

20 Compounding Catastrophes in Polissya: Chornobyl's Legacy along the E40 Waterway

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Introduction

In 1916, Ukrainian writer Vladimir Korolenko wrote about a place in Polissya, a swampy, forested region that stretches from eastern Poland through southern Belarus, northern Ukraine, and western Russia. In the story, the forester, a lone wolf man, emerges from a sloping hut and looks over his guests. The baron and his entourage dismount, while his valet prepares a fire for dinner. The corrupt nobleman plans an evening of debauchery. In Korolenko's story, the baron, a trespasser in the Polissyan wilderness, will die that night for his civilizational sins.¹ The baron's assumption that he ruled the forest becomes his ruin. How does a man take possession over marshland that is there and then not there, firm ground then inundated bog? How does he navigate a river that ignores its banks and walks north and south, east and west seasonally? In Slavic folklore, transitional spaces are dangerous. "Unclean forces" love swamps that are neither land nor water. "Nature is made through . . . haunted artifacts," the geographer Jake Kosek writes.² The Prypiat Marshes have long stood as an obstacle to human "development" and "progress" because their very indeterminate qualities appear as a form of danger, as something unruly for modernizing humans in search of resources. To eradicate such places is to make the world safer, more secure, and more manageable.³

And that is how large portions of Polissya, known as "Europe's Amazon" due to its high levels of biodiversity and unique marshland habitat, remain today—as an obstacle to be conquered, a problem to be fixed.⁴ In 2020, engineers in Poland and Ukraine began to deepen their existing river dredging in the Prypiat Marshes to accommodate an envisioned global armada of

shipping barges.⁵ Engineers working for a coalition of government ministries from Ukraine, Belarus, and Poland planned to create a highway that would channel through the marshes, connecting the Black and Baltic Seas: the E40 waterway. Critics charge the waterway will be disastrous for Polissya's finely balanced ecosystem. They liken the plan to a Soviet-era, vanity megaproject that will reap a range of environmental harms without any equitable economic gain. But the E40 as a concept has deeper roots than Soviet hubris and bears a wider geographical scope. Promoters of the E40 say that Varangians (Vikings) between the ninth and eleventh centuries traveled through these rivers, invading north to south. The traditional Slavic trading routes through the marshes should be put to use again, advocates of the E40 argue, as they draw on archeological relics and claim a place as their heirs.

Yet, after the Vikings, no conquering armies managed to defeat the marshes. Invading Teutonic knights, the Kaiser's troops during World War I, and Nazi storm troopers feared the Polissyan wilderness. They floundered in the swamps, got lost in the roadless expanse, and disappeared in the mire.⁶ Because of the threat it posed, Nazi officials made plans to drain the swamp. So too did Polish lords and Russian autocrats before them.⁷ No party managed it. Even for the Soviets, the great Prypiat Marshes remained a challenge, a gaping stretch of "value" underutilized, and an obstacle to navigate around. More recently, as Russia invaded Ukraine from the north via Belarus, Polissya's natural wetlands, including the Pripyat, Irpin, and Dnipro Rivers, "played a vital role in defending Kyiv."⁸ As a result, the National Ecological Centre of Ukraine (NECU) "appealed to the Ukrainian Ministry of Infrastructure to recognize this, abandon E40, and protect Polissya⁹ in its natural state."¹⁰ European Union officials, moreover, are wary of contemporary plans to build the E40 waterway and do not support it. Yet, with backing from Chinese leaders that are intent on building a global trading infrastructure—the Belt and Road Initiative—cabinet-level officials in central Europe have pursued the plan for the past decade.

This chapter examines the compounding socio-natural catastrophes facing Europe's "Amazon," which are intimately linked with the nuclear-water nexus. In line with this book's aims, our chapter explores the wider environmental consequences of the nuclear industry in relation to watery landscapes. We follow and extend upon this book's envirotechnical perspective by considering not only the nuclear-water nexus beyond the official spatial boundary of the nuclear plant but also the multiple temporalities—past

nuclear catastrophe, present nuclear ghosts, and future speculation—that exist in this wider spatial arrangement. Hence, we argue that the E40 waterway bears many of the flaws of similar attempts to rationalize and capitalize the marshes in the past. The E40 project threatens to revive Chornobyl contaminants and other toxins buried in the marshland’s muddy depths, which, activists fear, would wreak havoc on the region’s aquatic ecosystem.¹¹ These fears contrast with some scientists’ and public officials’ celebrations of nature’s return to the Chornobyl Exclusion Zone.¹² Drawing from interviews with local activists in Ukraine, Belarus, and Poland, the organizers of the “Save Polesia” campaign, and scientists working in the zone, this case shows how socio-natural disasters create zones of emergency that open the door to greater exploitation and extraction (which becomes the norm or default). We focus on activist sources to show how the perpetuation of what is left of a functioning ecosystem in the post-contamination Pripyat Marshes takes a great deal of work politically.

Europe’s Amazon

Polissya is a vast natural-historical region that stretches from Central Europe across Eastern Europe, encompassing Eastern Poland, the border between Belarus and Ukraine, and Southwestern Russia. At 18,000,000 ha, Polissya is two-thirds the size of the UK, comprising a marshland region on the banks of the Prypiat River within the drainage basins of the Western Bug and Prypiat Rivers. Home to wolves, lynx, brown bears, wild horses, and bison, to name only a few of its native species, Polissya is known as one of Europe’s last wildernesses. Despite the presence of charismatic and photogenic fauna, the region is recognized for its extraordinary diversity of birdlife. Volha is a Ukrainian environmental activist and ecologist working in Polissya.¹³ “If you look at a map,” he told us, “you will see that Polissya is a green migration corridor for mammals and different species.” Maya, a Polish environmental activist, related, “There are bird species that nest on these sandy islands; some of the rare and almost extinct species of Poland, which are protected by the European Commission in Natura 2000 sites.”

Despite being Europe’s largest wilderness, few Western environmentalists have heard of “the Amazon of Europe.”¹⁴ The region is diverse. Its western part is protected under the “West Polesie Transboundary Biosphere Reserve,” which covers parts of Poland, Ukraine, and Belarus. It is also designated as

an area of global importance under UNESCO's World Network of Biosphere Reserves. Historically, the territory fell into several protected jurisdictions. In 1990, Polish authorities established the "Polesie National Park" protecting almost 100 km² of the Polissyan territory. Once in Ukraine, the northwestern part of Polissya was protected as part of the Shatskyi Biosphere Reserve in the Volynska region of Ukraine. This biosphere reserve was created out of the Shatsk National Nature Park, which was formed in 1983, and comprised the Shatskyi Lakes, a group of more than thirty water bodies, and one of Europe's largest collections of lakes. Ukraine's deepest lake (Svitiaz) features in this park. Here, many of the lakes are connected by Soviet (and earlier) land-reclamation canals or via natural channels. In Belarus, the Polissya region was protected under an area called Pribuzhskoye-Polesie. In 2012, the Shatskyi Biosphere Reserve (Ukraine), Polesie National Park (Poland), and Pribuzhskoye-Polesie Biosphere Reserve (Belarus) were combined to create the West Polesie Transboundary Biosphere Reserve.

Despite this protection, the Polissya region has been scarred by anthropogenic activities over its long history. Herein, we turn to contemporary plans to build the E40 waterway through Polissya, a project that stands to reawaken ghosts of the region's radioactive past (and present). In considering this case, we show how anthropogenic radionuclides remain an unsolvable and unmanageable conundrum in the long-term future—one that will resurface again and again as landscapes change naturally or are developed. In line with the aims of this book, we center the agency of water and wet landscapes in this story of nuclear ghosts. We do this by questioning the finitude of the Chornobyl catastrophe as we consider how water resurfaces and transports buried dormant radionuclides. Alongside other contributors to this collection, we read the wet Chornobyl landscape as an archive of nuclear catastrophe, advancing understandings of the Chornobyl catastrophe as spatiotemporally nonlinear—owing to water's agencies.

The E40 Waterway

In 1996, a series of planned waterway constructions was announced under the Geneva European Agreement on Main Inland Waterways of International Importance (AGN). The E40 waterway—a navigable transport route—is one of these planned waterways, which, if built, would stretch 2,000 km from Gdansk in Poland to Kherson in Ukraine and affect five rivers: the Vistula, the Bug, the Pina, the Prypiat, and the Dniro. The megaproject would

include the construction of several dams on the Prypiat River, heavy dredging along the whole route, the straightening of river channels, and the construction of several bypass canals to ensure large shipping vessels can navigate it. The canal would pass within a few kilometers of the mothballed Chornobyl nuclear power plant.

In the early 2010s, a Polish-Belarusian-Ukrainian consortium led by the Dnieper-Bug Republican Unitary Maintenance and Construction Enterprise was created to develop an implementation plan for the E40 waterway. Valery, a Belarusian environmental activist we spoke to, attended “a huge press conference” in 2016 organized by the Gdansk Marine Institute, the Belarusian government, and a Belarusian nongovernmental organization (NGO). At the conference, a large research project—a so-called feasibility study—was launched into the topic of the E40 waterway.

Our Polish interlocutor, a campaigner against the proposed megaproject, told us, “In discussions about E40, quite often China is mentioned because they are looking for new and improved connections for transporting goods from China to Central and western Europe.” The E40 has been connected (in theory) to the Belt and Road Initiative and has been linked to Asian investors.¹⁵ Establishing a new trade route between the Baltic and Black Seas would supposedly bring economic benefits to the entire region. Critics, such as Daniel Yergin, have described this initiative as a “debt trap,” involving more than USD 1.4 trillion—a scale of investment in overseas infrastructure never seen before.¹⁶

The environmentalists, ecologists, and activists we spoke to suggest the E40 passes through a “chain of protected areas” and have “counted about 76 protected areas from the Baltic Sea to the Black Sea” that the E40 would impact. This area is “part of a ‘green corridor’ which is protected now and has to be protected in the future as well,” Volha told us. In 2020 a coalition of Bahna, Frankfurt Zoological Society (FZS), NECU, and BirdLife Partners in Belarus, Poland, and Ukraine formed to stop development of E40.¹⁷ In 2025, the coalition comprises FZS, the Polish Society for the Protection of Birds/BirdLife Poland, and NECU.

Stop the E40, Save Polesia

“As it exists largely as paperwork, not many people know about it [the E40 project],” Volha told us. On top of this, according to Volha, the E40’s construction is taking place via “salami tactics,” which involves “implementing

the construction step-by-step without attributing any part of the work to the broader E40 project." In other words, the E40 is being constructed in an undercover fashion at disparate locations to avoid greater public attention and concern. For this reason, several environmental groups are very active in spotlighting and opposing the construction of the waterway.

"Save Polesia" is the largest activist group campaigning against the development of the E40 waterway. In 2025, its members are from Germany, Ukraine, and Poland. We spoke with several of their members or associates, who outlined why they are resisting the construction. We detail four key reasons behind their resistance.

First, the impact of the E40 construction project on biodiversity and nature will be enormous. The Prypiat River is one of the least spoilt waterways in Europe.¹⁸ According to Helen from the Frankfurt Zoological Society who is overseeing the campaign, "Even being cautious, we're talking about fifty or sixty internationally protected areas directly being damaged on the route." That does not include the overall hydrological impact, but just highlights the "internationally protected sites, Natura 2000 sites, the Emerald network sites, World Heritage sites, RAMSAR, and so on."¹⁹ Within these, "highly threatened habitats such as floodplain hardwood, alluvial forests, transition mires, and quaking bogs would be degraded or destroyed."²⁰

Due to the construction of dams, the whole hydrological system will be altered, and the chemical composition of the affected rivers will drastically change. Maya told us, "It'll involve the complete destruction of the existing natural habitats . . . transforming rivers into artificial channels." The volume of dredging will be enormous, with huge impacts on aquatic life. In Poland, several river systems will be affected. Helen also noted that dredging is required to ensure the E40 will have the water flow necessary for transportation ships. This dredging, however, will siphon moisture from soils, lower water tables, and increase the risk of drought in the region, threatening local people's livelihoods as well as leading to an increased chance of wildfires. These are already common in certain parts of Polissya, including the Chornobyl Exclusion Zone, where wildfires annually reanimate radionuclides that are buried or stored by plants, posing health risks to firefighters, local people, and wildlife. Europe is already facing its worst drought in five hundred years. So, there is the possibility that, as climate change worsens, the waterway might be unnavigable in the future.²¹ In addition, climate change is making Polissya increasingly fragile, and as the weather becomes hotter and drier,

peatlands in the area release stored carbon, contributing to the buildup of greenhouse gases.²² The destruction caused to hardwoods as well as peatland ecosystems could turn an important carbon sink into a carbon source.²³

In Belarus, on the Prypiat River, there are “eleven reserves and one national park as well as primeval forests with special habitats,” which will all be affected by the construction according to Volha. Volha also described Belarus’s portion of the Chornobyl exclusion zone as a “unique experimental territory which [they] want to designate as a nature reserve with strict protection in the future.” The Belarusians have also been keen to establish an international research station in the Chornobyl zone, a plan that has again been indefinitely postponed due to Russia’s use of the territory as an invasion route from Belarus to Ukraine.

On September 25, 2022, on World Rivers Day, Save Polesia shared their new report, which detailed how the E40 megaproject would have adverse impacts on at least 193 international and 139 national protected areas in Poland, Belarus, and Ukraine, many of which would be severe.²⁴ They noted that the project would be at odds with international and European biodiversity regulations, including commitments under the Convention on Biological Diversity and the Ramsar Convention. Moreover, in Poland, the E40 project conflicts with obligations under the EU Biodiversity Strategy and Bern Conventions.

Second, the Polissya region is home to the Poleshuks, an ethnic group that first occupied the marshes in Polissya. Many of this group belong to religious minorities and were drawn to the marshes as refugees seeking religious freedom or to avoid state repression during the tsarist period. They tend to live in small village communities organized around a village church. They speak a distinct dialect—a mixture of Ukrainian, Belarusian, and Polish—and hold on to traditions and ways of life that have faded from the landscape of most other parts of Eastern Europe. During the great famine of 1932–1933 that decimated many regions of Ukraine, people living in and around the Prypiat Marshes did not suffer from widespread hunger and hunger-related fatalities.²⁵ Their ability to live from locally grown native plants and animals gave them a resilience unobtainable for Ukrainians in the richer “bread basket,” who relied on monocrop wheat and rye, easily confiscated by Soviet armed forces during forced collectivization policies.²⁶ Poleshuks, especially those in eastern Polissya, also have a high level of local ecological knowledge and practice. They currently make use of seventy recorded wild food taxa.²⁷ These

plants, adapted to poor mineral soils and swampy terrains, may be especially important in the future when climate change takes hold.

Moreover, Polissya and the Poleshuks were greatly affected by contamination from the Chornobyl nuclear disaster. It is not just the Chornobyl zone that is sullied by radiation. Research has shown that parts of Polissya outside the zone also have elevated levels of radioactive contamination.²⁸ Those living in Polissya experienced an increased frequency of five disease categories, a spike in birth defects, and lower mortality after 1986.²⁹ There is some evidence of radiation effects among the Poleshuks, and they are the community that experiences the highest levels of exposure, as they live on locally sourced foods, including milk, berries, and wild mushrooms, all of which are natural absorbers of radiation.³⁰ E40 construction work could reanimate and resuspend Chornobyl radionuclides long buried in the marshes, causing further potential damage to the Poleshuks.

Third, the economic case for the E40 has been greatly scrutinized, and reports have been published showing it will not be economically beneficial, despite the claims of an original “feasibility study” that suggested it would be. According to Helen, “The economics of the project will probably be the biggest thing against it in the end. That’s because it’s going to be really expensive and I think the economic work that we’ve done or commissioned suggests that without subsidies, it just isn’t going to be in any way economic.” In 2021, a critic of the E40 told us that the Belarusian Ministry of Finance had refused to release five-year funding for the E40 because they did not find it economically feasible. The Ministry of Transportation, however, continued to pursue the project because they would oversee the building of the canals in Belarus, and so billions of dollars in funds would be directed their way. The same person also criticized the potential loss of revenue in tourism to Polissya and trucking (which canal transportation would replace) that the E40 would cause, both of which are major sources of income for people in Belarus. Maya pointed to similar concerns in Poland.

Fourth, all parties highlighted a lack of planning and evidence associated with the E40. The only real studies are EU-funded ones, and they have “gaping holes” in them according to Helen, who described the environmental assessments that had been done as “quick and dirty.” Before the 2020 dredging there was no EIA and “Eco-Center” did not release data from their radioactivity studies concluding the project would not cause ecological or human damage, Volha told us. Helen concluded that the E40 “is really a political project . . . to

be seen to be doing something big and dramatic. I'd say it is a classic political statement project; the scale of it and the geography are Soviet."

The researchers, campaigners, and activists we spoke to have several aims. The Save Polesia partnership offers what they call a "stark warning:" "Abandon E40 waterway megaproject or vital wetlands, grasslands, forests, and mires across Poland, Belarus, and Ukraine face catastrophe."³¹ For Helen, her objective is to stop it from being built or to have it properly assessed on a responsible basis. Thus far, they have achieved some of their aims. In Belarus, they have "1,000 offline signatures from the communities from both regions—the Brest region and the Gomel region—[which will be most affected], and also about 30,000 signatures on the petition in Belarus more generally," according to Valery. "In Belarus," Volha told us, "We have a working group consisting of thirty-three specialists from different NGOs and the Academy of Sciences as well as ornithologists and several organizations from Ukraine and some organizations from Sweden."

Chornobyl and the Nuclear-Water Nexus

The Polissya region was heavily contaminated with radionuclides following the Chornobyl nuclear catastrophe, which occurred in the early hours of the morning on April 26, 1986. The official death toll of this event is fifty-four, but the true number is unknown. Several scholars have estimated that much higher numbers have died early due to Chornobyl. In 2016, the Ukrainian government published a report stating that thirty-five thousand women have received compensation for husbands who died from a Chornobyl-related illness. This number only included men in Ukraine who were married and had documented exposures.³² Belarus and western Russia received 80 percent of the fallout from Chornobyl. Neither of those countries have published data on Chornobyl-related fatalities. These higher estimates are often explained by a combination of an institutional (Soviet) cover-up of the number of liquidators involved in emergency response and decontamination efforts, the ongoing effects of long-lasting radioisotopes in the Chornobyl-affected territories (which have been poorly monitored and recorded), and the difficulty in proving causation concerning radiation-induced illnesses.³³ Attributing more than fifty-four deaths to Chornobyl has received harsh criticism from critics, who question this more dire portrait of Chornobyl's human effects. One critic notes that such estimates are biased, ignoring "the thousands of

scientific studies on Chernobyl which are available in the international scientific literature."³⁴ In doing so, these higher estimates, according to critics, serve to perpetuate "the many myths about the accident effects" while having "very little basis in sound science."³⁵

Such disputes are par for the course in intense techno-scientific and political controversies such as Chornobyl. But Chornobyl warrants specific attention due to the epistemic problem surrounding measures of the catastrophe's impact. According to one radioecologist we spoke with, "much of the early radioecology literature was published—if it got published at all—in the gray literature, mostly in government reports, and most of it never made it to the primary literature—a lot of it was top secret and not really shared." It is well documented that the Soviet government were quick to cover up Chornobyl's impacts,³⁶ meaning much evidence did not make it into the official, or international, scientific literature. It is for this reason that historians and science and technology studies scholars have turned to alternative sources to assess Chornobyl's impacts, including Soviet archives only recently explored by Western researchers. Indeed, archival research is essential, given the "messy" data available from many foundational nuclear studies, such as the Japanese Life Span Studies.³⁷ On top of this epistemological problem is that radioecology researchers often have financial ties to radioecology laboratories or researchers, which, for some, calls into question their independence and legitimacy.³⁸ All this is to say, the ongoing effects of the Chornobyl catastrophe are controversial, and there are divergent opinions among both the natural and social scientific communities as well as in public discourse. This is the context in which the proposal to build the E40 waterway takes place.

At its closest, the proposed E40 waterway will pass only 2.5 km from the remains of the Chornobyl Nuclear Power Plant.³⁹ The initial impetus for creating the Chornobyl Zone of Alienation in 1986 was to isolate the territory most heavily contaminated with radioactive isotopes not only to prevent human exposure but also to ensure minimal human activity in the area, which tends to distribute radioactive contamination widely. As noted above, scientists working in the Chornobyl Zone disagree over the extent of the damage radiation is having on the Zone's ecosystem and biological organisms. The majority of researchers conclude that radioactive contamination has caused damage to flora and fauna in medium to heavily contaminated regions.⁴⁰ A small subset, however, strongly disagrees with this conclusion.⁴¹ Such disagreements involve heated exchanges in the pages of journals and

conference halls and the scientific discipline tasked with understanding the impacts of radiation on ecologies. The field of radioecology is intensely politically charged. Researchers contest each other's methods and purposes, disputing claims across a host of species-specific ecological studies.⁴²

With the E40 waterway, we see the same disagreements played out among the same factions of Chernobyl researchers. Those that tend to find detrimental radiation-induced effects on Chernobyl's ecosystems oppose the E40 on the grounds of further ecological risk, while those that think Chernobyl's wildlife is flourishing after the catastrophe suggest radiation risks of the E40 plans are minimal. Commenting on the potential impacts of environmental radionuclides on the health and functioning of the natural ecosystem at Chernobyl, Helen told us:

Some stakeholders contest negative impacts on the ecosystem at Chernobyl and feel that the people in Ukraine and Belarus are harmed by talking about radiation negatively. In contrast, other stakeholders want to see informed decision-making, based on detailed assessment. We take the position that informed decision-making is required on any project. We're all about good open processes. Our main suggestion is that this whole project needs better assessment, based on up-to-date, detailed data. From my environmental background, I would say, "Yes we don't want to be alarmist, but isn't it just as damaging to people to contemplate such a massive project without a more open decision-making process?"

The scientific debate regarding the impact of radiation on nature at Chernobyl is shot through with (nuclear) politics. In Belarus, Volha told us, "The government doesn't want to speak about half-lives." They are not concerned with how radioactive particles migrate across borders, and it was mentioned that certain topics relating to this topic had been "forbidden in Belarus, so you couldn't investigate them." But some are adamant that the risks posed to humans (and nonhuman life) due to radioactive contaminants in the environment remain and not just in the most contaminated parts of the zone.

The Chernobyl Nuclear Power Plant is in the heart of Polissya. Large portions of radioactive debris released during the nuclear catastrophe of 1986 were buried at the bottom of the Prypiat River, which, as Achim Klüpperberg explores elsewhere in this book, supplied water to the plant's cooling system. To construct the E40 waterway, hydrologists will have to dredge the Prypiat River to make space for cargo ships. Dredging could potentially reanimate buried radioactive contaminants that could flow downriver to the Kyiv Sea, a reservoir that provides drinking water for 2.8 million residents of the

Ukrainian capital, Kyiv.⁴³ The International Atomic Energy Agency recommended the Kyiv Sea remain undisturbed to prevent the rerelease of buried and undisturbed radiation.⁴⁴ Although the project is yet to receive approval, dredging has already begun in the zone according to locals and our interlocutors in the area.

Polissya is a layered toxic landscape that can allow the specter of Chornobyl to return over time as natural and anthropogenic landscape changes take place. As noted above, one result of dredging will be the drying of former swampland, which, once parched and dusty, could see dust picked up by the wind and transported long distances. Some of that dust from former swamp beds will be radioactive, having settled there in the four decades since the Chornobyl nuclear catastrophe. Much like forest fires can resuspend radiation into the air, disturbance to aquatic systems can resuspend and transport radiation buried in sediment.⁴⁵

Indeed, as medical researcher Wladimir Wertelecki notes, radiation is often waterborne.⁴⁶ The ecology of Polissya means that radiation deposited in the region is regularly stirred up due to natural flooding. The water cycle in the region ensures that radionuclides are constantly moved and transported through the environment, making it particularly difficult to map and govern. Here, water is the agent that allows revenant radiation to return, again and again. Provoked by human disturbance, the agency of water and its capacity for suspension, flow, and transportation become crucial actants in the spatial and temporal nonlinearity of the Chornobyl catastrophe. Governance of Chornobyl's waterways, which involves a cascading series of dams, is thus key to ensuring radiation remains in place without spreading unnecessarily. Retention rather than distribution is the goal.

Concerning dredging the Prypiat River in the Chornobyl Zone, we see the “salami approach” again. It is difficult to link any small, apparently isolated activity to the broader E40 project. Helen told us:

The dredging of the Prypiat [River] really has no point. It hasn't been dredged for nearly twenty years, but the dredging which occurred in 2020 was described as being “routine.” The last time it was dredged was in 2000 or 2001, and as far as we can work out, the main driver of the dredging is the economic benefit of the dredging company, because (a) it's a lucrative government contract and (b) they've been given approval by the state specialized enterprise Ecocenter that the dredging, which I think is mostly sand, is safe to sell to the construction industry.

She continued:

It's been quite hard to get information, but through the NECU court case, we got some information about some of the sediment sampling that happened before the dredging. Some of that sediment has got quite high radiation levels and, arguably, should have been handled as radioactive waste, but instead, it's going to be sold to the construction industry, particularly for highway construction, according to my colleagues. So, you know you've just got to be a bit dubious.

Beyond dredging, a dam was also proposed to be built in the Belarusian part of the Chornobyl Zone "less than a kilometer away from the remains of the power plant," Helen told us. "It's going to need quite a lot of engineering work in the wobbly bit of the Prypiat near Chornobyl," she added. So, it's more than just "minimal dredging" as authorities report. The pattern of quietly pursuing construction of the E40, despite the fact that it has not been approved, spreads radioactive contaminants by means of water, dredging equipment, and transport infrastructures. This tactic, alongside the habit of carrying on these actions in a semi-clandestine fashion, bears with it the haunting of Soviet officialdom who worked in similar ways to minimize or cover up the effects of Chornobyl contaminants on public health and local ecologies.

Conclusions

Since we conducted this research throughout 2021, Russia's full-scale unprovoked military invasion of Ukraine began on February 24, 2022. On the first day of the invasion, Russian forces invading from Belarus occupied the Chornobyl Nuclear Power Plant and the wider Exclusion Zone, including territory along the proposed E40 waterway. Five weeks later, on March 31, 2022, the zone was liberated by Ukrainian forces, but large parts of the area remain heavily mined. At the end of July 2022, "Ukraine terminated its bilateral agreement with Belarus on inland navigation signed in Minsk in 1998."⁴⁷ This is most likely because of the poor and deteriorating diplomatic relations between Belarus and Ukraine, which have been caused by Belarus's assistance in Russia's full-scale invasion. Nevertheless, the Save Polesia organization maintains that their campaigning (and their Ukrainian partners' campaigning) may "also have played a role in the decision of the Ukrainian government to suspend agreements with Belarus concerning inland waterways."⁴⁸

During the occupation of Chornobyl, workers of the Chornobyl Nuclear Power Plant were held hostage and only occasionally allowed to rotate shifts. Due to the invasion, forest fires were ignited in the Zone, rereleasing radionuclides stored in plants and trees. The occupation of Chornobyl was a form of nuclear terrorism, which, as of 2024, the Russian Federation continues to practice at the Zaporizhzhia Nuclear Power Plant in southeastern Ukraine, posing great threats not only to the workers and residents of these areas but also to international security.

During the month that Russian forces occupied the Chornobyl Zone, they were busy. Photos captured by drones and satellites show that Russian soldiers were commanded to dig a labyrinth of trenches around the Red Forest, the most radioactive part of the Chornobyl Zone, encountering long-lasting and purposefully buried radionuclides and exposing themselves to high, possibly life-threatening doses of radiation.⁴⁹ From the photos, it looks as if the Russian army commanders declared war on the Red Forest: trees blasted, earth bulldozed, sand and soil piled up, root limbs akimbo, helplessly facing the sky. This is the kind of landscape that the development of the E40 waterway would produce across many miles.

While digging, the soldiers camped for several weeks in the Red Forest, where, in a day, a person can get the maximum allowable annual dose of radioactivity for nuclear plant operators. After a month, some soldiers reportedly fell ill and went on strike, demanding they leave the zone.⁵⁰ Debates ensue over what caused the mysterious illness and one reported death—whether it was radioactivity or some other cause. The episode shows a version of the strange haunting Korolenko fictionalized at the start of the twentieth century. In the twenty-first century, the danger in anthropogenic wilderness shifted from wildlife and wild people to feral toxins and roving contaminants that can, if one disturbs them, attack. Buried strontium and plutonium are new natures, just as wild and as given to hide and ambush as the old discarded nature of boar and wolves. We see, then, that ecological and human disasters are tightly bound up with each other and that threats to radioactive ecosystems involve compounding catastrophes of the past. In Polissya, it is the management and manipulation of water and aquatic ecosystems that keep radiation at bay.

Our chapter has centered on the wider wet landscape of the Polissya region to understand the nuclear-water nexus beyond the spatial confines of nuclear power plants, their cooling ponds, pipes, valves, and pumps. To do

so, we turned to those familiar with the landscape and its aquatic ecologies. Centering these voices resisting development of this contaminated wetland, we highlight how nuclear catastrophes are reanimated due to the agencies of the elements, be that via forest fires, climate change-induced floods, or, in this case, hydrological cycles and anthropogenic disturbance in a contaminated river system. The Chernobyl nuclear catastrophe is made to reoccur when the landscape is disturbed. The policy ambition behind creating a Zone of Alienation was to allow long-living radioactive isotopes to decay in an undisturbed state. Turning the Chernobyl zone into a major waterway redefines the Zone of Alienation as a Zone of Exchange.

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