

Cheap Water, Catastrophic Costs The Political Ecology of the Oder's Transformation

Piotr Walewicz

Kazimierz Wielki University

piotr.walewicz@ukw.edu.pl

Abstract

This paper examines the 2022 Oder River ecological disaster through a world-ecology lens, arguing it is a localized manifestation of global 'Cheap Water' dynamics. It traces the river's transformation across centuries, from its early appropriation in eighteenth-century Prussia to its exploitation under Polish state socialism and its continued devaluation in post-1989 predatory capitalism. The analysis reveals how the state, as an 'inherently environmental entity,' consistently mediated the relationship between capital accumulation and water flows, treating the river as a 'free gift' for energy production, food cultivation, and waste disposal. The concept of 'Cheap Water' is introduced as modern water reconfigured and devalued by capitalist world-ecology, interconnecting the concepts of Capitalocene and Wasteocene. The paper demonstrates how historical geo-managerial practices, driven by economic and geopolitical imperatives rather than socio-ecological justice, created a 'sacrifice zone' in the Oder basin. The 2022 catastrophe, marked by mass aquatic death, exposed the fragility of this state-capital-science nexus and the inherent water injustice. The paper concludes by advocating for a re-politicization of water crises and a shift from control- and profit-oriented governance towards a more democratic, life-affirming, and justice-oriented approach, acknowledging the limitations of current localized solutions within the sovereign nation-state system.

Keywords: Cheap Water, World-Ecology, The Oder, 2022 Disaster, Capitalism



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Of the numerous planetary crises we are currently facing, there is one that often escapes public attention, perhaps because we know nothing about its potential scale or perhaps because we silently accept it as the obvious consequence of human activity (Linton 2010; Mencwel 2023). It is the water crisis in its many forms, from shortages to floods, from overuse to contamination (Neimanis 2017). More specifically, it is the crisis of modern water, stemming from the long-anticipated collapse of all the scientifically and politically backed managerial practices of the supply model (Linton 2010). It is also one of the many aspects of the contemporary crises of capitalism in the web of life (Moore 2015). The Oder, a transboundary river flowing through Poland, Czechia and Germany, serves as a critical case study, especially after its 2022 ecological disaster.

The water crisis is everywhere, but not every part of the world gets the same amount of scholarly attention. While the study of bodies of water in the Americas, Africa, Asia or Oceania has contributed much to political ecology, the plight of rivers in the capitalist West often seems less interesting, even though they too suffer the exploitation by the nexus of state, capital and science/technology. European rivers are good examples of the destructiveness of human capacity to transform the world that had emerged from evolutionary struggles (Harvey 2000). One of such bodies rarely described in political ecology literature is the Oder River. It is a river in a crisis that nobody in Poland had predicted as recently as the 1990s (Mencwel 2023). The latest expression of this crisis was the 2022 ecological catastrophe, when dumping too much post-industrial salinated water into the river caused a mass death of millions of aquatic lives. In 2025 this crisis is still not resolved and looms over the whole river basin once again with the images of multiple dead fish.

Rivers are among the most human-transformed environments and yet they are, at the same time, among the last bastions of biodiversity (Olaczek 2000). The Oder is still one of these and one of the last relatively near-natural large rivers in Europe (IGB 2020). “Relatively” is the key word here demonstrating how far the civilizational transformation of European rivers has gone, as large parts of the river had been transformed so heavily and so long ago that we can only approximate its original shape from geological, geomorphological and archeological studies (Wojewoda 2015). And even though it might not share the plight of the bodies of water on Madeira, it too is victim to the capitalist hydraulic engineering that began in the long sixteenth century (Patel and Moore 2017).

For the Polish journalist and activist Jan Mencwel (2023) the Oder is the most wronged river in Polish history. The river has, at one time or another, been the victim of every possible villain present in environmentalist discourses, i.e. the “enlightenment reason, specieism, modernity and modernization, scientific/technical rationality, materialism [...], technological change [...], multinationals [...], the world bank, patriarchy, capitalism, the free market, private property, consumerism [...], state power, imperialism, state socialism, meddling and bumbling bureaucrats, military industrial complexes, human ignorance, indifference, arrogance, myopia and stupidity, and the like” (Harvey 2000:214-215). It has been “pushed around” under the modern paradigm of water resource development and management and brought to the brink of catastrophe (Conca 2006).

The Oder is also Poland's most political river. The Vistula may have the stronger symbolic meaning, but it is the Oder that flows through three different countries, was key to the development of large parts of their territories, became a border river after 1945, but also floods often and carries enormous amounts of pollution and waste resulting in ecological catastrophes that impact the whole socio-ecological life in its basin. According to Christian Parenti (2016:178), "few forces call forth the state so consistently as water" and the Oder is a great exemplification. The transnational aspect of the river is associated with difficult bargaining situations and potential for conflict (Conca 2006), but it is mostly the capital-subjugated and control-obsessed state itself that causes the crises which it also fails to predict and react to accordingly. The river's body is at the center of the epoch-making character of scientific-technological river management that allows for "reviving, sustaining and advancing the rate of profit for capital" and for "the appropriation of geological and biological work [...] in cheap, and geologically or biologically significant ways" (Moore 2023). Historically, this work had been done by providing water for drinking and agriculture or providing kinetic force for the transportation of goods, but now it is mostly done by absorbing and transporting industrial, agricultural and urban waste.

The article is an attempt to answer the call made by a trio of Polish scholars in 2022 to study the Oder through a *longue durée* perspective—something that is lacking from the otherwise sizeable, yet fragmented and reductionist body of research on the river (Buko, Gaziński and Makowski 2022). It connects with other approaches to study the politics of rivers, such as the research on the water-energy nexus or water justice studies (Weinthal, Vengosh and Neville 2018; Harris et al. 2016). Such an approach is necessary to analyze the specific co-produced ecologies that have developed in the whole Oder basin, their function in the larger capitalist world-ecology, the role of the state in this environment-making and the power-capital-nature relations that enabled the catastrophic events of 2022. The research here is done by translating the complex world-ecology conversation into a political science-oriented analytical framework that focuses on the interplay of state and water. Incorporated into this framework is a necessary working category of 'Cheap Water.' It was first coined by Deckard (2019) as something within the Seven Cheap Things (Patel and Moore 2017) that both forms within their intersection and transcends them due to water's specific role in the flow of capital and waste in the web of life. Cheap Water is when Linton's (2010) 'modern water' becomes reconfigured within and cheapened by the capitalist world-ecology, becoming the flow that interconnects the currents of the Capitalocene and the Wasteocene (Moore 2015; Armiero 2021). The article begins by laying out the theoretical and analytical framework and then follows the story of the Oder as it flowed into the Capitalocene and into the Wasteocene—a story that culminates in a catastrophic finale in one of capitalism's sacrifice zones.

World-Ecology as a Theoretical and Analytical Framework

Analyzing the tragic story of the appropriation of the Oder by the state-capital-science nexus requires a transdisciplinary perspective which is provided here by the potent, evolving and

increasingly accepted within different disciplines world-ecology approach. It ensures that the research does not reduce environmental problems as purely technical or scientific challenges, but as deeply embedded in power relations. This part of the article is not supposed to be a full account of the vast and complex world-ecology conversation, nor a detailed analysis of the thought of its creator, Jason W. Moore. It is rather a synthetic transformation of their elements into a readily utilizable analytical framework for a predominantly political science-centered research of how state power correlates to capitalist hydraulic control and social domination (Worster 1985).

The unending crisis of the Oder, the impotence of the state and the disappointingly low agency of civic engagement in the matter require an explanation that is both intellectually and politically important, and world-ecology promises just that (Moore 2015). It is ontologically founded on challenging the ‘Society + Nature’ dualism in favor of dialectical categories such as the *Oikeios*, which Moore (2015:45) defines as “a concept that moves from the interaction of independent units – Nature and Society – to the dialectics of humans in the web of life.” It emphasizes “the creative, historical, and dialectical relation between, and also always within, human and extra-human natures” (Moore 2015:46). This dialectical understanding of the web of life is essential for grasping how the Oder’s fate has, for the last four centuries, been intrinsically linked to human projects. At the same time, what is also significant about the world-ecology approach is pointing out the inadequacy of calling the global ecological crisis ‘Anthropogenic.’ According to Moore the crisis is in fact capitalogenic as capitalism develops through nature as an ecological regime—a system of organizing nature through “audacious strategies of global conquest, endless commodification, and relentless rationalization” (Moore 2016). Thus, it is the capitalist world-ecology that should be studied to understand the contemporary results of our environmental history, including the 2022 Oder disaster.

This dialectical approach lends itself well to any study of water, as it “provides a way of understanding the flow of history as well as the flow of water, and reveals how these flows are very closely related” (Linton 2010:25). With *Oikeios*, Moore shows the relational nature of historical agency where “every era of class society, and phase of capitalism, is a product and producer of the web of life” (Moore and Antonacci 2023:7). This rethinking of agency as “the capacity to induce historical change (to produce ruptures), or to reproduce extant historical arrangements (to reproduce equilibrium)” (Moore 2015:47) is of great methodological importance. Moore emphasizes that the agency of classes, capital or empire is unthinkable without the agency of extra-human natures and unfolds through configurations of power and reproduction in the web of life. One such configuration is the institutionalization of the flows of water by the state through science, technology and managerial procedures on the one hand, and the co-production of environments and cultures along rivers on the other (Conca 2006). These dialectical processes mutually strengthen both the concept of water as a resource and modern state through ‘cheapening’ water by systematic devaluation and appropriation by capital (Linton 2010; Patel and Moore 2017). Cheap Water becomes both appropriated and a tool central for the appropriation of nature, labor and energy via technological and engineering means of controlling its flow (Deckard 2019; O’Neill 2020).

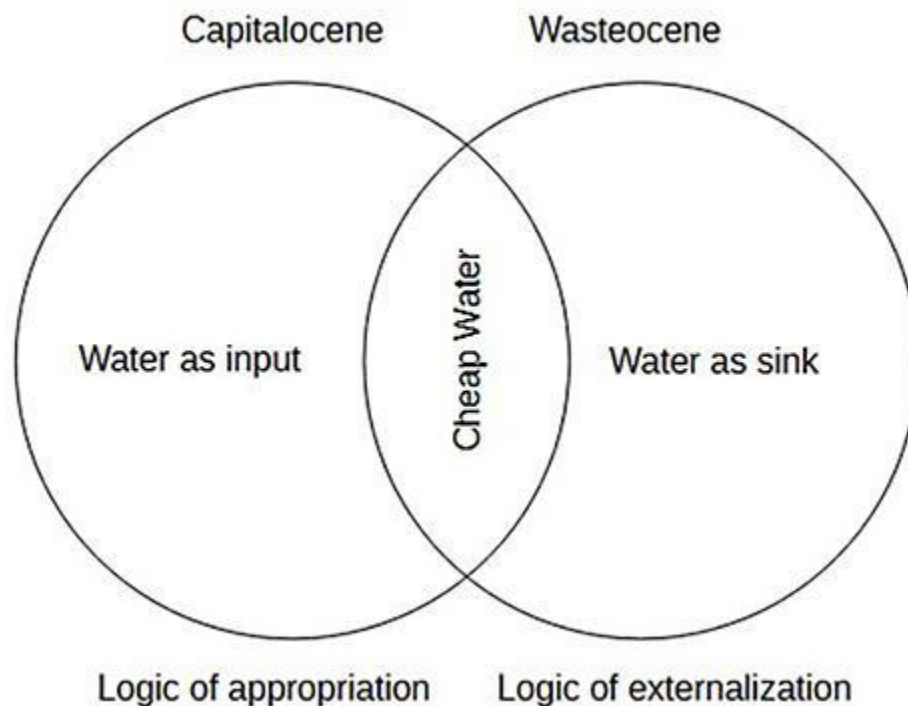
This provides a critical foundation for theorizing the role of the state in mediating the relationship between capitalist accumulation and flows of water. Because production requires not only resources but also fixed infrastructures of various kinds, capital becomes a force that necessarily territorializes and centralizes (Cox 2013). These happen through states—the coordinating devices that connect and integrate networks of power of the dominant economic entities into discrete territories (Agnew 2018). Christian Parenti (2016:171) uses the term “geopower” to describe this political and epistemic power of the state exercised through territory as the “technologies of power that make territory and the biosphere accessible, legible, knowable, and utilizable.” For him the state is understood as an inherently environmental entity, which implements geo-managerial procedures—such as identification, maximization, and restructuring of labor and knowledge—in order to identify nature’s productive potential, control it and make it utilizable to capital (Parenti 2016; Moore 2018). Importantly, geo-managerialism is continuously justified and legitimized through the discourses of ‘corporate and state managerialism’ founded on the applications of scientific-technological rationality through state bureaucracy (Harvey 1996). Within the politics of water this becomes ‘water resource management,’ ‘waste management’ etc. as ways of facilitating the ‘cheapening’ of water through policy and selective regulation.

The legal legitimization of this state-as-environmental-entity is provided by sovereignty—both as a concept and an institution. It underpins and gives permanence to state policies and international politics, with the latter especially important in transnational and/or border rivers like the Oder. State control of territory and national sovereignty are invoked regularly in the discourse on environmental politics and policies, especially when relevant to the state’s energy or food security (Walewicz 2023). What we have then is territorial modes of jurisdiction that prevail over processes that care not for our abstract demarcation lines (Dalby 2021; Latour 2016). These modes work within borders that are generally based on arbitrary, but economically and strategically useful considerations of the alliance of capital and state. They divide the web of life into parts geo-managed by states and thus sovereignty itself becomes an environmental practice through establishing the conditions for capital accumulation and protecting legal property regimes (Wallerstein 1991; Emel et al. 2011). Moreover, not only does the state provide economic entities with legal rights of ownership and conditions for capital accumulation, it also empowers them to stymie efforts to curtail their privilege to extract use value from nature and labor (Walewicz 2023). This also happens with both the rights to consume water as well as rights to use water bodies as sinks for waste, including the state protection of these rights, deciding limits or choosing when to impose or cancel fines for overcoming those. Unlike carbon emissions, which are becoming at least somewhat integrated into global or regional environmental policies, water policies are still mostly sovereign domains of states, even though the transnational nature of the crisis of modern water is as evident as in the case of the climate crisis.

Cheap Water thus has a peculiar place in this paradigm. It is produced through the systematic ‘cheapening’ of both human and extra-human work. It could be positioned at the intersection of Moore’s (2015) Four Cheaps, but has a different relation with each of them. Water has always been a source of food, but is also a necessary input for any other food production. Thus,

there is no Cheap Food without Cheap Water. There is no Cheap Labor without water-as-nutrient, but there is also no globalization of labor without the kinetic energy of water-as-pathway. Water has long provided energy-as-power (starting with the first water mills of ancient Greece), but there is also no power generation without water—at least as long as fossil fuels (or nuclear power) are involved. Water is the most commonly used raw material. It is used in, or is essential to, the production of almost every commodity in the world, taking a special place among Cheap Natures. It also has a specific relation to waste. Waste dumped into water has no fixed location and no boundaries, as it moves with the water. Almost everything thrown into a river ends up in a sea or an ocean, where it becomes a part of a slow-motion and silent unmaking of the global ecosystem. Lastly, it is the foundation of all life—it is the beating, or rather flowing, heart of the web of life and as long as anything in the capitalist world-ecology is being appropriated or exploited, Cheap Water is somehow involved.

Figure 1. Venn Diagram of the relationship between Cheap Water, the Capitalocene and the Wasteocene



Yet people in capitalist societies take water for granted, while capital continuously tries to appropriate it without paying for its reproduction. Within the capitalist world-ecology water is cheapened when the energy it provides for transport, the life it sustains for food, or the waste it carries away are treated as ‘free gifts.’ Moore’s labor theory of life explains how the state-capital-science nexus works together to ensure that the costs of the ecological reproduction of any body

of water are externalized. Water is cheapened in a double manner. It is cheapened as an input (energy for mills, transport for coal, etc.) and it is cheapened as a sink (disposal for industrial, agricultural and urban waste). Cheap Water acts as the blood flow that connects the Capitalocene and the Wasteocene. In the Capitalocene, the focus is on the appropriation of water as an input for accumulation. As the system reaches its ecological limits, it flows into the Wasteocene, where water's primary 'value' lies in its capacity to absorb the overflows of production. The history of the Oder is a good example of leading up to the moment where these two 'Cheaps' collide—the river can no longer function as a sink without destroying its ability to function as a living system being put to work.

Appropriating the Oder in the Capitalocene: Prussian Imperial Ecological Regime

Geologically the Oder is 10 million years old. It had always been a meandering river dotted with numerous islands providing spaces with economic, transit and defensive advantages. The oldest remains of human presence are dated to the Middle Paleolithic, when the use of fire and improved tool-making techniques opened new possibilities for organizing nature (Wojewoda 2015). The first settlements started appearing around 5000 B.C., but the river itself did not become utilized noticeably until 700-600 B.C. (Wolski 2021). Until the Middle Ages the river was not significant economically, but served as an easy access route to the north for the Celts and to the south for the Germanic tribes (Linek 2015). Later the riverside became an inadvertent ally to various Slavic tribes, providing them with easy access to food, drinking water, transportation and protection. When the tribes began uniting under princes and kings, their rivalry kicked off the process of large-scale organization of nature around the river, including urbanization, deforestation and turning swaths of land into farmland. Ships and rafts carrying salt, herring, grain, clay, sand and wood started crowding the waters of a few navigable sections of the river, bonding it forever with the development of civilization in this part of the world (Moździoch 1993; Marszałek 2010). The river also entered into the realm of property and the cycle of currency as early as the thirteenth century with those kings and princes, aristocrats and clergymen haggling over tariffs on goods transported by river. At the same time, it was a period of relative balance between human and non-human natures, with laws established to, for example, hunt and breed beavers, as well as protect and care for beaver dams (Moździoch 1993). The process of transforming the form and course of the Oder continued until the seventeenth century, but was noticeably slowed by political instability and shifting economic priorities. Yet the scope, speed and technological complexity of the interventions into nature increased steadily, as they did all over the emerging capitalist world-ecology (Moore 2017). Another bout of large-scale, systematic river regulation happened in the eighteenth century, emerging as another early Central European example of state-enabled and state-protected mediation between capital and Cheap Nature (Parenti 2016).

The seventeenth century brought a noticeable increase in the number and length of dikes built, but the big planned and organized efforts to transform the river further began in the early 1700s (Ciszewski 2006; Kaak 2019). At that time there were already fifteen riverside towns with a population larger than 1000 each, so the whole river basin was becoming more significant

economically and politically. 1769 is when the first map of the Oder was created, right after the river had become a spoil of war between the Habsburgs and Prussia (Hamplová, Urbaniak and Żurowska 2006). This first formal instance of identification of its productive potential began one of many bursts of appropriation of the Cheap Natures of the whole river basin. It was an instance of *geo-managerialism* during the early stages of development of capitalism in Prussia—even though its path differed from other Western European states (Mooers 1991). Being less driven by the bourgeoisie and more by a transforming nobility, it still depended on increasing accumulation not only by the appropriation of Cheap Natures, but also through perfecting new ways of organizing nature through scientific and technological managerial procedures (Moore 2018). Prussian capitalism was also founded on colonization, with the population being moved from the core of the country into the eastern fringes like the freshly dried marshlands of the Oder basin (Czeczot and Pospiszyl 2021). The river also got entangled into the water-energy nexus by the growing number of windmills built and an ever-increasing number of boats and barges (Weinthal, Vengosh, and Neville 2018).

The process of regulating the river in the early eighteenth century followed the European trend of being enamored with state-run “water management” (Parenti 2016). Prussia was amongst the leaders in new organizational practices and “the first state on the continent waging a systematic and centralized war with nature, founded on sciences, statistics, geology, geography typical of the Enlightenment” (Czeczot and Pospiszyl 2021). It had also entered a vicious cycle—forests were cut down and marshes dried by the building of dikes in order to get more farmland, yet those same actions caused a huge loss of biodiversity and led to the collapse of fishing and fish markets. Every change was subordinated to productivity and intended to provide the state with an immediate fiscal advantage. Not much thought was given to long-term consequences and ecosystem degradation was treated as acceptable collateral damage (Kaak 2019). It was not, however, just a “state project.” It was rather a massive transfer of Cheap Nature to the Prussian landowning elite in order to facilitate grain exports.

Cheap Work was provided by desperate fishermen. Some even attempted sabotaging the construction of further dikes and were punished for the infringement by working on the same construction sites while chained to carts (Patel and Moore 2017; Kaak 2019). Military policing of diking to prevent sabotage and ensure that all landowners fulfil their dike maintenance and marshland drying duties—for agriculture as well as to deprive the subordinated classes of places to hide from the oppression—was one of many aspects of geopolitics’ materialist possibilities (Parenti 2016; Czeczot and Pospiszyl 2021). While the large-scale diking was seen as a sign of progress and improved the lives of new settlers in the many dried marshes, it was also the Oder’s entry into the Capitalocene as the appropriation of nature for the purpose of accumulation for the few wealthy landowners and the owners of ship companies utilizing the straightened river. The power that a meandering river had over people got replaced by the power of the centralized state (Czeczot and Pospiszyl 2021). The state served specific class interests. The transformation of the river was not merely a feat of state engineering, but a class project designed to consolidate the

power of the Junker class. The state provided the landowning nobility with more arable land and turned the river's complexity into a simplified pathway for their export-focused economy.

The plight of the Oder under Prussian and later German rule did not change much throughout the whole nineteenth century, although it did gain an imperialist dimension after the Congress of Vienna in 1815. The Congress, apart from fueling later surges of imperialism, established rules that forced states to ensure free shipping and modernization of all rivers (Jarrett 2013). The geo-managerial procedures of allowing access to Cheap Nature/Work/Energy were now no longer in the hands of states themselves, but became a legal and institutional part of the emerging world order (Moore 2018). The most important effects of technological transformation of the river during that time were shortening its course by 177 kilometers and riddling it with thousands of groynes. Like other big hydrotechnic endeavors it became another illustration of “the role of the state in developing and reproducing the metabolic arrangements that are capitalism” (Parenti 2016:177). What changed in relation to the eighteenth century is that the historical agency of the specific class project that bundled the river with the Junker class got entangled with that of coal—the Cheap Energy from the Silesian mines—by carrying it towards the Baltic so that it could contribute to changing the world (Moore 2015; Malm 2016). The Oder's water-energy nexus now got expanded by this new dimension (Weinthal, Vengosh and Neville 2018). New offices and institutions were established to ensure the navigability of the river and ‘manage’ its flow. At the same time, the state apparatus engaged in an intense struggle against a different emanation of the river's agency—the floods, disastrous to settlements and the economy—by way of large-scale projects like artificial retention reservoirs, canals and dredging the riverbed. This fight was legitimized by promises of more farmland, less flooding or improved health conditions—always at the expense of local population, systematically depriving them of possibilities for emancipation (Czeczot and Pospiszyl 2021).

After World War I the river lost some of its importance, especially as a route of coal delivery to Berlin, after the political rule over its basin was divided between three different states. The final shift happened after the completion of the Mittellandskanal, enabling the transport of more coal from the Ruhr area than from Silesia. This, as well as Szczecin lagging behind Hamburg more and more, was part of a larger trend of uneven economic development between Western and Eastern parts of interwar Germany in a struggle of different vectors of geopower (Ministerstwo Ziemi i Odzyskanych 1946; Parenti 2016). This was a pivotal moment for the history of the Oder's regulation in the twentieth century, as only by regulating it even more and connecting with the Vistula and the Danube through man-made canals could the imbalance be reduced. Importantly, the idea of connecting the Oder to those other river basins remained a political goal for the later state socialist government of Poland. The last German project of transforming the river was a new 7-kilometer-long canal that was supposed to, but never would, become a part of the larger Oder-Danube canal. At the same time, even though the Oder basin was not under Polish rule at the time, the newly independent state did demonstrate a kind of politically and technologically driven “obsession with water”—affecting all the rivers actually governed by the state between 1918 and

1939—which left a lasting mental impression on Polish attitude towards hydroengineering that would soon affect the Oder as well (Mencwel 2023:72).

Flowing into the Wasteocene: Polish Socialist-Industrial Ecological Regime

As the Capitalocene matured all over the world, the appropriation of the Oder deepened, the river's role evolved further with political and technological transformations, culminating in becoming mostly a receptacle for industrial and urban waste on a trajectory to become one of the hot spots of the Wasteocene. After the Oder once again was majorly under Polish rule, the new post-war government did not waste any time to exploit it as much as possible. As early as 1946 a gathering of scientists and experts discussing the challenges of new territorial boundaries of Poland with a focus on the problems of the sea and the Oder pointed out its usefulness in economic development. The river, in concert with the Vistula, was about to become a “trackway through which the greatest economic currents can be fulfilled [...] by overcoming the relatively smallest terrain difficulties, by the lowest capital expenditure, and by the largest degree of flotation.” This Cheap Nature was anointed as the carrier of Cheap Energy from “one of Europe's biggest reservoirs of mechanical energy accumulated in coal,” used to “multiply the value of human labor” (Ministerstwo Ziemi Odzyskanych 1946:14). Right after reclaiming new land and the Oder back after centuries, the Polish nexus of science, state and technology got into further regulating the river to increase its transport capacity as much as possible and as quickly as possible through a new incarnation of *geopower* (Moore 2018). It began with the first expert-written three-year plan of the new centrally planned economy, aimed at tripling the river's capacity to carry boats and barges. It was intended to facilitate modernizing the country and improving the welfare of its citizens, but got quickly hijacked by party-state bureaucracy for their own political gain (*nomenklatura*).

This scientific management in USSR-dependent countries sometimes tended towards a class-oriented labor organization copied from the West in order to not fall behind in the race to subordinate and maximally exploit all kinds of human and extra-human labor (Foster 1999). In Poland the party-state bureaucracy had its legitimacy rested on rapid heavy industrialization, which necessitated treating the river as a cog in the machine. The desire to maximize productivity using whatever Cheaps available was not at all different to what was happening in the capitalist Western states. What was different was that this was not a project for capital accumulation of a bourgeoisie class, but a legitimization project for the bureaucrats whose careers depended on bringing results. Moreover, the heavy modernization of the Oder basin was also dictated by new geopolitical struggles (Niemczynowicz 1992). In 1946 it was supposed to break the pseudo-colonial relations of only exporting raw materials and food to Western Europe by opening the possibilities of sending more labor-intensive products to other parts of the world. Later, after being subdued by the USSR, the whole endeavor became a part of the Cold War rivalry and an important tool to be used against the pressures from the capitalist West. The logic of commodity production got very close to that in the capitalist states, especially after Poland had become heavily indebted to foreign creditors (Rae 2008). Because the capitalist order after World War II was being imposed by the West onto the whole world, production organized by state bureaucracy still had to compete with its corporate

equivalents in the West under the logic of competitive accumulation (Harman 2014). Being governed by officials competing to see who could best fulfil the state's expectations, Poland had no other choice than to become a part of the joint world-ordering by Moscow and Washington, each desiring to preserve the power relations around the globe (Wallerstein 2004).

A fascinating, yet depressing, account of how the Oder was treated by Polish state socialism is given in a 1977 compilation of reports on the river written by journalists for a literary competition (Hornig et al. 1977). The human attitude towards water was really no different than what hydrofeminism recognizes within capitalism (Neimanis 2017). We learn how the scientists and engineers, enabled by the government and the press, knew everything there was to know about the “river-laborer” (*rzeka-robotnica* in Polish, which could even translate to “river-female-laborer”). We are shown how the sailors were accompanied by “single-cruise female friends”—an euphemism for female sexual workers pushed towards staying on a barge for months by the poverty pervasive in riverside cities—providing Cheap Care (Patel and Moore 2017) and facilitating the maximum exploitation of labor from the sailors who would otherwise leave their backbreaking work much sooner. We are told about the nexus of political power and Cheap Energy, which was either carried by the current in barges full of coal or siphoned straight from the flow of the river, risking Wrocław's University and the Old Town being flooded and collapsing. Finally, we witness how the river flowed straight into the Wasteocene, being injected with waste from “every town, every factory”: rusted splinters and petrol stains from the barges, unsold rotten fish and much more.

After 1977 things did not improve at all. Functioning within the Eastern Block meant that the country did not have to submit to the effects of the oil crisis and followed other East European states in completely neglecting the energy efficiency of the economy. And because the Cheap Energy came solely from fossil fuels—mainly coal—the amount of dust and sulfur emissions greatly degraded soil and water, including the Oder. Environmental law existed in the Polish People's Republic (PRL) only on paper, while actual environmental protection never functioned. The great equalizing project of Polish state socialism improved the lives of much of the proletariat, but at the unfortunate cost of the proletariat. The river thus became a vehicle for the emerging Wasteocene, with lead and zinc waste from ore processing in Silesia coalesced into a “chemical bomb” for the whole river basin (Niemczynowicz 1992). Waste began to take over the waters of the Oder and its tributaries. Heavy industries and municipal waterworks have been releasing untreated waste straight into the rivers. Power plants emitted salinated and heated cooling water—a harbinger of what was to come in 2022, because the science-capital-power nexus managing the rivers had never learned its lessons. These processes had only sped up in PRL, culminating in the Oder itself having no first-class quality water—which means water suitable for drinking—at the turn of the regime in the early 1990s. More than 64 percent was not even suitable for watering crops or fish farming (Niemczynowicz 1992). What happened to the Oder under communist governance is exactly what Foster (1999) describes as the “ecocide” happening all over the USSR and its satellite countries.

Balancing on the Edge of Catastrophe: Neoliberal Ecological Regime

The transition to a capitalist democracy in 1989 was done through an imperialist extension into a non-capitalist market by the West in a kind of shock therapy, cementing Poland's place in the semi-periphery of the world-economy (Klein 2007; Rae 2008; Klementewicz 2015). By destroying elements of the socialist economy and gaining monopoly over whole industrial and financial sectors it was founded on primitive accumulation enabled by the comprador bourgeoisie (Rae 2008; Keller-Krawczyk 2011). Despite these new relations, nothing changed in the state's relationship with water. Full reincorporation into the capitalist world-ecology allowed big business to join the state's war on water, jumping on the opportunity to socialize the costs of private profit (Mencwel 2023). Behind the obscuring euphemism of public-private partnership, new institutions and laws were put in place in order to enable as much appropriation of Cheap Water as could be hidden from the public—all enabled by the rise of crony capitalism (Klementewicz 2015). The enamored with free-market ideology did the rest, persuading everybody that technocratic management, including 'water management,' run by the invisible hand will solve every issue (Bohle and Greskovits 2012). Not many actors understood that "management is about control, not liberation" and state institutions readily underwent the managerial revolution (Moore 2021; Klementewicz 2015). Moreover, the integration with the European Union in 2004 cemented Poland's semi-peripheral position, and the socio-economic problems of the Polish side of the Oder basin (lower income, lower access to health care or other social services, less environmental protection) became more noticeable (Ciok 2000; Rae 2008; Jasiocki 2013).

Thus, the river once again became entangled in a new kind of class project. Long gone were the Junkers and the party-state bureaucrats. This was the time for the neoliberal managers securing Cheap Water for the interests of multinational shipping and industrial mining conglomerates. The water of the Oder became a scarce resource and an economic good "to be supplied and consumed or used in the most rational, economical fashion possible" (Linton 2010:215). Big projects related to mining that required drying big swaths of marshlands caused a drop in underground water and loss of many species. With climate change affecting the amount of water in the Oder itself, the dumping of salinated water from the mines began affecting the river more and more. At the turn of the millennium at least five other industries were responsible for dumping waste into the river as well: food, paper, steel, coking and textile industries (ICPO 1999). The scale of degradation and destruction was steadily growing (Ciszewski 2006). A lot of effort was put into devising a managerial system of water permits issued by state institutions to private businesses. These were intended to simplify and encourage various private endeavors: hydroengineering projects (dams, dikes, canals etc.), mining sand or stone from the riverbeds, deforesting the shores or dumping waste into the water or surrounding grounds. Appropriating and destroying nature became legal, as long as one could stay within the parameters of permitted destruction or stay under the radar of public opinion. It was mostly done through opaque reporting or inadequate oversight (Mencwel 2023). Thus, for more than two decades it has not even been the absence, but the exemption from regulations for the energy industry that resulted in

uncontrolled contamination and ecosystem degradation, following a pattern visible in other parts of the world as well (Weinthal, Vengoth and Neville 2018; Kojzar 2021).

The first years of the transformation did not see any major regulation projects in the Oder basin, but the 1997 great flood was promptly used to legitimize an even further control and regulation of rivers (Kundzewicz et al. 2021). The Polish state—often enabled by the German state which has acted as an accomplice, at least until the 2022 catastrophe after which Berlin’s rhetoric changed drastically (Zimmermann 2022)—never really abandoned the idea originating in eighteenth-century Prussia that the Oder could become a cargo watercourse and that people can engineer their way out of flood risk by pouring more and more concrete into the river. The most recent organized efforts to implement this began in 2015 as a joint Polish and German initiative, even gaining the approval and financing pledges from the World Bank, the EU and the Council of Europe Development Bank. These efforts also ignored most of the expert voices and prioritized short-term economic profit of singular businesses (mostly in the hydraulic engineering industry) which would become obsolete anyway because of the long-term damage done to the ecosystems in the river basin (IGB 2020). Importantly, the 2015 agreement has been made by the ‘liberal democratic’ government and the succeeding ‘right-wing populist’ government decided to continue with its implementation despite Germany’s slow retreat, signifying that the superficial political rhetoric has no impact on the actual treatment of bodies of water by the capital, state and science/technology nexus. The new government simply continued by adding more arguments to the discussion. One of these was the geopolitically necessitated transport of imported coal, but this time from the seaports into the hinterland, reversing the nineteenth century vector of tying the flow of water with the flow of Cheap Energy (Kość 2022).

Another dimension of Cheap Water in the Oder basin is the role of science. Even a cursory glance over the departments in Polish universities reveals that science is mainly involved in enabling the geo-managerial workings of the state. Water is studied mostly in technical universities and some geography or biology departments in other universities, but mostly with a managerial and techno-regulatory focus. Issues of genuine, rather than merely rhetorical, sustainability or socio-ecological justice appear rarely. They are mostly published by authors not really involved with academia that much or scholars representing anthropology, cultural studies or sociology—disciplines not directly associated with water-related issues and with relatively low political impact (e.g. the often cited in this article Mencwel 2023; Tusznió & Strzelecka 2022). Moreover, big businesses (whether state-owned or private) have been missing from most of the scientific discourse on Polish water. For example, in the report co-written by 35 of the most prominent scientists who study water in various forms the ‘energy’ side of the Polish water-energy nexus is completely omitted, including no mention of power plants dumping hot water or coal mines dumping salinated water into rivers. The problem of waste is brought up only in the context of urban and agricultural waste (see Kundzewicz et al. 2021). Water is also missing from analyses of Polish capitalism and Mencwel (2023) was actually the first to write extensively about their relationship in detail.

This long-standing pattern of prioritizing economic activity, technology-based solutions and the accompanying regulatory leniency directly contributed to the profound ecosystemic alterations that set the stage for the 2022 disaster. The state's consistent geo-managerial approach, focused on control and appropriation rather than actual sustainability and justice, laid the critical groundwork for the catastrophe, which in turn laid bare the fragility of not only the ecosystem, but the self-control of the state-capital-science nexus. Driven by a transnational managerial class and local comprador elites, the transformation of the river prioritized industry over the reproductive health of the river.

Cheap Water in Capitalism's Sacrifice Zone

As much as the government has tried to be somewhat proactive with river transport investment in Polish rivers, it has been completely reactive when it comes to the threat of too much (floods) or too little water (drought), as well as the threat of excessive waste. It has only been taking decisive but short-lived action after major floods, droughts or toxic poisonings of rivers (Kundzewicz et al. 2021). Despite the government's own pledges from 2016, the biological conditions in the river have been deteriorating steadily (WWF Polska 2022). Under such political-ecological conditions, the enclosure on the biosphere under "capitalism's sacrifice zone strategy" had to, sooner or later, end badly for the Oder (Moore 2023). The catastrophe happened at the intersection of structure in the form of the state-capital-science nexus and contingency in the form of a specific set of decisions or lack thereof, culminating in a sacrifice zone where waste forced life to concede.

The 2022 ecological disaster that saw a 60 percent reduction in fish biomass and an 88 percent decrease in native mussels and snails stands as one of the most severe environmental catastrophes in recent European river history. The first signals of distress appeared long before any state reaction. Local anglers in southwest Poland reported unusual fish die-offs as early as March 2022, but these were largely ignored by regulatory bodies, first revealing the class divide between the state managerial class securing the interests of industry and members of local communities. Then in July 2022 a mass mortality event was documented in the Gliwice Canal, which is a key industrial waterway connected to the Upper Silesian coal mines. Despite the removal of enormous quantities of dead fish, the event was treated as a localized pollution incident. When members of the Polish Angling Association mobilized to remove tons of dead fish from the Oder, state laboratory facilities did respond, but still without proper testing. Only after the contamination wave moved downstream and entered the city of Wrocław, a major urban center where the river is integral to city life, the Polish Government Center for Security issued public alerts.

The lack of early state intervention placed an immense burden on local volunteers, including the anglers and environmental activists. They were the first to face the physical toll of removing hundreds of thousands of decomposing fish without logistical support from the state, but also the psychological stress of working in an environment which has been contaminated by unknown biological hazards. There were rumors of mercury and other toxic substances, and they spread rapidly due to the delayed testing by state agencies. For many of those volunteers, the river was not just a place of work or hobby, but a central part of their life and community identity.

Feelings of grief were widespread. They were accompanied by the feeling of economic insecurity, as fishing businesses were pushed towards insolvency and tourists were scared away by the presence of massive amounts of decomposing biological matter and bans on river use. The whole Oder basin became a “haunted landscape” (Wilson 2025).

While the immediate biological agent of this devastation was a massive bloom of a toxin-producing alga that led to suffocation and circulatory failure in animals, it was enabled only by profound human alterations to the river’s ecology (IGB 2024). This was a relational agency at work, working through the configuration of class (the neoliberal managers and comprador elites), industrial and agricultural practices, governance failures, heat and drought. The scale of this toxic bloom was only possible through the combination of, among others, high salinity (caused by legal and illegal industrial/mining discharge), high concentrations of phosphorus and nitrogen (caused by legal and illegal agricultural and urban waste), not enough ‘natural’ riparian zones and too many engineering measures implemented to deepen the river bed for navigation (Free et al. 2023).

The disaster laid bare the scale of water injustice present in the core capitalist states that may not be as great as in the so-called ‘developing’ countries, yet exists as an inherent effect of Cheap Water in the capitalist world-ecology. As in other parts of the world, the catastrophic event was felt mostly by the inhabitants of the riverbanks whose livelihood depends on clean water and abundance of aquatic life, not by the big business (Harris et al. 2016). There were documented cases of individuals, including anglers and residents, suffering skin irritations and chemical burns after contact with the river, yet the authorities delayed official warnings for weeks, endangering local communities unaware that the water itself posed a danger. The existing legal framework effectively internalized the environmental degradation as an acceptable cost of doing business, whether coal mining, hydro-engineering or food production, by externalizing waste disposal onto the river ecosystem and downstream communities. The responsibility of the government and the corporate heads even got a judicial confirmation after the investigation by Fundacja Centralna (Ptak-Iglewska 2025). Cheap Energy, Cheap Nature and Cheap Food got entangled within the pressure for Cheap Water and this knot got tightly tied around life in the Oder basin. It still holds strong with new cases of high salinity or mass fish deaths observed each year after 2022 (Kojzar 2025).

The geo-managerial practices of the Polish government that led to the 2022 disaster were founded on the pressure to facilitate accumulation by appropriation as well as on national security concerns, as all around the world the scarcity of both energy and water had already entered the decision-making calculus (Weinthal, Vengosh and Neville 2018). In a kind of paradoxical situation, however, the hydromorphological modifications to the Oder and providing conditions for continuous appropriation met with the global capitalogenic climate crisis on a local level, undermining the most basic existential security of the web of life. The development projects going on in post-1989 Poland intersected with the impacts of the climate crisis to render the Oder basin more and more susceptible to external shocks, whether ‘natural’ or ‘civilizational.’ The state lacked any foresight before, and it also lacked any insight during and after the 2022 disaster. World Wildlife Fund (WWF) experts agree that it was this state neglect that ultimately allowed the crisis

to happen (WWF Polska 2022). The government's response was widely criticized as slow, politicized and lacking transparency. There was initial downplaying of the disaster or attributing it to 'natural' (as in outside of human control) causes, as well as national posturing directed towards German media and scientific institutions. Cross-border cooperation was hindered as national political agendas founded on concerns for sovereignty overrode ecological imperatives in the transboundary basin of the Oder. The state's lack of foresight and its slow, politicized response exemplify not only the state's nature as an environmental entity subservient to capital, but also the human ignorance and indifference that Harvey (2000) identified as contributing factors to environmental degradation. On top of that, the internally contradictory nature of science allowed the government to plan even more destructive engineering investments and legal relaxation by appealing to the authority of one group of 'experts,' while the opposite group advocated for swift restoration of the natural flow and ecosystem of the river and legal tightening (WWF Polska 2022; Free et al. 2023).

The struggle between the way of technological fixes that would ensure capitalism's business-as-usual, the way of state-of-the-art expert knowledge of the so-called 'Nature Based Solutions,' and the way of the fight for justice for all life continues (Moore 2023; Mencwel 2023). Its latest embodiment is the proposition to give legal personhood to the Oder, although time will tell whether this idea brings with it any noticeable paradigm shift, gets absorbed and appropriated by capitalism, or falls into oblivion. There is a lot of fuel for this movement coming from the actions of the state itself. Apart from allowing even more saline discharge to enter the river *after* the disaster, there were also some specific controversial issues. One example was the leaked report by the Ministry of Industry to the European Commission from 2024, revealing the astounding number of fines for saline discharge that were waived and legitimized through legislative loopholes regarding public financing (Osoba Odra 2025).

Conclusion

The 2022 disaster was not an isolated incident but a localized manifestation of a global pattern within the capitalist world-ecology. It reveals how state responses to such catastrophes are optimized for market tolerability, rather than socio-ecological stability and justice, while risks, instead of being eliminated, are only smoothed and re-framed for industry's confidence and national security concerns. It also shows how water policies, by remaining largely sovereign domains of states, hinder effective solutions to water crises which are inherently transnational. But what is even more interesting than analyzing the singular event and its immediate consequences is the *longue durée* perspective on the processes that facilitated the disaster on a political level.

The history of the appropriation of the whole Oder basin shows water as a relational agent that becomes both 'modern water' through resource-making, as well as Cheap Water through continuous devaluation and appropriation in either early capitalist, state socialist or late capitalist conditions. The treatment of water, among other elements of the Oikeios, as a "free gift" by the state-capital-science nexus that began in the sixteenth-century Madeira exists in the contemporary

Oder basin as much as any other place in the world (Patel and Moore 2017). It began with the state-enabled regulation in eighteenth-century Prussia, continued with the exploitation under state socialism and never slowed down in the Polish post-1989 predatory capitalism that maintained the constant cheapening of water for energy or food production and ‘waste disposal.’ The currents of both the Capitalocene and the Wasteocene intertwine between the riverbanks of the Oder and its tributaries leading to the creation of these ‘sacrifice zones’ where aquatic life dies on the altar of Cheap Water.

This relation between water and capital has always been mediated by strong government involvement, public financing, agencies, institutions, state-led science and state-led infrastructural projects. It proves Parenti’s (2016:166) point that through this multifaceted mediation the state, as an “inherently environmental entity,” becomes the actual “relationship” that capital uses to work through nature. The history of the Oder lets us expand on Parenti’s original thesis that it is only the ‘capitalist state’ that fits this description, as the state socialist era of Polish organization of nature followed all the same paths, albeit with end goals of a more political than economic nature. It was thus the imposition of the rules of the capitalist world-ecology that caused the non-capitalist state to behave exactly as its capitalist counterparts, cheapening and appropriating water while externalizing costs into it.

The 2022 disaster is not something of the past, but a persistent, localized emanation of the crisis of ‘modern water.’ It continues and will continue until the current geo-managerial approach to water, prioritizing control and profit, gets replaced with a more socio-ecologically just relationship. This relationship would have to both acknowledge the historical agency of extra-human nature as a relation within the web of life (rather than an inherent property of the water itself, as new materialists would have it) as well as re-politicize the crisis itself, albeit via a different politics of water. Scholars like Moore (2022:30) advocate for a global shift “from a privatized logic of planetary dictatorship to one that favors a biospheric socialism of the associated reproducers.” Water, with all its role in the web of life, would certainly benefit from such a transition. But the issue of the Oder, while being part of a global pattern, is also a local issue within the system of sovereign nation states and thus there exist localized solutions that are already in play. There is already a discursive shift that makes water crises as much of an issue as carbon-dioxide emissions or a redirection of the discourse on water away from quantity towards quality. Then there is the movement for a legal personhood for the Oder, which may be hopeful, but still carries the same problems as any rights-of-nature movements that function in the capitalist world-ecology and its constraints. It is, however, the first big movement in Poland aiming to shift water governance from a resource-based to justice-based approach, engaging activists, artists and scholars alike (Harris et. al. 2016).

The 2022 disaster did somewhat open the eyes of the public to the plight of Polish rivers and the big business’ role in it, as well as put the democratization of access to the river into the mainstream discourse. However, the government and its overall course seem unmoved. On one hand, the bill to give legal personhood to the Oder got introduced by a small group of members of the parliament. On the other, there are new laws being passed that will enable even more

appropriation of the Cheap Water. Riverbed regulation and riverbank deforestation are being made easier, coal power plants are still being given more permits to utilize the Oder's water and the fines for dumping saline are still negligible to the industry. The expert voices chosen to shape institutional decisions are still mostly those transfixed on steel and concrete-focused engineering projects rather than those advocating for 'nature based solutions' to water issues. Thus, a revolution in the politics of water, at least in the case of the Polish part of the Oder basin, will not happen solely in a bottom-up manner, because it has to contend with another bottom-up pressure—that of capital. It will have to be accompanied by a top-down reconfiguration of the state and its knowledge-making capabilities in a more democratic, life-affirming and justice-oriented way.

About the Author: Dr. Piotr Walewicz is an Assistant Professor at the Faculty of Political Science and Administration, Kazimierz Wielki University in Bydgoszcz, Poland. His major research interests are in political theory, environmental politics, world-ecology, discourse analysis and ecolinguistics.

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