implementation of the Circular Economy Action Plan and the transition to sustainable products. This will worsen the scope of supply and increase prices for products from external countries. The EU is imposing specific requirements on companies to provide information on their social and environmental standards for sustainable production, according to the European Product Environmental Footprint methodology[359]. Companies will have to demonstrate how environmentally sustainable their products are throughout the value chain – in addition to product design. Digital product passports are expected to be introduced[360], which will include information on a product's composition, including its material and chemical properties, as well as information on circularity, such as guidance for reuse and repair operators. Details are included in the Sustainable Products Initiative, which is designed to push companies exporting to the EU to invest in the transition to new sustainable production models. For example, companies may have to start researching and investing in the purchase of recycled materials instead of virgin raw materials, or adapt to higher sustainability standards to ensure that products are more durable, reusable, repairable, and energy efficient, while producing minimal waste and harmful chemicals. This is a huge range of new responsibilities that generate additional costs, and these will be passed on – again – to the end customer.

Other legal mechanisms, such as new human rights and environmental due diligence laws, are expected to emerge in the near future to complement the Green Deal.

11.6

TRANSITION TO LOCAL PRODUCTS?

Increased manufacturing costs and a potential decrease in the availability of imported goods could lead to a shift to locally made products. This could potentially benefit local industry, but there is a "but."

Currently, almost ¾ of the EU's energy system is based on fossil fuels. Oil dominates with a share of 34.8%, followed by natural gas (23.8%) and coal (13.6%). The share of RES is growing, but their role remains limited (13.9%), as does that of nuclear power (12.6%)[361]. Depending on the accuracy of the scenario, experts at the European Council on Foreign Relations (EFCR) estimate that between 2015 and 2030, EU coal imports would fall by 71-77%, while oil would fall by 23-25% and natural gas by 13-19%. They expect the declines to be even more dramatic after 2030, with oil imports falling by 78-79% and natural gas imports by 58-67% compared to 2015[362].

358 *J. Solgaard, Why Asia-Pacific tax departments need to prepare for the EU's CBAM, published 14.12.2023, https://www.internationaltaxreview.com/article/2ckxbui6dw5k09xli1a80/sponsored/why-asia-pacific-tax-departments-need-to-prepare-for-the-eus-cbam, accessed 20.06.2024.*

359 *European Product Environmental Footprint – EU PEF. See Commission Recommendation (EU) 2021/2279 of December 15, 2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organizations, OJ L 471 of 30.12.2021, pp. 1-396.*

360 *Digital product passport – DPP.*

361 *Eurostat, Shedding light on energy in the EU – 2023 edition, https://ec.europa.eu/eurostat/web/interactive-publications/energy-2023, accessed 13.06.2024.*

362 *M. Leonard, J. Pisani-Ferry, J. Shapiro, S. Tagliapietra, G. Wolff, The geopolitics of the European Green Deal, published 03.02.2021, https://ecfr.eu/publication/the-geopolitics-of-the-european-green-deal/, accessed 13.06.2024.*

On the one hand, a huge reduction in this flow must restructure the EU's relations with key energy suppliers. Europe's exit from its dependence on fossil fuels will inevitably negatively affect many regional partners, and may even destabilize them economically and politically. Countries such as Norway and Algeria will eventually be deprived of their main export market[363].

On the other hand, a greener Europe would be more dependent on imports of raw materials and products needed for clean energy and clean technologies. For example, rare earth elements, of which China is the largest producer, are essential for battery production. Moreover, in the context of radical decarbonization, Europe may remain a major net importer of energy, but that energy must, of course, be green. An example is green hydrogen produced in the sunniest regions of the world. Such electricity is essential for industrial processes such as steel and cement production, as well as transportation sectors such as trucking, shipping, and aviation. It is therefore planned to produce 10 million tons and import an additional 10 million tons of renewable hydrogen in the EU by 2030. Given North Africa's renewable energy potential and geographic proximity to Europe, the region is being considered as a potential supplier of competitively priced renewable hydrogen to Europe, e.g., Germany has already partnered with Morocco to establish Africa's first green hydrogen industrial plant with the intention of future exports, but only to Germany[364].

Europe, by carrying out green colonization this time, would remain dependent on external suppliers, de facto its new colonies, because it has already become obvious that it does not have access to the raw materials necessary to carry out the intended process. More expensive, but clean energy, often coming from outside the EU, will of course increase the costs of local production and, consequently, prices for the final European consumer. It is also important to ask which countries, and to what extent, have taken care to produce or purchase clean energy, without which domestic producers simply cannot cope.

11.7 NISKA REDUKCJA CO_2, DUŻE ZMIANY W HANDLU I INWESTYCJACH

The Green Deal is the introduction of *carbonomics*[365], which has a significant external policy dimension, as it will have profound geopolitical repercussions, some of which will adversely affect both individual member countries and the EU's trading partners. At the same time, experts are unanimous in pointing out that the European CBAM will do little to significantly reduce emissions. Given the way the scale of production is growing, even if CO_2 pricing is implemented globally (and this is an unlikely scenario), emissions will continue to increase without fundamental changes in technology. Estimates indicate that CBAM is likely to reduce global CO_2 emissions by less than 0.2% compared to a CO_2 trading scheme with a price per allowance of EUR 100 (USD 108) per metric ton and no carbon tariff. At the same time, the tariffs could reduce global exports to the EU by about 0.4% and exports from Asia to the EU by about 1.1%, negatively affecting some EU producers[367].

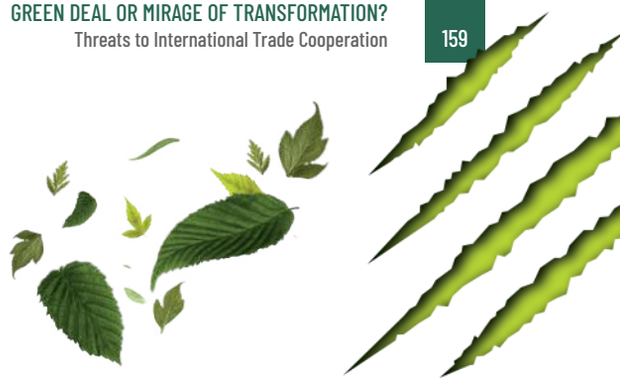
363 *Until the end of 2021 Russia was the main supplier of oil (24.8%) and natural gas (48%) to the EU. In 2022 the EU continued to import energy products (oil, natural gas, solid fuels, i.e. coal, lignite, peat and coke) worth more than EUR 320 billion, and more than 60% of EU imports from Russia were energy products. According to Eurostat data, EU imports of energy products decreased in 2023 compared to 2022. In the fourth quarter of 2023, compared to the same quarter of 2022, oil imports decreased in terms of both volume (-4%) and value (-8%), and natural gas imports decreased similarly (in terms of volume it was -10%, and in terms of value -57%). Following Russia's invasion of Ukraine, the EU responded with sanctions packages that directly and indirectly affected oil and gas trade. In the following quarters of 2022 and 2023, greater supplier diversification gradually began to emerge. This made Norway (53.4%) and Algeria (15.9%) the main gas suppliers. Right behind them, in third place, is still Russia (12.7%). As for liquefied gas supplies, Russia is even in 2nd position (13%), just behind the United States of America (49.4%), followed by Algeria (11.1%). The supply of crude oil provided by Russia fell to 3.5% in Q4 2023 in favor of other suppliers, i.e. mainly the United States of America, Norway, Kazakhstan, but in addition to them there are also Libya, Iraq, Nigeria, and Azerbaijan. Russia was also the largest supplier of coal to the EU in Q4 2021 with a market share of 47.9%. The EU's fifth package of sanctions banned the purchase, import or transfer of coal and other solid fossil fuels to the EU if they originated in or were exported from Russia, and as a result, the share of Russian products fell to 0 in Q4 2022. Consequently, the shares of the United States of America (+15.8 percentage points to 34.9%) and Australia (+6.7 percentage points to 26.8%) increased, while South Africa's share fell (-16.9 percentage points to 6.1%).*

364 *I. Magoum, Morocco: Partnership with Germany for green hydrogen, published 09.12.2020, https://africaclimatesolutions.com/morocco-partnership-with-germany-for-green-hydrogen/, accessed 20.06.2024.*

365 *Goldman Sachs, op. cit.*

366 *H. Yermolenko, op. cit.*

367 *Asian Development Bank, Asian Economic Integration Report 2024: Decarbonizing Global Value Chains, February 2024, https://www.adb.org/sites/default/files/publication/945596/asian-economic-integration-report-2024.pdf, accessed 20.06.2024.*



In these already difficult conditions of re-, or perhaps deglobalization, the specter of a crisis in the European economic model is also emerging, putting the fiscal and tax stability of the EU into serious question. The new burdens associated with the Green Deal in regulatory, financial, trade, and political terms will certainly not accelerate the much-desired economic growth that the over-indebted countries of Western Europe (e.g., France, Italy) have long sought, and which Poland has infamously just joined. On top of that, "green regulations" will contribute to a decline in the competitiveness of our companies in international markets, where we have only just begun to take steady steps. And the lack of prospects for a strategy stimulating the development of local alternatives should prompt businesses to react decisively.

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12

CHALLENGE TO DISCUSSION

Temperature and carbon dioxide (CO_2) measurements conducted over several decades have led some climate change researchers to conclude that the observed increase in the Earth's atmospheric temperature is largely caused by the burning of fossil fuels. Based on this belief, a plan was devised to eliminate fossil fuels as an energy source and replace them with so-called non-emission energy sources. In the European Union (EU), this plan is called the European Green Deal. The adoption of several directives by the EU to implement the Green Deal's principles has sparked opposition from many sectors, not only in Poland but also in many other EU member states. We witnessed violent protests by farmers, who were forced to suspend their protests due to the necessity of season-related work.

It should be noted that the primary opposition stems from the close deadlines for moving away from fossil fuels and transitioning to so-called renewable energy sources. Experts point out that current technologies do not allow for the storage of energy from these sources to ensure operational security of energy systems. The forecasts regarding energy prices and their impact on the country's economic development and the impoverishment of the population are pessimistic.

One gets the impression that all expert analyses focus on the consequences of implementing the Green Deal and the manner of its introduction, rather than the increase in the Earth's temperature, and consequently the climate changes threatening humanity, are caused by CO_2 emissions from the burning of fossil fuels. **This claim is accepted as a dogma, and anyone who dares to point out significant facts challenging it is publicly stigmatized.**

The primary task of scientific research is the pursuit of truth. Truth is not established by voting or majority opinion, but through a thorough analysis of facts, measurement results, and the correctness and consistency of proposed models. For it is only the truth that is truly fascinating.

As the first example challenging the dogma of CO2 being responsible for the increase in Earth's temperature, I propose the work of Norwegians Ole Humlum, Kjell Stordahl, and Jan-Erik Solheim from 2013[368]. Drawing on data from many global databases containing measurements of temperature and CO2 concentration in the atmosphere, the authors presented graphs of these changes, where they averaged the data for individual months from 1982 to 2012. Typically, such averages are calculated for years or even entire decades. The result of their work is surprising: it turns out that during the studied period, temperature changes precede CO_2 concentration changes by about nine months. The question arises: if temperature changes are caused by changes in CO_2 concentration, why does the effect precede the cause? Figure 1 presents the result of the Norwegians' work. Temperature changes are marked in blue, and CO_2 concentration changes are marked in green. The authors explain this phenomenon by the dissolution and release of CO_2 from the oceans.

Another example is the work of German researcher Dieter Schildknecht from 2020[369]. On the basis of the theory of radiation interaction in gases, he demonstrated that the impact of anthropogenic (human-caused) increase in CO_2 concentration on the Earth's atmospheric temperature is negligible.

Figure 1. Change in CO_2 concentration in the atmosphere and air temperature change in the Northern and Southern hemispheres from 1982 to 2012.

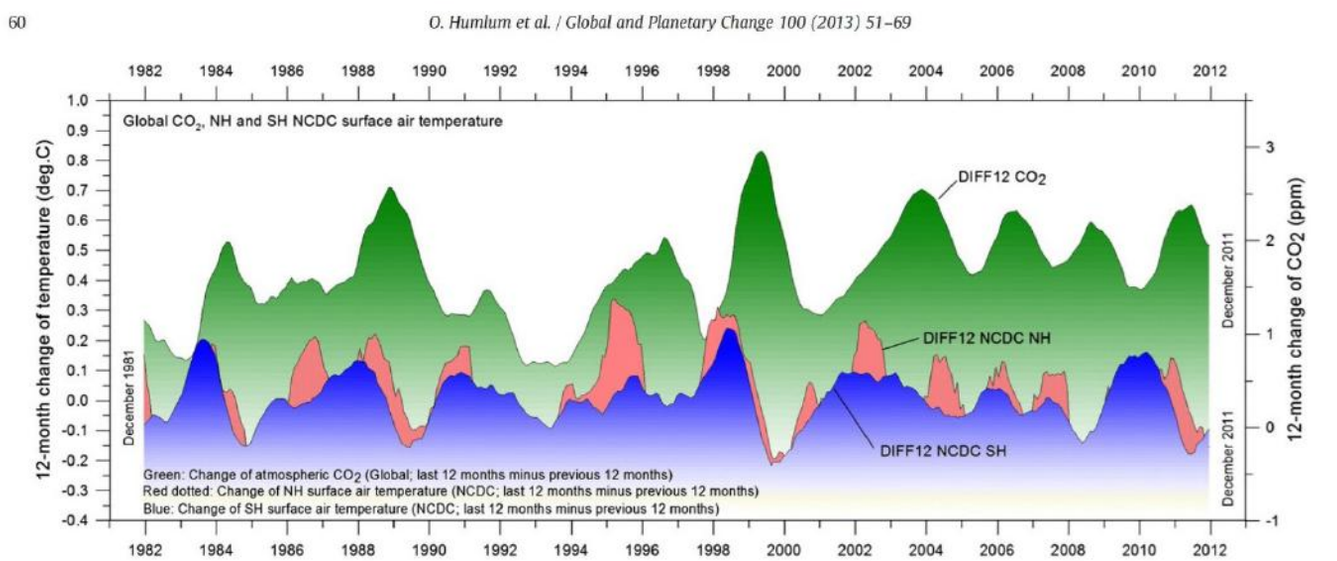


Fig. 9. 12-month change of global atmospheric CO_2 concentration (NOAA; green), change in Northern Hemisphere surface air temperature (NCDC; red dotted), and Southern Hemisphere air temperature (NCDC; blue). All graphs are showing monthly values of DIFF12, the difference between the average of the last 12 months and the average for the previous 12 months for each data series. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of the article.)

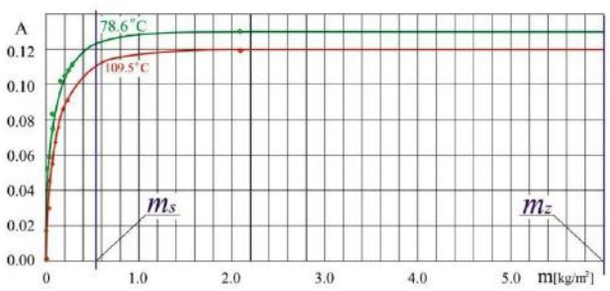
Source: O. Humlum, K. Stordahl, J.-E. Solheim, op. cit. p. 60.

368 *O. Humlum, K. Stordahl, J.-E. Solheim, The phase relation between atmospheric carbon dioxide and global temperature, Global and Planetary Change 2013, vol. 100, pp. 51-69, https://tesla.rcub.bg.ac.rs/~dvujovic/humlum2013.pdf, accessed 10.07.2024.*

369 *D. Schildknecht, The Saturation of the Infrared Absorption by Carbon Dioxide in the Atmosphere, International Journal of Modern Physics B, 2020, vol. 34, no. 30, https://arxiv.org/pdf/2004.00708v1, accessed 10.07.2024.*

This year brought another argument challenging the dogma that CO_2 is responsible for climate change. Three Polish researchers – Jan Kubicki, Krzysztof Kopczyński, and Jarosław Młyńczak – conducted an experiment involving the recording of infrared radiation passing through a mixture of air with varying amounts of CO_2[370].

Figure 2. The relationship between absorption of transmitted thermal radiation and CO_2 mass.

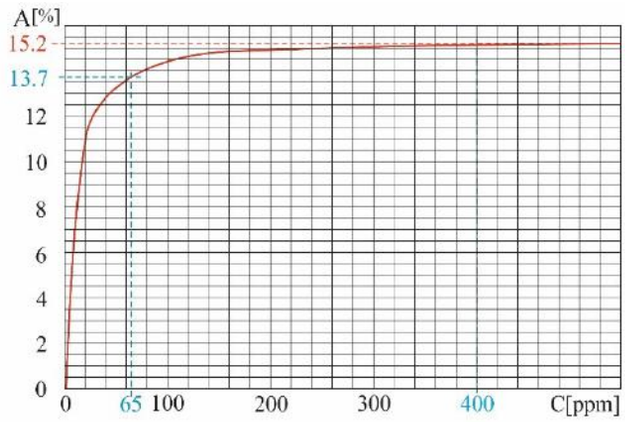


Source: J. Kubicki, K. Kopczyński, J. Młyńczak, op. cit. p. 5.

Although the radiation source used by the researchers was much warmer than the Earth, they observed the saturation effect (see Figure 2) at a CO_2 concentration (m_s) much lower than it is currently (m_z). This means that adding more CO_2 to the air has no significance, as all the infrared (thermal) radiation has been absorbed at a much lower CO_2 concentration.

Further experiments conducted by J. Kubicki[371] taking into account the conditions (pressure and temperature) prevailing in 8 distinct layers of the atmosphere, divided into the intervals (in kilometers): 0.0-0.5; 0.5-2.5; 2.5-4.5; 4.5-6.5; 6.5-8.5; 8.5-10.5; 10.5-12.5; 12.5-14.5, demonstrated that at a CO_2 concentration of 100 ppm[372] there is 90% absorption saturation, and at the current CO_2 concentration of about 400 ppm saturation is practically 100%.

Figure 3. Dependence of the absorption of Earth's thermal radiation in the atmosphere on CO_2 concentration.



Source: author's private information.

It must be clearly emphasized – these are not theoretical considerations, but the results of a specific experiment. What conclusions can be drawn from reading the mentioned works?

The Green Deal should be rejected in its entirety, because it was constructed on false premises. The forecasted negative effects of its implementation result primarily from a faulty diagnosis regarding climate change. No one in their right mind disputes that the climate is changing, but the reason for these changes is not the use of fossil fuels.

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370 *J. Kubicki, K. Kopczyński, J. Młyńczak, Climatic consequences of the process of saturation of radiation absorption in gases, "Applications in Engineering Science" 2024, vol. 17, 100170, https://www.sciencedirect.com/science/article/pii/S2666496823000456, accessed 10.07.2024.*

371 *Author's private information.*

372 *ppm – parts per million.*

Three Polish physicists – Jan Kubicki, Krzysztof Kopczyński, and Jarosław Młyńczak – published their findings in a peer-reviewed article in the scientific journal "Applications in Engineering Science"[373]. Based on experiments, they demonstrated that the ability of carbon dioxide (hereafter: CO_2) to absorb radiation becomes saturated and the addition of CO_2 to the atmosphere cannot have a significant effect on the climate at increases beyond a threshold of about 300 ppm[374]. Due to saturation, increasing concentrations do not lead to further absorption of radiation. Kenneth Richard's report on the Polish physicists' discovery concludes with the sentence: "Climatologists around the world are astonished by this discovery"[375]. Scientists around the world are astonished – except for Szymon Malinowski, Professor, who, gassed on CO_2, does not grasp the significance of the Polish physicists' discovery. Therefore, not all scientists are paralyzed by the fear of losing their grants.

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374 *ppm – parts per million.*

375 *R. Kenneth, 3 Physicists Use Experimental Evidence To Show CO2's Capacity To Absorb Radiation Has Saturated, 23.04.2024, https://metatron-substack-com.translate.goog/p/co2-does-not-cause-global-warming?_x_tr_sl=en&_x_tr_tl=pl&_x_tr_hl=pl&_x_tr_pto=sc&_x_tr_hist=true , accessed 10.07.2024.*

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Ryszard PIOTROWSKI

Constitutional law expert, Ph.D., Doctorate in Legal Sciences, Associate Professor at the University of Warsaw.

Author of books and scientific articles on constitutional law issues, law-making, and comparative constitutional law. His academic interests include: constitutional law, the philosophy and axiology of constitution, comparative constitutional law, theory and practice of legislation, parliamentary law, and human rights. He has been a recipient of scholarships from the International Research and Exchanges Board, the American Council of Learned Societies (Georgetown, the Library of Congress, lectures at universities including Greensboro, Charlottesville, San Diego), the Consiglio Nazionale delle Ricerche, and the Senate of the Italian Republic; participant in the Erasmus program (lectures in Italy). Author of over 200 scientific publications. Presented more than 200 papers at conferences, including international conferences. Author of more than 180 expert opinions on constitutional law and human rights for public institutions and private entities, as well as commentaries on current constitutional issues presented in the media (awarded the title of Jurist of the Year 2016 in the "Jurist-Educator" category by the editors of Rzeczpospolita for "wise and unconventional elucidation of questions about the system of government and constitution"). In 1987, he initiated simulations of Constitutional Tribunal hearings as part of constitutional law classes, conducted (jointly with Adam Jankiewicz, D.L.Sc.) in the Tribunal's courtroom. Awarded the Knight's Cross of the Polonia Restituta Order by the President of the Republic of Poland in 2014 "for outstanding contributions to the country's systemic transformation, activity to promote the development of Polish parliamentarism, and achievements in professional work and public service conducted for the benefit of the country"; in 2012, he was honored with the Medal of the Polish Society of Constitutional Law. In 2017, he received a distinction from the Rector of the University of Warsaw "in recognition of contributions to the prestige and development" of the University.

Katarzyna Agnieszka OBŁĄKOWSKA

Ph.D. in Social Sciences in the discipline of political science and administration, sociologist.

Expert in social research, public policy, and behavioral economics. She holds a Ph.D. in economics from SGH Warsaw School of Economics and a Master's Degree in sociology from the University of Warsaw. She has completed postgraduate studies in public administration and finance (Warsaw University of Life Sciences, SGGW), marketing research (SWPS University), brand management (SGH Warsaw School of Economics), and art history (Collegium Civitas). She has many years of research experience, including leading teams and research grants (including from the National Science Center), as well as analytical, scientific, expert, and public speaking experience. Author of over 30 scientific publications on socio-economic policy, development, state, culture, cultural heritage, trust, social capital, tourism, welfare and behavioral economics, and public finance. Author of 3 books: Dlaczego ludzie płacą podatki? Zgodność podatkowa w ujęciu ekonomiczno-społecznym [Why Do People Pay Taxes? Tax Compliance from an Economic and Social Perspective], (Polskie Towarzystwo Ekonomiczne, 2024), Polityka publiczna wobec zabytków nieruchomych w Polsce. Doświadczenia – reguły – model [Public Policy Towards Immovable Monuments in Poland. Experiences – Rules – Model], (Instytut Studiów Podatkowych, 2023), and Muzea zamkowe i pałacowe w Polsce w świetle pozytywnych efektów zewnętrznych ich działalności [Castle and Palace Museums in Poland in Light of the Positive External Effects of Their Activities], (Difin, 2021). Co-editor of two scientific monographs and numerous expert reports.She has presented at more than 40 scientific and economic conferences. She cooperates with public administration and social organizations. She was awarded the Decoration of Honor "Meritorious for Polish Culture".

Katarzyna WAWRZONKIEWICZ

M.L.A. – graduate of the Faculty of Law and Administration at the University of Warsaw.

Specializes in value added tax and excise tax issues. Responsible for drafting legal and tax opinions, pleadings and conducting tax audits. Co-author of book publications, including successive editions of the commentary to tax on goods and services (VAT), the commentary to the excise tax, and the author of numerous articles on tax-related topics.

Cezary Bogumił WINCENCIAK

M.Sc. – graduate of the Chemical Technical School in Płock (at Orlen SA) and the Warsaw University of Life Sciences (SGGW).

A farmer and agriculture enthusiast from a young age. Creator of Hektar Wiedzy [Hektar of Knowledge] – an interactive training and information structure for farmers. Originator and author of smart solutions for agriculture (Hektar Wiedzy mobile, Hektar Sensor, Hektar Farmer).

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