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ENERGY ETHICS: THE (IM)PURITY OF RENEWABLE ENERGY SOURCES. AN ANALYSIS OF OFFSHORE WIND FARMS IN THE BALTIC SEA

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The burning of fossil fuels is a major cause of global warming. Thus, one proposed solution is a transformation of the energy system. However, this does not mean a simple switch from one source to another: the transformation must involve the entire socio-technical energy system. The way energy is produced determines the development of civilisation, and modern developed societies consume massive amounts of energy (Smil 2017: 6; Ritchie et al. 2020). Above all, a transformation of the energy system must take into account environmental issues. However, it is not only a question of greenhouse gas emissions and global warming but also of other environmental problems such as land consumption and loss of biodiversity, which are interrelated and mutually reinforcing (Caesar et al. 2024: 20). Six out of nine planetary boundaries have been crossed,[1] and climate change is just one of the interrelated processes (Richardson et al. 2023).

As alternatives to "dirty" and polluting fossil fuels, renewable energy sources (RES) are referred to as being "green" and "clean." However, they are not without environmental impacts: examples of potential ethical and environmental issues involve the impact on local ecosystems, the materials

[1] Importantly, these boundaries set the limits within which humanity can safely operate, so it is an anthropocentric indicator of life support.

used to create RES, how they are sourced, and so forth. In relation to a transformation of the energy system, these require further investigation.

In this article, I will look at the ethical and environmental issues associated with offshore wind farms. As a case study, I will use those being developed in the Baltic Sea on the Polish coast. Given that they are one of the first elements in transforming the Polish energy system at the national level, they can help to illustrate ethically problematic issues and to identify the most vulnerable points and the actors most likely to be affected. The main concept through which I conduct my analysis is the concept of "impurity" proposed by Alexis Shotwell (2016). The aim of this paper is to answer the following research questions: is ethical energy production possible? Can RES, such as offshore wind farms, be this kind of ethical energy? What environmental problems are associated with this kind of energy production?

I will begin by indicating the theoretical framework, which consists of findings from the field of energy humanities and concepts developed within critical posthumanism and feminist new materialism. The next section introduces the central concept, which is that of Shotwell's "impurity." This is followed by an analysis of RES, using the impurity concept to outline the ethical issues that RES raise. In the last part of the article, I will analyse the offshore wind farms being built on the Polish coast. The analysis consists of two parts: a technical description of the farms, including environmental conditions, and a proper ethical analysis.

/// Engaged Humanities

This section introduces the energy humanities and concepts drawn from the field of critical posthumanism and feminist new materialism. These provide a theoretical framework for my further analysis of the impurity of RES.

Energy Humanities

A new research subdiscipline has been developing over the course of the past two decades: energy humanities. It is based on recognition of the fundamental importance of fossil fuels to modern civilisations (Szeman 2007; Szeman & Boyer 2017; see also Mitchell 2011; Malm 2016). The term "petrocultures" was coined to describe cultures built on fossil fuels and dependent on unfettered access to them (Wilson et al. 2017). The moment of reflec-

tion on petrocultures is also marked by their imminent end. As the authors of the anthology *Petrocultures: Oil, Politics, Culture* point out,

> Oil transformed life over the century in which we came to depend on it; the looming threat of its absence from our lives means that it will transform us again, from people who are at home and comfortable in the petrocultures we have devised for ourselves to people who will have to shape ourselves to fit contexts and landscapes we can barely imagine, even if we need to do so – and quickly. (Wilson et al. 2017: 3)

Analyses in the new research field aim to gain a deeper understanding of societies' dependence on fossil fuels, both in terms of energy and petroleum products and of dependence on their consumption. This approach is driven by the necessity for change – a shift away from burning fossil fuels is required due to a warming climate. Although there is scientific consensus on the subject, the global consumption of fossil-fuel energy is not declining (Ritchie et al. 2020). As resistance to a move away from fossil fuels grows, so too does an understanding of the need to examine the social relationship with fossil fuels.[2] The complexity of this social relationship is described by another term from the field of energy humanities, "petromelancholy," which signifies a feeling of longing for the peak of petroculture (LeMenager 2014: 102), when access to fossil fuel was not a problem or even an object of reflection: it was cheap and within easy reach. The oil-based culture was both invisible and omnipresent.

Gerry Canavan draws parallels between fossil-fuel dependence and substance addiction as it is defined in the fourth and fifth editions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV and DSM-V). His starting point is the phrase "oil dependence" used by US presidents:

> Barack Obama in 2010 announces that "now is the moment" to "seize control of our own destiny" back from the oil on which we depend; George W. Bush in 2006 promises to "make our dependence on Middle Eastern oil a thing of the past"; his father in 1992 asserts "there is no security for the United States in further depend-

[2] There is no room in this article to analyse this issue in detail, but it can be pointed out that some of the main actors responsible for staying with fossil fuels are the oil companies, and that their lobbying efforts have blocked the shift away from fossil fuels both at the level of legislation and of public support (see Oreskes & Conway 2010).

> ence on foreign oil"; and so on, all the way back to Richard Nixon, who swore that by 1980 "the United States will not be dependent on any other country for the energy we need" (Stewart 2010). The repeated word dependence suggests an intriguing medicalization of the material conditions of oil capitalism. (Canavan 2017: 25)

DSM-IV uses the term "substance dependence" (in DSM-V, the phenomenon appears as "addiction"), which is defined as "a maladaptive pattern of substance use, leading to clinically significant impairment or distress" (American Psychiatric Association 2000: 197, cited after Canavan 2017: 25). Canavan, referring to literary representations of oil prosperity, highlights the dangers of substance overdose: "in the delirium of abundance made possible by oil there is always the possibility that one might consume too much" (2017: 25). He concludes that the social relationship with oil meets seven diagnostic criteria for dependence (Canavan 2017: 25–27).

In this view, the transition to RES can be interpreted as an element of healing, a recovery from addiction, where the transformation of the energy system provides the promise of a better, healthier future, without pollution, extractivism, and environmental damage. However, the excess in which people had previously lost themselves does not concern fossil fuels alone, but – above all – the degree of energy consumption in general (which has been made possible by fossil fuels). The development of RES only adds to the ever-increasing consumption (Ritchie et al. 2020). We are not just dependent on fossil fuels, but on access to energy in general. The mere development of RES as an additional energy source in no way solves the planetary crisis (nor the dependence on fossil-fuel energy, whose consumption is constantly increasing).

Theoretical Framework

In the following section, I will explain the theoretical assumptions on which the further ethical analysis of the environmental problems associated with the production of energy from wind farms in the Baltic Sea will be based.

One of the key concepts in this connection is naturoculture, which was introduced by Donna Haraway (2008). The concept stems from a feminist critique and rejection of thinking in dualistic divisions such as culture/nature, man/woman, or human/animal, as these have served to prioritise the human as superior and to uphold humans' dominion over nature (Braidotti 2013). The separation of the concepts of nature and culture emphasises the

false separation of humans (who belong within this division to the realm of culture) from the realm of nature. Haraway points not only to the merging of these two spheres but also to the multiplicity of different naturocultures.

Consequently, by rejecting anthropocentrism, nonhuman entities, such as animals, plants, or even ecosystems, are recognised as objects of ethical concern, the agency of both human and nonhuman entities is acknowledged, and the human being ceases to be regarded as the model and basic unit of reference. Moreover, the inclusion of nonhuman entities in ethical considerations is linked to the recognition of the interdependence of living beings and their environment. This, in turn, places emphasis on the relationality and reciprocal influence between the different entities: what matters are the connections between the different organisms, the mutual influences, and how different organisms co-create their environment, which in turn co-creates them. Priority is given to an embodied perspective: the body is not understood here as closed, with clearly defined boundaries (as even our human body is inhabited by protists, fungi, and bacteria, without which it would be impossible to live) but permeates and is permeated by the environment, in line with the notion of transcorporeality proposed by Stacy Alaimo (2010: 15).

Last but not least, materiality is important in connection with the embodied perspective discussed above, and in the case of the renewables under analysis, in reference to the materials of the energy system infrastructure (including how particular materials were obtained) and the mutual, material influences and connections between infrastructure, ecosystems, and individual entities.

This framing allows us to look at ethical entanglements. Ethical issues are not understood here as separate problems but rather as existing simultaneously with the situations that co-produce them. It is therefore not possible to separate them from their context and to analyse them in isolation from their constituent activities, relations, and connections.

In line with the above description, I see energy systems as agential and with the potential to rematerialise reality due to the degree of dependence modern civilisations have on energy, its importance for global geopolitics, its impact on the environment at both the local and the planetary level, and everyday energy consumption practices.

In thinking about energy, I take a broad perspective, which includes the processes in our bodies:

> [T]he human body, like that of any other living organism, can be considered as an "energy converter" (Cottrell [1955] 2009, p. 35). This is a basic premise of modern biology: all living organisms absorb energy from their environment in order to build up and maintain their own physiological structure, and they release this energy in the form of waste or excrement. This process is called metabolism, and the various strategies which biological species pursue in order to keep their metabolism going define their relative position in the cycles of matter and energy that constitute the biosphere: plants use energy from solar radiation in order to convert water and carbon dioxide into sugars and other chemical compounds; the biomass resulting from this process is consumed by herbivores, which convert it into animal tissue, heat, and mechanical energy; their tissue in turn serves as food for carnivores. (Horn & Bergthaller 2020: 128–129)

The distinguishing element for humans in this process is their ability to satisfy their needs using sources of energy other than food (Horn & Bergthaller 2020: 129).

Based on the conceptual framework outlined above, the next section of the article will introduce the concept of (im)purity, which is the main category for further analysis.

/// Constitutive Impurity

RES are described as "green" and "clean," as a counterpoint to "dirty" and polluting fossil fuels. But how "clean" are they really, and – first of all – how should this term be understood? In this context, it is useful to refer to Shotwell's analogous concept of purity.[3] In her analysis of the concept, she combines an aesthetic category with an ethical one. In her book *Against Purity: Living Ethically in Compromised Times*, she starts her narration with the story of the soap in an airplane restroom. The soap as a product has a marketing context: it is a call to purity, cleanliness, nature, and innocence – but we cannot really buy any of these. Shotwell considers such desires as a kind of ethos, which we can

[3] Shotwell uses the term "pure," not "clean," but I argue that her considerations can still be applied to RES analysis, and the two concepts can be treated synonymously in this context.

> use to mark the beginning of the Anthropocene: roughly, the moment that humans worry that we have lost a natural state of purity or decide that purity is something we ought to pursue and defend. This ethos is the idea that we can access or recover a time and state before or without pollution, without impurity, before the fall from innocence, when the world at large *is truly beautiful*. (Shotwell 2016: 3)

This can create an image of an idealised, pure nature placed in opposition to (human) contaminated culture, which has become so powerful and far-reaching that it has overcome nature. In this way, the idea of having crossed a boundary arises – we (humanity) have gone too far in our endeavours to subordinate nature and need to go back to the point where we can start over. However, the concept of purity contains many paradoxes: it can also mean complete control over nature, sterility, and the elimination of what is perceived as "dirty" and "wild." Then culture, using the solutions provided by science (such as the ability to eliminate bacteria through antibiotics, sterilising/disinfecting agents, cleaning products, treatment of infectious diseases, etc.), indicates what is pure and right, and what is polluted and contaminated.

Shotwell warns against the kind of thinking that assumes a new beginning is possible – there is no fresh start, as we are part of "complex webs of suffering" (Shotwell 2016: 5). The reference is to both our historical baggage (histories of slavery, colonialism, genocide, and so forth) and to our present-day entanglement in ethical problems (such as food, clothes, or energy production). Shotwell views ethical problems through the web of interdependence in which we function and considers "impurity" to be the current ethical condition. Especially individual purity is unattainable: reality is too complex. Shotwell strongly criticises practices that give the illusion of achieving individual purity. Wealthy residents of the capitalist countries of the Global North are encouraged to practice purity – such as detoxifying their bodies through the use of appropriate cosmetics, treatments, and food products – with the primary aim of sustaining continued consumption. Shotwell criticises these practices as reinforcing separation and a lack of situatedness, and sustaining a vision of the individual as having clear boundaries.

> I argue against purism because it is one bad but common approach to devastation in all its forms. It is a common approach for anyone who attempts to meet and control a complex situation that is fun-

> damentally outside our control. […] Purism is a de-collectivizing, de-mobilizing, paradoxical politics of despair. (Shotwell 2016: 8–9)

She argues that classical ethical models, which place the individual moral agent at the centre of their theories, are unable to account for problems of such complexity. While there are, of course, situations where ethical dilemmas involve an individual decision, in the case of the Anthropocene epoch,[4] issues as basic as food or energy access involve a great level of complexity. Shotwell writes that

> To say that we live in compromised times is to say that although most people aim to *not* cause suffering, destruction, and death, simply by living, buying things, throwing things away, we implicate ourselves in terrible effects on ecosystems and beings both near and far away from us. We are inescapably entwined and entangled with others, even when we cannot track or directly perceive this entanglement. It is hard for us to examine our connection with *unbearable pasts* with which we might reckon better, our implication in *impossibly complex presents* through which we might craft different modes of response, and our aspirations for *different futures* toward which we might shape different worlds-yet-to-come. (Shotwell 2016: 8)

However, this doesn't mean that it is impossible to strive for ethical behaviour – there is still "the possibility of acting from where we are," with "complicity and compromise as a starting point for action" (Shotwell 2016: 4–5). The individual is not in a position to eliminate such complex problems. Hence, a collective response is necessary – although it too does not promise ethical purity. What we can do is to acknowledge this situation and our situatedness. Shotwell writes that the "world is partially shared, offers finite freedom, adequate abundance, modest meaning, and limited happiness. Partial, finite, adequate, modest, limited – and yet worth working on, with, and for" (Shotwell 2016: 5).

Nevertheless, the condition Shotwell writes about is not all that general and universal. Not every human being is equally immersed in the production of suffering as are, for example, the wealthy residents of the countries

[4] I use this category even though the Stratigraphic Commission rejected the proposal to adopt a new geological epoch under this name (see Witze 2024). Following Adam Izdebski (2023), I use this category to refer to the period of destabilisation of the planet's life-supporting systems.

of the Global North, who are responsible for higher energy consumption and higher levels of commodity consumption (although the level of entanglement also differs between individuals, depending, e.g., on lifestyle or access to goods).[5] On the other hand, there is a risk of creating the image of less privileged communities as being pure and innocent. I think Shotwell warns against it: purity is not a solution. The creation of categories and divisions between "clean" and "dirty" is precisely what Shotwell opposes.

/// The (Im)purity of Renewable Energy Sources

RES do not produce energy by burning fossil fuels, so they do not directly emit greenhouse gases – hence the term "clean," while "green" refers to inexhaustibility – because unlike fossil-fuel deposits, which are limited, RES use renewable energy from the sun or wind. However, this does not mean that they are devoid of environmental impact (every technology has an impact). In this section, I will conduct a preliminary analysis of the potential harm of RES, using the category of (im)purity.

The connection between purity, dirt, and morality was described by Mary Douglas in her anthropological study of religiosity, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*, from 1966. She wrote that "Dirt offends against order. Eliminating it is not a negative movement, but a positive effort to organise the environment" (Douglas [1966] 2001: 2). In the case of the energy transition, "dirty" is defined as that which is to be eliminated, which is linked to contamination, toxicity, and pollution. Shotwell, referring to Douglas's work, writes that "Purity practices – in ideology, in theory, and in practice – work to delineate an inside and an outside; they are practices of defining a 'we'" (Shotwell 2016: 13). Such divisions have ethical implications: the division between "clean" and "dirty" was one of the strategies sustaining colonialism and racism (see Fanon 1963; Ahmed 2004).

Zygmunt Bauman sees the practice of dividing the inside with its inhabitants and the outside with its waste (including human waste) as a pattern of how modernity and modernisation work:

[5] See United Nations' division of economies into developed economies, economies in transition, and developing economies (2014); also Ritchie et al. 2020. In accord with Shotwell's ideas, it is impossible to make a full ethical comparison and assessment of the "purity" of individuals, but undoubtedly a high degree of consumption is associated with greater involvement in unethical practices.

> The production of "human waste," or more correctly wasted humans (the "excessive" and "redundant," that is the population of those who either could not or were not wished to be recognized or allowed to stay), is an inevitable outcome of modernization, and an inseparable accompaniment of modernity. It is an inescapable side-effect of order-building (each order casts some parts of the extant population as "out of place," "unfit" or "undesirable") and of economic progress (that cannot proceed without degrading and devaluing the previously effective modes of "making a living" and therefore cannot but deprive their practitioners of their livelihood). […] The disposal of human waste produced in the "modernized" and still "modernizing" parts of the globe was the deepest meaning of colonization and imperialist conquests – both made possible, and in fact inevitable, by the power differential continuously reproduced by the stark inequality of "development" (euphemistically called "cultural lag"), resulting in turn from the confinement of the modern fashion of life to a "privileged" section of the planet. (Bauman 2004: 5–6)

Waste humans are not allowed to enjoy the benefits of modernisation: their place is with the rubbish. Bauman points out that the role assigned to them is to work with the waste of modernisation, which is something that members of the consumer society do not want to do themselves, for instance, collecting and disposing of rubbish:

> [T]he consumers are not willing to do the rubbish collectors' jobs themselves. After all, they have been groomed to enjoy things, not to suffer them. They have been educated to resent boredom, drudgery and tedious pastimes. They have been drilled to seek implements that do for them what they used to do themselves. They were tuned to the world of the ready-to-use and the world of instant satisfaction. […] With each successive triumph of consumerism, the need for rubbish collectors grows, and the numbers of people willing to join their ranks shrinks. (Bauman 2004: 59)

The global division between those who consume (and who litter) and those who clean up that litter is doing well, as "the majority of unmanaged and mismanaged plastic waste is found in the developing world stemming from imports from Organization for Economic Cooperation and

Development (OECD) countries" (Browning et al. 2021: 1). This division also applies to technology and access to it, including energy. The transformation of the energy system requires the extraction of minerals and metals, which are largely sourced from countries in the Global South (Church & Crawford 2018). In turn, the fruits of transformation serve to reduce emissions and sustain the well-being of the developed countries of the Global North (see European Commission n.d.).

The mining of the critical metals needed for the transformation of the energy system is problematic due to the rising social and environmental risks and harms. Moreover, the risks and harms will increase as mining is intensified to meet the growing demand for such metals (Church & Crawford 2018). The term "energy-extractives nexus" was coined to describe the complex relationship between energy production and extractivism (Bainton et al. 2021: 629), where "extractivism" can be defined as "a form of predatory appropriation of land and resources, embedded in global geographies of unequal ecological and value exchange" (Andreucci et al. 2023: 1). Historically, colonialism was based on the logic of extractivism (see Moore 2015). Currently, this logic is continued, hiding neocolonial power relations under the guise of the need for a transformation of the energy system. An example of such actions is the creation of "green sacrifice zones" (Zografos & Robbins 2020: 543), where the concepts of "sacrifice" and "greening" are juxtaposed: areas are sacrificed (i.e. environmentally destroyed and polluted) to metal and mineral extraction sites, which, however, do not benefit the residents of the places concerned.

Andreucci and co-authors argue thus that "the ongoing energy transition is premised upon an extractivist logic, linked to neo-colonial patterns of uneven development and the creation of sacrifice zones of mineral extraction in the global South" (Andreucci et al. 2023: 2). Instead of fossil-fuel extraction, for the transformation of the energy system there is new way of extracting, called "green extractivism," which turns out to be greenwashed colonial extractive capitalism. The paradox is that an environmentally destructive mode of extraction and accumulation, loaded with colonial legacies, is being promoted as a solution to the ecological and climate crisis (Andreucci et al. 2023: 3). Retaining the model of aggressive extractivism also begs the question of how renewable so-called RES are in reality (Dunlap 2018).

To summarise, behind the production of energy from RES are practices that we would not describe as "green" or "clean." What is "impure" and "dirty" is hidden and ignored: the discourse on renewable energy has

no place for human waste, exploitation, pollution, and environmental destruction. Responsibility is extended geographically, based on the colonial North/South divide, as well as in time: the slow violence continues also in the era of transformation towards green energy systems (Nixon 2011).

In the next part, I will continue my analysis based on the concept of "impurity" in relation to Polish wind farms in the Baltic Sea.

/// The Baltic Sea and Polish Wind Farms

This section of the article consists of two parts. The first contains a technical description of the development of wind farms: the environmental conditions in the Baltic Sea, the legal context, the identification of the entities responsible for the development of the individual farms, the materials used for the wind farms, and an analysis of the impact of the farms on the natural environment of the Baltic Sea. The second part contains an analysis of the concept of ethical impurity in relation to these offshore wind farms.

Polish wind farms were chosen as a case study for several reasons: first, because of the specificity of the Baltic Sea, which is located in the middle of Europe and is a naturocultural area affected by anthropogenic influence from all sides; second, the context is a local one for the author, who is a researcher from Poland; and third, because of the importance of offshore wind energy for the Polish energy transition (Ministerstwo Klimatu i Środowiska 2019: 62–66).

Polish Offshore Wind Farms: Technical Description

The Baltic Sea, due to its specific location and the consequent scale of anthropopression (it is surrounded by nine countries with high population density and lacks strong sea currents), faces a number of ecological problems. These include overfishing, excessive shipping, sunken chemical weapons, underwater noise, wrecks on the seabed, microplastic pollution due to abandoned fishing nets, and eutrophication, caused by excessive use of nutrients, most commonly phosphates and nitrates, which flow from fields into rivers and then into the sea. This results in so-called dead zones, deprived of oxygen. As a consequence of global warming, the Baltic Sea is getting warmer (Bergström & Haldin 2023). Therefore, the Baltic Sea can be seen as a local exemplification of global issues and as "a time machine to study consequences and mitigation of future coastal perturbations, due to its unique combination of an early history of multistressor disturbance

and ecosystem deterioration and early implementation of cross-border environmental management to address these problems" (Reusch et al. 2018).

From the perspective of Poland's transformation of its energy system, this is an important moment, when offshore wind-farm infrastructure is beginning to emerge in the Baltic and is changing the appearance, perception, and role of the Polish coast. To understand why Polish offshore farms are being built right now, it is necessary to refer to Polish legislation. The Renewable Energy Sources Act came into force in 2015. Among other things, it defines the principles and conditions for the production of energy from renewable sources, the principles for the implementation of the national action plan for energy from renewable sources, and the principles for international cooperation in the field of RES. The act also implements four directives of the European Parliament and of the Council (Dz.U. 2015 poz. 478). In December 2020, the Act on Promotion of Electricity Generation in Offshore Wind Farms was adopted (Dz.U. 2023 poz. 1385). The law was considered an important step in legal regulation and procedural and administrative improvements (Pyć 2024). It designates areas where offshore wind farms can be built: in the so-called Polish Exclusive Economic Zone of the Baltic Sea, in the area of the Slupsk Bank, the Central Bank, and the Odra Bank (see Fig. 1). The Act also sets out the rules and conditions for the provision of state financial support for electricity generated in offshore wind farms, the rules for the implementation of investments, the rules for the disposition of a set of equipment for power output, and the requirements for the construction, operation, and decommissioning of offshore wind farms.

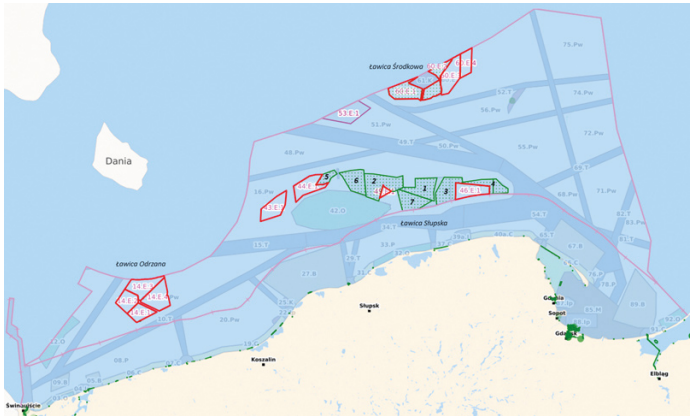

Figure 1. Map of Poland's planned offshore wind farms
Source: Morska Energetyka Wiatrowa. N.d. "Program rozwoju Morskich Farm Wiatrowych," https://www.gov.pl/web/morska-energetyka-wiatrowa/program-rozwoju-morskich-farm-wiatrowych, accessed: 12.07.2024.

The Act was followed in 2021 by the publication of the Energy Policy of Poland until 2040 (PEP2040). The document assumes that in 2030 there will be at least 23% of RES in Poland's gross final energy consumption.[6] Particular importance is attributed to offshore wind energy, prioritising the development of this source due to its high degree of operational stability and capacity utilisation. The document also points out that the development of this technology is important for the implementation of the European Green Deal. PEP2040 identifies three main pillars (*just transition, zero-emission energy system, good air quality*), composed of eight strategic objectives. Specific Objective 6 (second Pillar) is *the development of renewable energy sources* with Strategic Project 6: *implementation of offshore wind energy*. In addition to *offshore wind energy*, the second Pillar consists of *nuclear energy*, and *local and civic energy*. The development of offshore wind farms therefore occupies an important position in plans for the Polish energy sector in the coming years. The above-mentioned legal documents can be seen as an actor enabling further action in the energy transition process.

Seven offshore wind projects from the first phase of the support scheme are currently under construction.[7] The first energy output is scheduled for 2026, with a planned total installed capacity of up to 7,090 MW (phase I of support) and 11,457 MW (phase II of support), giving a total of 18.547 GW.

The construction of offshore wind farms is mainly the responsibility of Polish energy companies (PGE – Polska Grupa Energetyczna, Orlen, Tauron, Polenergia) cooperating with foreign companies more experienced in RES projects (the Danish company Orsted, the Canadian company Northland, and the Norwegian company Equinor), or international companies (Ocean Winds, an international company created on the initiative of EDP Renewables – a Portuguese concern; ENGIE – a French concern; and RWE Renewables – part of RWE concern, a German company).

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[6] The document also points to the continued use of fossil fuels (diversification of supply) and the development of a market for oil products and natural gas (referred to as "a bridge fuel"). The document further envisages the exploration of new natural gas deposits, including at the bottom of the Baltic Sea, and the implementation of nuclear energy.

[7] Out of the nineteen projects being implemented, seven are in the first phase of support (Baltica 3 by Elektrownia Wiatrowa Baltica 3; Baltica 2 by Elektrownia Wiatrowa Baltica 2; Baltic Power by Baltic Power; BC-Wind by C-Wind Polska; FEW Baltic II by Baltic Trade and Invest; MFW Baltyk II by MFW Baltyk II; MFW Baltyk III by MFW Baltyk III). The second phase of the support system includes as many as twelve more projects (Energa MFW 1 by Energa MFW 1; Energa MFW 2 by Energa MFW 2; Orlen Neptun 14.E.3 by Orlen Neptun III; Orlen Neptun 14.E.4 by Orlen Neptun IV; Baltica 7 by PGE Baltica 4; Baltica 9 by Elektrownia Wiatrowa Baltica 9; Baltica 2+ by Elektrownia Wiatrowa Baltica 2; Orlen Neptun 46.E.1 by Orlen Neptun VIII; MFW Baltyk I by MFW Baltyk I; Baltica 1 by Elektrownia Wiatrowa Baltica 1; Baltica 1+ by Elektrownia Wiatrowa Baltica 1; Baltica 5 by Elektrownia Wiatrowa Baltica 5). See Morska Energetyka Wiatrowa n.d.

In addition to the farms themselves, the infrastructure required to use them is also being built: an installation terminal is to be constructed in the port of Świnoujście, as are service terminals in Łeba, Ustka, and Darłowo (to serve the farms), as well as the connection infrastructure, that is, the cables connecting the windmills to the substations. So far, the only installation port (prepared for the construction of farms) has been the terminal in Ronne on Bornholm (Świsłowski 2024). The installation terminal in Świnoujście will be the second of its kind in the Baltic Sea and will also be able to serve foreign investments. Another such installation port is being built in Gdansk. This means building on land where there was originally water: the land is surrounded by a "mould" of steel, filled with sand or other substance, then the ground is consolidated until a platform is created from which turbines can be installed (MT 2024). The municipality of Choczewo is to play a key role – an electrical substation will be built there to bring power from the wind farms in the Baltic Sea to the rest of the country. The first Polish nuclear power station is also planned to be built there.

Wind turbines are to be purchased from companies such as Vestas and Siemens Gamesa (Świsłowski 2023). The wind turbines use steel and iron materials, aluminium and alloys, copper and alloys, polymer materials, glass/carbon composites, electronics/electrics, lubricants and fluids, according to the Vestas information brochure (Vestas 2024). The company also points to the use of rare earth elements: "rare earth elements in the magnets found in the towers of all new turbine models and in permanent-magnet generators in the older GridStreamer turbine models (i.e., the V112-3.0 MW and the 2.0 MW GridStreamer platform) and the EnVentus platform" (see Vestas.com).

Polish offshore wind farms will be located next to a Natura 2000 protected area, which aims to protect certain species, along with their habitats. The 2020 Act on the promotion of electricity generation in offshore wind farms mentions environmental conditions; the wind farm projects must also meet environmental protection requirements. More specific information can be found in PEP2040, where Annex 3 is entirely devoted to an environmental impact assessment in connection with the implementation of the Energy Policy of Poland until 2040. The document indicates that renewable energy is among the activities with the least negative impacts. However, offshore wind farms are listed as one of the main threats to natural habitats, and to plant and animal species (Ministerstwo Klimatu i Środowiska 2019: Annex 3, 112). According to the analysis, offshore wind farms will have a direct, possibly negative, short- and long-term impact

on biodiversity and animals (threat to habitats, especially of endangered grey seals and harbour porpoises, possible disturbance of animal species by noise and vibration emissions, and collisions of bats and birds with wind turbines); a long-term, possibly negative impact on the integrity of protected areas, land surface (disturbance of the seabed) and landscape (disturbance by "unfamiliar" elements); a possible negative impact on water (disturbance of seabed sediments and the possible release of pollutants deposited in them into the water); and a positive indirect and long-term impact on air, people, the climate, and natural resources (Ministerstwo Klimatu i Środowiska 2019: Annex 3, 141).

Recommendations include locating wind farms outside of valuable natural habitats, limiting the extent of construction work, avoiding locations on the flight paths of birds, and carrying out post-implementation monitoring to reduce negative impacts or introduce compensatory solutions.

Among the factors having a negative impact, the landscape was mentioned due to the placement of "unfamiliar" elements. Depending on meteorological conditions, the wind farms most probably will not be visible from land, as they will be at least 22 km from shore, but they will undoubtedly affect the image of the Baltic Sea and the Polish coast.

Polish Offshore Wind Farms: Ethical Analysis

To what extent can we consider the environmental impact of RES to be harmful, and if so, to whom?

In the case of wind farms on the Polish coast, environmental impact assessments indicate negative, direct impacts on animal habitats, noise and vibration problems, and collision risks for birds and bats.

From the perspective of potential negative impacts on people, the appearance of "unfamiliar" elements in the seascape is indicated. The farms should not be discernible from the shore most of the time (due to the distance), nor audible. These concerns about the image of the coast can be interpreted as parallel with the concern over things being thrown in the water, as in the case of the deliberate sinking of weapons. The water – in this case, the sea – is then treated as a large lifeless reservoir that can be used to store rubbish. In a way, it is a replication of the gesture of throwing "outside," beyond the accepted boundaries, that which is unwanted, dirty or contaminated. On the other hand, elements of RES infrastructure can be perceived positively, in terms of "clean" energy and a good relationship with the natural environment. These considerations open up new fields

of research on how the naturocultures of the Baltic Sea will be perceived when they contain RES infrastructure.

The documents analysed present the environment as manageable and in need of protection. The environment remains a resource (as with fossil fuels) – only it is "renewable." However, this term only refers to the source of energy (such as the sun or wind), not to the materials used to create the infrastructure necessary for energy production, for instance, wind turbines. This is not a problem in regard to individual turbines, but when issues of scale are taken into account, then we return to the problem of extractivism and the maintenance of neocolonial relations of power and exploitation: for example, nickel, which is used to make steel, is extracted in the largest quantities in Indonesia and the Philippines (see European Commission n.d.), while in terms of the largest importers, these are China, Japan, Norway, and the European Union, as primary importers, and as refinery importers: China, the European Union, the United States, and Japan. This leaves us with a division between those who extract and those who benefit from the fruits of so-called green technologies.

In the narrative on the environmental impact of offshore wind farms, there is no consideration or perspective on planetary water entanglements apart from one remark in the description of the environmental conditions of the Baltic Sea: "The Baltic Sea is an Inland Sea with relatively little water exchange with the world ocean, due to the straits it takes about 30 years for the water in the Baltic Sea to completely exchange. Therefore, its continuous monitoring is essential" (Ministerstwo Klimatu i Środowiska 2019: Annex 3, 69, own trans.). The Baltic Sea, with all its environmental problems, thus becomes a vulnerable object of constant monitoring, but this does not protect it from further elements of anthropopression.

In embracing the perspective of water connections, the Blue Humanities approach (Mentz 2022), which points to the importance of water for life on earth, becomes useful: as much as 70% of the Earth's surface is water. The human body is also comprised of about 60% water, so we are indeed, as Astrida Neimanis puts it, bodies of water, connected through the constant exchange of substance with other bodies of water, such as oceans, rivers, or glaciers (Neimanis 2017). Such a perspective allows us to move away from thinking of the Baltic Sea as a resource for tourism or industrial purposes. It encourages us to think about how water connects individual beings and ecosystems and how it sustains life.

The construction of Polish offshore wind farms follows the logic of business as usual – the largest Polish fuel companies, such as Orlen and

PGE, which are simultaneously involved in the extraction and trading of fossil fuels, are responsible for the construction of the farms. PGE owns the Bełchatów and Turów brown coal mines, the two largest lignite mines in Poland (Charkowska et al. 2025). The same companies that are responsible for emissions are thus becoming leaders and beneficiaries of the transformation to a "green" energy system. This breaks down the division between "bad" CO_2 emitters, who are responsible for emissions (the polluter pays principle), and "good," "green," "clean" energy from renewable sources. This ethically ambivalent situation sharpens the paradox of the "dirty" versus "clean" divide applied to energy sources. The implementation of RES projects also fuels the greenwashing practices of the aforementioned companies, which present themselves as leaders in the green transition. The image change is also taking place at the naming level: Orlen Neptun or PGE Baltica are meant to evoke associations with the sea – in the first case, with the water god of Roman mythology, in the second, with the historical name of the crater that was an independent continent until the end of the Ordovician period. Both names refer to culture and history and are therefore intended to be image-enhancing.

Offshore wind farms on the Polish coast are part of the logic of economic growth, which is written directly into PEP2040. The energy transition, in its current phase, is not accompanied by reflection on the need to reduce the consumption of raw materials, nor is the agenda of limiting growth reflected at the European Union level. Instead, the concept of sustainable development appears.

> The document [PEP2040] was drafted in accord with the country's principle of sustainable development. Sustainable development has been defined as social and economic development in which a process of integrating political, economic, and social activities takes place, while the natural balance and sustainability of basic natural processes are maintained in order to guarantee the possibility of satisfying the basic needs of particular communities or citizens, both for the present generation and for future generations. (Pyć 2024: xii; own trans.)

The aim, therefore, is development, but one which is set in a natural context and takes into account the need to preserve fundamental natural processes. It is, however, intended to serve people only – it is concerned with future generations, while currently living organisms are

relevant in this view only insofar as they sustain the conditions for human life. This is still an anthropocentric vision.

Given that the greater the scale of offshore wind farms, the greater their harmfulness, the question must be asked: is economic growth with ethical energy production possible? A full answer is beyond the scope of this text, but existing research indicates that "green growth," that is, economic growth that would not involve resource consumption and carbon emissions, is impossible (Hickel & Kallis 2020). The normative recommendation emerging from the analysis would therefore be to reduce energy consumption.

/// Towards Cleaner Energy

Is "clean," ethical energy production possible in the Anthropocene? As the analysis has shown, it is possible to move towards more ethical ways of energy production, but even RES such as offshore wind farms, which are considered to provide "clean" and "green" energy, involve environmental problems. The complexity of both human and nonhuman, technological, economic, political, and ecosystemic planetary interconnections makes it impossible to avoid entanglement in suffering, destruction, and death. I agree with Maria Puig de la Bellacasa, who sees "interdependency as the ontological state in which humans and countless other beings unavoidably live" (Bellacasa 2017: 4). When it comes to energy production, it is not only the mode of production that matters, but also the question of scale. Reducing energy consumption seems inevitable on the road to more ethical energy production.

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/// Abstract

This article examines the ethical and environmental issues of offshore wind farms being developed on the Polish coast of the Baltic Sea. The main research questions are whether ethical energy production is possible,

whether renewable energy sources, such as offshore wind farms, serve as truly ethical energy sources, and what environmental problems are associated with their operation. The study applies Alexis Shotwell's concept of "impurity" and theoretical frameworks from the energy humanities, critical posthumanism, and feminist new materialism. The analysis reveals ethical paradoxes in renewable energy – while it does not directly emit greenhouse gases, its production and operation involve environmental burdens such as ecosystem disruption, resource extraction, and the reinforcement of neocolonial dependencies. The article highlights that achieving a more ethical energy production requires not only changing the source but also a reconsideration of energy consumption levels.

Keywords:
impurity, renewables, energy, Baltic Sea, offshore wind farms

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