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CURRENT ASSUMPTIONS OF THE EUROPEAN UNION'S ENERGY AND CLIMATE POLICY IN THE ASPECT OF OPPORTUNITIES AND THREATS

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Purpose: In the light of the threats defined, the article emphasises the importance of new tools that can be helpful for a responsible energy policy. This is why it is so important to internalise some concepts such as taxonomy, the European Green Deal or the Bauhaus as an antidote to irreversible climate change, leading to the self-destruction of humanity, for which man has only themselves to blame.
Methodology/approach: The method of the paper was based on an in-depth analysis of the European Union source documents, published on websites and in documents of the European Commission and the European Parliament. In addition, materials and information published on the websites or in the source documents of individual parliamentarians (Jerzy Buzek, MEP) and EC commissioners (Franz Timmermans) were used. The information gathered was extended through a library search and based on the library resources of several prominent Polish universities, as well as the Oxford Institute for Energy Studies. Moreover, the analysis included academic publications, websites of institutions, companies and organisations monitoring the course and energy and climate policy changes.
Constraints: Adapting to climate change through the prism of activating and using innovative financial mechanisms is another challenge to which the Brussels structures must give new responsible directions based on intergenerational solidarity. The spending of money should also be based on a sustainability mechanism so that financial resources are not spent today that will have to be repaid by future generations. In the same sense, solidarity between states and between regions is necessary.
Implications: Europe and Poland have a challenge, the keyword of which is **reorganisation**, and almost all the deadly coal- and gas-fired heating plants will be subject to it. The hope is the European Union, as it is an organisation with unlimited possibilities, and it has proven many times that it will not hesitate to use these possibilities for the benefit of future generations.
Value: The current assumptions of the energy and climate policy of the European Union in terms of opportunities and threats were cited and analysed. Innovative solutions and tools for financing the development of the European Union were taken into account, including the European Green Deal, Just Transition Fund and EU ETS. Moreover, the necessity to change the way the EU thinks about itself and restructure all resources in the face of the consequences of the war in Ukraine was indicated.
Keywords: sustainable development, climate, energy security, natural gas, hydrogen, European Green Deal, Just Transition Fund, taxonomy, EU ETS.

1. Introduction

The climate and energy challenges of the modern world can be considered from a historical perspective, as the problem was first identified in the 1960s. The identification of the threat to the future life of the human population on Earth caused by climate change emerged and was popularised under the concept of sustainable development. This term was first officially introduced in 1969 by the Secretary-General of the United Nations, U. Thant, in the report entitled "Problems of the Human Environment" (Alberski, Solarz, 1994**).** It was subsequently repeated and highlighted in the 1972 report commissioned by the Club of Rome entitled "The Limits to Growth" (Meadows, 1973). The problem, for this is how we should call the threat to the continuity of human life caused by irreversible changes to Earth's climate, has been generated by the global postmodern capitalist economy, which does not ensure access to existing (energy) resources for future generations and therefore does not pursue a policy based on sustainable development.

The conceptualisation of environmentally responsible energy and climate policy in Poland was initiated as early as 1989 by the Civic Parliamentary Club (OKP). It turned out that the overproduction of electricity at that time was as high as 12TWh, which made it possible for Poland to be an exporter. The main reason for this overproduction, or excess of supply over demand, were the "oversized" power stations and the lack of a rational strategy for the extraction and processing of coal - the key raw material of the Polish economy under Edward Gierek, who headed the country's ruling Polish United Workers' Party in the 1970s. At that time, the definition of sustainable development had already been clearly defined and adopted by the United Nations in 1987, so Poland's energy policy after the collapse of the communist system was to be implemented with the aim of meeting the needs of future generations in terms of access to the Earth's resources, and above all to energy resources.

Nowadays, energy strategies and policies are developed on the basis of many factors. Therefore, international indicators which are globally developed, for example, at the annual Conference of the Parties (*COP*) meetings, are useful in this regard (Rogala, 2022). Such an approach to finding a global solution to the problem gives hope that the world will refrain from economic activities based on inefficient energy sources that are destructive to the climate and the environment. The European Union, which aspires to lead the change from non-renewable to renewable energy sources, with 10% of CO_2 emissions, and China, which produces 37% of emissions, are the world's leading polluters, must be involved and responsible for the change process. Therefore, as an organisation aspiring to become a world leader in responsible energy and climate policy, the EU must face significant challenges. Apart from looking after its own environment, the EU must exert pressure on the world while acting in an exemplary manner to protect the environment. The consequences are difficult to predict,

the solutions may be varied, and even the relocation of the EU companies and workplaces outside Europe should be considered (Popkiewicz, Kardaś, Malinowski, 2019).

In the light of the threats defined, the article emphasises the importance of new tools that can be helpful for a responsible energy policy. This is why it is so important to internalise some concepts such as taxonomy, the European Green Deal or the Bauhaus as an antidote to irreversible climate change, leading to the self-destruction of humanity, for which man has only themselves to blame (Urban, 2022).

2. Analysis of Literature and Policy Documents

The study employed energy and climate policy sources, mainly relying on the resources of the European Commission, the Polish Academy of Sciences, the Oxford Institute for Energy Studies, as well as several Polish universities (Silesian University of Technology, Rzeszów University of Technology, Opole University of Technology or the Publishing House of the State Higher Vocational School in Racibórz). Online resources were also used, relying mainly on the experts at Biznesalert.pl. Furthermore, the official websites of the Government of the Republic of Poland as well as of the European Parliament (EP) were considered with the necessary attention. To achieve maximum objectivity, the paper was also supported by research carried out or commissioned by non-governmental organisations, including the Sobieski Institute.

Policy documents, the validity of which seems indisputable, were downloaded from the official websites of the Ministry of the Environment of the Republic of Poland, the Polish Academy of Sciences, the European Commission (EC) as well as the European Parliament.

In addition, consideration was given to the opinions of politicians actively working for the achievement of climate neutrality by Europe, such as the Vice-President of the European Commission, Franz Timmermans; the former President of the EP, Jerzy Buzek; or His Excellency, the former EC Ambassador to Poland, Marek Prawda; as well as the former Minister of Economy, Janusz Steinhoff.

3. Methodology

The method of the paper was based on an in-depth analysis of the European Union source documents, published on websites and in documents of the European Commission and the European Parliament. In addition, materials and information published on the websites or in the source documents of individual parliamentarians (Jerzy Buzek, MEP) and EC commissioners (Franz Timmermans) were used.

The information gathered was extended through a library search and based on the library resources of several prominent Polish universities, as well as the Oxford Institute for Energy Studies.

Moreover, the analysis included academic publications, websites of institutions, companies and organisations monitoring the course and energy and climate policy changes.

4. Results

Energy and climate policy is no longer a challenge, but an obligation, because, as the paper proves, the situation is critical. The consequences of the turmoil surrounding the natural gas exported by the Russian Federation under its contracts due to the failure to meet deadlines, supply volumes or the disruption of supply chains must be taken into account, and this is related to the potential consequences of the ongoing war in Ukraine.

It seems that all the actions announced by individual European countries and institutions will be aimed at a rapid transition away from Russian gas. Hydrogen - namely the "green" one - may be and is supposed to be an alternative. Therefore, it would even seem necessary to move towards developing methods for the rapid acquisition of hydrogen as a fuel alternative to natural gas, including the prospect of using hydrogen in the armed forces.

However, the mere production or extraction of hydrogen is not enough when there is no adequate distribution network or when there are no tanks or storage facilities capable of storing hydrogen itself and potential surpluses of energy produced from the "new hydrogen technologies". Therefore, it is necessary to produce special fuel cells that convert H_2 into electricity.

The next challenge is to prepare a power balancing strategy, which may pose an even more serious challenge than just producing the fuel of the future (Satoła, Milewska, 2022).

The next solution could be to develop a network of civic activities that could participate directly in **reorganising** traditional residential coal-fired boiler plants and replacing them with modern zero-emission hydrogen ones.

Therefore, Europe and Poland have a challenge, the keyword of which is reorganisation, and almost all the deadly coal- and gas-fired heating plants will be subject to it. The hope is the European Union, as it is an organisation with unlimited possibilities, and it has proven many times that it will not hesitate to use these possibilities for the benefit of future generations.

4.1. Economic Environment Trends and the Climate and Energy Challenges of Today's World

Despite the existence of the European Energy Community, a strategy developed by former EP Presidents Jerzy Buzek and Jacques Delors (Buzek, 2022), individual members of the European Community have the right to pursue their own - national - energy "mix", and this freedom to follow their policies by the Member States is, after all, one of the values of the EU as a community in diversity, and can therefore be seen as an added value.

France bases its mix on nuclear energy, while Germany is still a "powerhouse" in coal combustion, including lignite, emitting twice as much CO_2 as Poland (Dmochowska-Dudek, Wójcik, 2022). Poland's CO_2 emissions are 800kg CO_2 per MWh/pc (per capita), while Germany's are 550kg CO_2 per MWh/pc. In this context, it is necessary to mention the production of CO_2 during the combustion of gas, which accounts for approximately 50% of emissions from solid fuels, with the exception that during combustion, i.e. the processing of natural gas as a raw material into electricity, there is no emission of harmful dust of the PM10 or PM2.5 type, and this is a value for the protection of human health, e.g. against asthma and its effects which cause hundreds of deaths per year in Poland (Raport: Astma ciężka, 2022).

It is a known fact that most energy is produced from oil followed by natural gas and coal, while atomic, wind or hydro-based energy is used less often. Currently, as much as 85% of energy comes from oil, natural gas and coal - the biggest emitters of toxic carbon dioxide and other greenhouse gases. Renewable sources are still marginally used. Solar, wind, geothermal and biofuels (Eftaksja, Passa, Michailidis et al., 2022) account for just over 1% of the energy consumed by humanity. It should be mentioned, however, that the amount of energy extracted from renewable sources increases from year to year, and the upward trend is rather dynamic (Kuzior, Postrzednik-Lotko, Postrzednik, 2022).

The very dynamic development of RES and the increase in its position in the energy mix is recognised and this phenomenon, and perhaps already an ever-growing trend, represents an extremely optimistic value for the health of future generations. In this area, however, Poland made a cardinal mistake by stopping the development of wind power in 2017, where wind energy growth of up to 100MW could already be seen (Enevoldsen, Permień, Bakhtaoui et al., 2019). This ignominious decision resulted in a drop to 18% in the energy mix, additionally still based on photovoltaics (Hołuj, Ilba. Lityński et al., 2019).

Renewable energy needs a rational network, and this poses another challenge because if the performance of offshore turbines gives an efficiency gain based on a potential of 10-20GW of power (and this is what is expected to be obtainable in the Polish Economic Zone based on a contract for difference in the appropriate financial mix), then this effect must be introduced into an adequately prepared network (Zagubień, Wolniewicz, 2022; Aydin, Igliński, Krukowski et al., 2022).

4.2. Taxonomy and Innovative Challenges

A variety of phenomena can be observed, more or less favourable to saving the environment and, above all, people from themselves and the gloomy consequences of their activities. It seems that the so-called **taxonomy** (Jakóbik, 2022). proposed by Brussels officials, which is an EU proposal (Rozporządzenie PE i Rady (UE) 2020/852 z 18.06.2020r.) for a transitional period or even for an exit from the processing of non-renewable (fossil) sources and the inclusion of these in acceptable energy fuels based on nuclear and gas, which are stable and even indispensable raw materials used to produce energy, which will be increasingly needed in a constantly growing global economy, may be an antidote of sorts. Furthermore, the taxonomy does not prohibit but "prioritises pro-environmental investments". And one of its most important objectives is to counter greenwashing, that is, the unjustified claim by companies that their activities are environmentally friendly (Hejj, 2022).

Europeans who are aware of the situation and of the mission that we want and need to carry out should also make changes to agricultural policy or communications policy in order to achieve the objective of "climate neutrality" by 2050 without losing competitiveness with the global economy, which, after all, does not impose extremely costly measures for reducing the emissions or energy intensity of production.

4.3. The EU Emissions Trading Scheme (EU ETS)

A further European political innovation, the highly rational and effective **ETS** (Unijny system EU ETS, 2022), is an important, perhaps even crucial, tool on the path towards climate neutrality. Still, it also needs to be corrected, perhaps even in the direction of a more effective correlation between the rate of increase of emission costs and the reduction of emissions, which should rather be a function of production and costs. Other sectors of the economy, such as transport and construction, should also be included in the ETS, as only synchronised action can lead to the success of a timeless programme such as the European Green Deal, with a climate-neutral effect set for 2050.

At the ETS sales auctions held in Berlin, Poland had PLN 60 billion available for 2021 in general, of which at least PLN 25 billion should be used to sanitise the energy sector, which would significantly increase efficiency and at least some specific stabilisation of energy systems. These actions confirm the thesis that the European Union is committed to a fuel-efficient economy and is moving towards a sustainable energy and climate change mitigation strategy through a combination of direct regulation and support of market entities (Kuzior, Kwiliński, Hroznyi, 2022).

Another challenge to reducing energy demand is to increase the rate of thermo-modernisation, as it is estimated that there are still around 80% of buildings in Poland that need to undergo comprehensive thermo-modernisation - an action that has already had procedures

developed and funding paths available for many years (Życzyńska, Suchorab, Majerek, 2020; Życzyńska, Suchorab ,Majerek et al., 2022).

4.4. Substitution of Solid Fuels by Gaseous Fuels

Europe consumes approximately 394 billion m^3 of gas annually, of which it imports 324 billion m^3 at the cost of approximately €1,100 billion. Poland, on the other hand, extracts 4 billion m^3 of gas annually from its own resources; we import around 16 billion m^3, of which 9 billion m^3 from Russia, largely based on the Yamal Contract, through which we transferred approximately 30 billion m^3 of gas annually (Steinhoff, 2022; Zawisza, 2022). At present, the Świnoujście gas port receives approximately 5 billion m^3, with a target of up to 10 billion m^3 [excluding the planned floating gas port in the Gulf of Gdańsk]. The planned launch of the Baltic Pipe in autumn 2022 will enable Poland to procure 10 billion m^3 of gas annually, which will to a large extent, meet the demand for this type of fuel and create the possibility of becoming independent from gas supplies from other directions (Biały, Janusz, Ruszel et al., 2018) (USA, Qatar) or create the possibility of negotiating a better - lower purchase price, which, according to various sources, generally has varied (Kretek, 2018).

At the end of 2021, there were approximately 3 billion m^3 of gas in Polish storage. Due to a number of geopolitical factors resulting, among others, from the turmoil surrounding NS2 declared bankruptcy on 1 March 2022 (Spółka Nord Stream 2…, 2022) or caused the open war conflict between Russia and Ukraine, the price of gas increased at the turn of 2021/2022 to $2,000 per 1,000 m^3, which caused panic on global markets and a kind of so far unknown energy crisis that triggered inflation in many countries, especially in Central and Eastern Europe exceeding even 10%. Furthermore, the war in Ukraine caused the price of natural gas in Europe to increase to a record level of €197.91 per megawatt-hour (Cena gazu…, 2022).

Individual members of the European Union are assuming their own long-term process of withdrawal from nuclear power by switching to natural gas. However, they are aware of the entirely unpredictable - even based on medium-term trade contracts with the Russian Federation pursuing an imperial policy through Gazprom. Chancellor Angela Merkel announced that Germany was abandoning nuclear energy, assuming that its current demand for natural gas would increase from 80 billion m^3 to a target of 100 billion m^3.

It seems that the plans of Germany, as well as most members of the EU and even of the world, will be radically revised.

4.5. Moving Away from Coal as a Necessity and an Opportunity

To achieve the objectives of the European Green Deal, Poland will gradually shut down the most environmentally damaging mines and power plants, including the most environmentally damaging energy producer, i.e. the 5,000MW Bełchatów power plant, which is ignominiously ranked 1st among the most environmentally damaging energy producers in Poland.

Attempts were made with carbon capture and storage (*CCS*) (Dyrektywa w sprawie geologicznego składowania CO_2, 2022). Still, this operation proved to be both irrational and economically unjustified with the current technological possibilities while works (Plac, Ribeiro, 2022; Yaci, Enczew, Longo, 2022), e.g. at Zakłady Azotowe Kędzierzyn-Koźle were advanced.

In addition, it is important to point out the incalculable cost of human life, which was taken care of by Margaret Thatcher by allowing 15 thousand miners to leave the mining industry each year, and the mission to save and prolong life in Poland was carried out by the government of Jerzy Buzek with Deputy Prime Minister Janusz Steinhoff in charge of the economy, providing an opportunity for up to 100 thousand Polish miners to live longer.

4.6. Energy Storage as a Challenge

A number of investments are envisaged and planned in the direction of adequate energy storage, which has to be produced in excess of demand due to the increasingly unpredictable actions of owners of their resources and energy producers.

Among the envisaged solutions, the following are particularly worthy of attention by scientists as well as individual countries planning a strategy based on the storage of surplus energy production:

- pumped storage plants,
- batteries (including those being decommissioned, which are still too costly and energy-intensive to dispose of),
- technologically enhanced batteries (e.g. lithium-ion),
- green H_2 production (e.g. by electrolysis),
- ... and those still in the research phase at research universities or scientific institutes, for which humanity is hopefully waiting.

The EU, therefore, must face further challenges, and it seems that this structure of 27 countries will not only meet the public's expectations by implementing ambitious plans but will probably not stop at the realisation of feasible tasks, constantly modifying the fulfilment of needs with further tasks that are currently beyond human capabilities or perception.

4.7. European Green Deal as an EU Vector for the New Times

European Parliament elections, which take place every five years, resulting in a change of political power in the European Union. Among other things, the composition of the European Commission - which acts as the EU's government, with Commissioners becoming representatives of individual EU Member States recommended by national authorities - is changing. After the 2019 elections, Franz Timmermans (Franz Timmermans, 2022) remained in the European Commission, taking up the position of Executive Vice-President of the European Commission for the European Green Deal, after a term when he was Commissioner from 2014-19, and Poland remembered him for his work to uphold the rule of law in the EU.

F. Timmermans to the EC's action strategy for the next term of office prepared his author's programme and prepared the EU's strategy and even mission to save the environment and climate, for the implementation of which he was entrusted with the position of Vice-President of the European Commission and leading the Commission's work on the European Green Deal with its first European climate law, aiming to include the goal of climate neutrality by 2050 in EU law (Obowiązki F. Tmmermansa…, 2022). The preparation period of this ambitious strategy for the next term of office coincided with the preparation of the next 7-year budget, and there the resources for the implementation of this author's idea were planned. And since the budget for 2021-27 was to be a transformational budget using the strategy of equalising opportunities between richer and weaker regions, so the ambitious plan fits in as much as possible with the pro-development strategy of EU actions and development. Moreover, the stated objectives of the European Green Deal were to present Europeans and the world with a concrete strategy and not just ideas that did not guarantee the survival of the European integration process, which had been ongoing for a decade (Juszczak, Szpor, 2020).

The European Green Deal can be considered on the basis of key aspects, of which certain strategies included therein are worth highlighting and discussing, which include: A(n) (image) strategy for growth and for transforming society to be aware of the goal of 0% net CO_2 emissions by 2050. In this defined context, economic growth, which determines social peace, should be separated from the extraction and exploitation of non-renewable energy sources. And another challenge in this context is to change the mentality and social expectations that manage to be maintained and stimulated during periods of economic growth. Thus, the overarching goal may be to change people's perception of the world in such a way that it is not economic but rather social goods that are most important in life.

The stated aim of the EU common market is to reduce CO_2 emissions and meet ambitious environmental targets to stop deadly climate change, which is more than just increasing the GDP *per capita* and further developing the capitalist or liberal economy.

It is necessary to ratify the climate conventions, which 192 countries of the world already signed in 1990, and there are constant debates over them, which do not stop the destructive actions affecting the Earth's climate change, which are the result of human activity (Rowiński, 2019**)**. Successive agreements signed at successive climate conferences (e.g. COPs) do not reduce greenhouse gas emissions. Ambitious tasks such as those set out in the 2015 Paris Agreement must not only be modified but must be achieved by 2030.

A wide-ranging sociological action aimed at uniting the entire human population (including politicians and business people) around this project is necessary because, in the absence of consensus, it may even lead to a kind of culture war (Kowalczyk, 2022).

The European Green Deal has..., must be an opportunity to lift people out of extreme poverty or deprivation, a disgraceful effect of globalisation which, in the power of its causation, has left out somewhere the human beings with their basic ontological needs. This is why the project of the European Green Deal must include protective measures, right up to the connection

between economics and the sustainable development strategy already defined in 1987 by the United Nations (Kretek, 2021).

In the ongoing discourse, there are many perspectives on the European Green Deal. Worth highlighting and elaborating on are the perspectives proposed during a lecture on 2 February 2022 delivered by H.E. Ambassador Dr Marek Prawda at the "MBA - Energy and Climate Policy Management" course, organised by Collegium Civitas in collaboration with the Paweł Adamowicz Civic Study Centre (including the Gdansk Foundation and the Energy for Europe Foundation (Zielone MBA, 2022).

The first perspective is **Solidarity in the Face of Adversity**, considered from the perspective of the European Commission.

A Union of greater cooperation - that is, accepting change through internalisation.

Such a different kind of EU - such a different kind of thinking, where the Western European debate challenging social paradigms should be accurately understood and interpreted.

A view on the **EU's role in adapting to climate change**, where the question should be answered: is the EU showing solidarity?

4.8. Solidarity in the Face of Adversity

We could not have foreseen the COVID-19 pandemic (Kordel, Wolniak, 2021). It was, and still is, a new situation. There were no provisions in the EU's Brussels procedures indicating how to cooperate during such a crisis, and there was and is no way of knowing how long this crisis will last or when it will end, so we still have unknown and difficult-to-predict consequences ahead of us. Of course, many mistakes have been made. Still, this crisis has shown the practically unlimited possibilities of generating solutions not previously applied, and it is thanks to the problem that both procedural and mental changes in structures and human resources can be accelerated. To combat the pandemic, a special institution, i.e. the European Health Commission, was set up to ensure the "protection of the health of Europeans and to respond jointly to international health crises" (Strategia Unii Europejskiej, 2022). as part of the EC's policy to promote the European way of life (Priorytety UE, 2022), with concrete and tangible results. The emergence of national "egoisms" and attempts to realise particular political interests, which during the first wave or phase became apparent in the form of disputes over face masks, which today seem mundane, but a lack of coordination between the various EU institutions emerged, which in turn led to effective attacks on the EU and the EC as institutions incapable of effectively assisting individual countries, and Poland in particular, as pointed out by Eurosceptic politicians from governmental spheres.

After several months of the coronavirus pandemic, it seems that this tragedy has united the nation-states more around the idea of a European Community and the swift and decisive actions of Ursula von der Layen and the EC in preparing aid and stabilisation packages for citizens in the form of various types of business shield and, among other things, thanks to these actions,

the rise in unemployment in the EU has been significantly lower than in the USA over the same period.

The pandemic or, in fact, the "pandemic effect" may trigger financial crises that are still difficult to predict (Prawda, 2021). A completely new and unknown threat has emerged, which is the inability to insure certain financial instruments due to risks that are difficult to identify. Insurers are looking for insurers, and even the well-organised Swiss insurance companies are not taking on contract insurances because the risks are becoming incalculable.

Eurosceptics use crises to criticise individual bodies or EU institutions instead of calling for more competence, which would be more conducive to deeper integration and its positive societal perception. Thus, it is more common to see a "cry for help" that has become more worthwhile than closer cooperation based on greater competence.

5. Discussion

5.1. Union of Even Greater Cooperation

For the survival of the project, which is the European Union, it is necessary to revise and update the strategy towards even greater cooperation. In this area, Germany, for example, seems to have led the way, accepting Eurobonds and the partial communitisation of debts without making a profit. Another loss suffered during the successive pandemic waves befell the German economy due to the closing of borders, which caused a kind of imbalance in the common market, which needs to be cared for and maintained, as it is not a once and for all project. It takes extraordinary determination to accept the complications and inconveniences arising from this project, bearing in mind, for example, the cycles of the economy (Ruszel, Wiącek, 2022).

In a community, as in every family, there are fissures, such as the rift between the interests of Northern Europe (Germany) and Southern Europe (Italy, Greece), which culminated in a revision of Germany's attitude towards changing its perspective on the future of the EU towards an openness to the initiatives of other Member States, and most Member States saw the attitude towards the European Green Deal as an opportunity for economic, social and even cultural change (Wolniak, Wyszomirski, Olkiewicz et al., 2021). This is the reason for the acceptance of Germany and other economic leaders of the Union to incur further debts on the basis of an already accepted and implemented budget.

New sources of own revenue should be created in the EU (in addition to contributions), such as, for example, the effective enforcement of fines imposed or the creation of further sources of own revenue for the EU on the basis of taxes or fees from international companies

and corporations for participating in the common market, which can change the functioning and, above all, the perception of the Union in terms of operational efficiency.

Another new source of revenue is the issuing of multi-year bonds, the revenues from which are to be transferred to help poorer countries on the path towards equalisation of living standards, as well as to those members of the community whose economies have been hit hardest by the pandemic (Sabato, Fronteddu, 2020).

5.2. European Union in the Face of Reconstruction, Modernisation, Transformation and Reorganisation

After several decades of this project, the question is whether further development should be based on nation-states or a federation of institutions? Certainly, cooperation needs to be tightened up, and this is to be helped by the Recovery Fund, which is already being used by many countries. The idea came from the Member States and is still in development, while Brussels officials have helped to implement this new tool for financing recovery and growth (Hitewa, Sovacool, 2017).

The EU of closer cooperation is unlikely to be a federation, as it is based on the budgets of the Member States and not the funding institutions. However, the new governing coalition in Germany [SPD, FDP, the Greens] (Krzemiński, 2022). has enshrined in a 177-page coalition agreement a move towards federation as a possible and feasible direction rather than an implication.

5.3. Union of Closer Cooperation Based on Values

The EU is a fact based on a two billion euro budget [in €] to which the contributors (governments) have to convince their societies - the voters, using strong arguments, conditioning access to money on respect for the rule of law and the demonstration of relevant economic indicators. Enforcing the rule of law, a problem in several Central and Eastern European countries (Poland, Hungary or Romania), requires more effective enforcement tools, which the EC must develop and introduce. The antidote to the fissures in the fundamental values of liberal democracy on which the European community is based is becoming the so-called conditionality mechanism with an implication: funds for respecting the rule of law. This tough conditionality has been created by making too many political compromises in areas such as trade, agriculture or climate, where it has become accepted to pay with concessions on matters of values. If the EC is consistent, then there will be no need to go further and no need to follow in the footsteps of the Netherlands, whose government can no longer transfer funds to states that do not respect the rule of law [i.e. the fundamental tripartite division of power].

The EU is an organisation that responds to changes, which can stop or at least slow down possible emerging crises. The forward-looking Recovery Fund (RF) has become such a response to the crisis that must follow the collapse of the global economy caused by Covid. Its innovation was based on two basic conditions. Firstly, the possibility for the EU to incur

debt was established, including, among other things, the issuance of multi-year bonds under the guarantees of the Multiannual Financial Framework (MFF) of the basic, traditional budget. Secondly, new sources of own revenue were created so that the Union would gradually raise more and more funds independent of the compulsory contributions of the Member States. These decisions with long-term consequences signal to the world that the Union has moved towards even greater cooperation, as all Member States still have unanimously adopted the MFF (Prawda, 2021).

The citizens of the EU are no longer satisfied with the logic of growth; there is a need for recognition and acceptance of social bonds and values - not necessarily based on economic growth. This is why it has become so important for the maintenance of democracy to elevate the issue of the rule of law to a fundamentally political problem.

5.4. Change of Integration Model - From Convergence to Fundamental Reconstruction

The project that is the European Union requires a lot of patience in the decision-making spheres, for which the overriding aim seems to be to fill in the ditches, to put out fires, i.e. to maintain a unified image on the outside, based on unambiguous and coherent messages, as a model aimed at reducing the gap between the rich and the poorer, which, in turn, several years ago corresponded to Poland and other countries from behind the "Iron Curtain" in reducing the distance to prosperous Western Europe.

Outside the € zone, Poland maintained good relations with the "€urogroup", which even intended to create its own parliament, and this was a rational solution. However, leading toward a "two-speed" Europe could be dangerous for further, more necessary permanent integration.

Poland lost its position as a kind of connector between the old and new states of the EU when it was perceived as a participant in the coalition-building with Poles Jerzy Buzek as President of the European Parliament and then Donald Tusk as President of the European Council. Back then, the Poles were more effective in realising their own interests, and everyone was interested in Poland joining the European elite. Nowadays, the countries that will benefit most will be those that actively participate in setting and implementing the EU's strategic goals. Therefore, Poland should align itself with these goals and return to its previous direction, abandoning the dangerous path with *Polexit* in the background - but towards unity in diversity based on respect for the rule of law (Ruszel, Reginia-Zacharski, 2020).

Furthermore, in the period of Russia's war against Ukraine, which started on 24 February 2022, the fact that the Union is not a military or defence alliance, despite its possessed and well-organised structures such as FRONTEX or PESCO, must become clear: it must have a well-developed instinct for self-preservation because administering collective happiness is no longer enough. Good relations with NATO are apparent; however, transatlantic relations, broken down by Donald Trump's aggressive policy towards the EU, need to be rebuilt. The political change in the US and the election of Joe Biden represent an opportunity for a new opening. It will probably be challenging to return to the TTIP free trade agreement between the EU and

the US. However, an opportunity for a partnership is emerging for Poland, perhaps even based on correct diplomatic relations with the US in the prism of "strategic prudence" (Kretek, 2019; Kupiecki, 2019).

Does the European Union need to determine what defines it? What price is it willing to pay for it? Does it aspire to be a hegemon? It seems that the EU has the potential to speak the language of leadership, so it needs to go beyond generalities and take on a new role; after all, almost 90% of the world's agreements are based on documents and procedures developed by the EU (Urban, 2022).

5.5. Adaptation to Climate Change through the Prism of Financial Mechanisms

Adapting to climate change through the prism of activating and using innovative financial mechanisms is another challenge to which the Brussels structures must give new responsible directions based on intergenerational solidarity. The spending of money should also be based on a sustainability mechanism so that financial resources are not spent today that will have to be repaid by future generations. In the same sense, solidarity between states and between regions is necessary (Meng, Wang, Su et al., 2022).

In this sense, the **ETS mechanism** aims at raising funds from emissions trading (Satoła, Milewska, 2022). which has been in operation since 2013, and the funds raised remain at the disposal of each country and feed the national budgets. In this tool, the emitter pays, and these funds should be used for investments in restructuring the country's energy policy, carried out precisely in the direction of climate neutrality.

As part of EU solidarity, 2% of the ETS is paid to the ten poorest EU countries and forms a modernisation fund.

The **FST mechanism**, on the other hand, is a concept to support those areas moving away from coal mining and burning. Turów can use this fund in Poland, as it has a concession until 2026 [however, an extension until 2040 is likely to be applied for - HAK Note], and if it does not abandon mining, there will be no possibility for it to benefit from the FST funds and thus from €3.8 billion for Poland out of a pool of €17.5 billion. The FST can be regarded as another instrument of solidarity of the European Union which is a kind of lever for national economies (Ferreira, 2022).

The **"fit for 55" package** imposes specific obligations on the Member States. Poland should accelerate action to reduce CO_2 emissions from 2020, and this package aims to accelerate the programme of reducing emissions and deadly substances; on its foundations, a Social Climate Fund is to be established, from which €12 million over the period 2020-32 is to be dedicated to Polish citizens at risk of energy poverty.

The **CBAM** - *Carbon Border Adjustment Mechanism* - is "a carbon price adjustment mechanism at the border taking into account CO_2 emissions. It is a tool we should look at from the perspective of the whole EU ETS reform and the Fit for 55 package" (Moskwa…, 2022).

The mechanism is intended to reduce imports of products that increase greenhouse gas levels in products produced outside the EU.

6. Conclusions

6.1. Summary by Threat

Seemingly, the biggest threat could be a scenario in which Russian flows in Nord Stream 1, the Yamal-Europe pipeline and Ukrainian pipelines are stopped between 1 April 2022 and 31 March 2023, in which case Europe's ability to refill its storage facilities would be seriously threatened. Europe may be able to survive the summer by emptying residual stocks in storage, but this would lead to the need for a significant reduction in demand during the winter. Without mitigation measures, around 40% of winter demand in Central and Western Europe could be left unprotected. There is potential to mitigate this crisis scenario to some extent by diverting LNG to Europe from other countries (Ruszel, 2022**)**, increasing production from Groningen in the Netherlands and additional imports using pipelines from Norway, North Africa and Azerbaijan (Fulwood, Sharples, Henderson, 2022).

Additional support to security needs for the winter period could be provided by the planned pumping of 10 billion m^3 of gas through the Baltic Pipe, which could start transferring to Poland this autumn.

6.2. Forecasting and Conclusions on Reorganisation

Important decisions began to be made just the day before the war in Ukraine. On 23 February 2022, the day before Russia invaded Ukraine, and the day after the German decision, when German Chancellor Olaf Scholz announced that he had instructed Economy Minister Robert Habeck to withdraw the positive assessment of the impact of the launch of the Nord Stream 2 (NS2) pipeline on the security of gas supplies to Germany and the EU (Ruszel, 2018). At this point, US President Joe Biden announced the imposition of sanctions on Nord Stream 2 AG (NS2 AG), the owner and operator of the pipeline, and its CEO Matthias Warnig. The restrictions were implemented under the sanctions provisions of PEESA (*Protecting Europe's Energy Security Act*). They represent the *de facto* revocation of the exemptions that the US administration granted to both NS2 AG and Mr Warnig in May 2021, invoking the national interest (Kędzierski, Kardaś, Łoskot-Strachota, 2022).

There is a lot going on around NS2, whose future should be based on three conditions: ownership unbundling; inclusion of other distributors; transparent tariffs.

These three conditions are the proposals discussed in the ITRE committee in the European Parliament. However, given the war in Ukraine, the topic will have to be considered in

a completely new situation and through the prism of war with its potential consequences in mind.

In addition, the effects of the turmoil surrounding the natural gas exported by the Russian Federation under the contracts concluded must be taken into account, as failure to meet deadlines, supply volumes or disruption of supply chains connected to the potential consequences of the ongoing war in Ukraine may result in penalties or sentences against Russia or its companies. Gas may then flow through existing pipelines as a form of retribution or **reparation**.

It seems that all the actions announced by individual European countries and institutions will be aimed at a rapid transition away from Russian gas. Hydrogen, but the "green" one, can and is to be the alternative, and we are not prepared to produce it sufficiently to supplement the energy mix. The fact is that green H_2 is the fuel of the future for many reasons. It will be the most environmentally friendly, which seems to be exemplified by the argument that when hydrogen escapes, it is not a greenhouse gas and therefore does not pose an environmental threat and does not exacerbate the ongoing climate catastrophe. In addition, "analyses conducted suggest that hydrogen, and in particular the green variety, could become a mainstay of industry in Poland and the EU over the next few decades. However, for this to happen, it is necessary to remove a number of barriers, which are identified in detail in the report, including, above all, those currently blocking the development of renewable sources for hydrogen production" (Miętkiewicz et al. (2022).

It even seems necessary to move towards developing methods for the rapid acquisition of alternative fuel to natural gas, such as hydrogen, including the prospect of using hydrogen in the armed forces (Soboń, Słyś, Ruszel et al. 2021).

There are many ways in which this fuel can be obtained. The leading solutions for obtaining hydrogen are using fossil fuels such as coal, oil or natural gas. Conversion processes of non-renewable fuels produce about 96% of hydrogen, while water electrolysis produces only 4% of this gas. The main methods of H_2 extraction include the *steam methane reforming* (SMR) process, which currently produces about 50% of the hydrogen demand, while the efficiency of the steam methane reforming process is determined to be between 74% and 85% (Kothari, Buddhi, Sawhney, 2008).

However, the mere production or extraction of hydrogen is not enough when there is no adequate distribution network or when there are no reservoirs or storage facilities capable of storing the hydrogen itself and potential surpluses of energy produced from "new hydrogen technologies". Therefore, it is necessary to produce special fuel cells that convert H_2 into electricity.

The next challenge is to prepare a power balancing strategy, which may pose an even more serious challenge than just producing the fuel of the future (Midor, Iwanowa, Molenda et al., 2022).

The next solution could be to develop a network of civic activities that could take a direct part in **reorganising** traditional residential coal-fired boiler plants and replacing them with modern zero-emission hydrogen ones, on the basis of **housing co-operatives** that have been prepared both legislatively and practically for decades.

Therefore, Europe and Poland have a challenge, the keyword of which is **reorganisation** (Toborek-Mazur, Partacz, Surówka, 2022). and almost all the deadly coal- and gas-fired heating plants will be subject to it.

Currently, Poland, by releasing CH_4 methane containing much-needed hydrogen into the atmosphere, and even ½ of the annual demand for this type of fuel, is contributing significantly to the destruction of our environment, so this is another opportunity for the development of the economy, for new jobs and another field for decisive action.

The European Union is an organisation with unlimited possibilities and has repeatedly demonstrated that it will not hesitate to use them.

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