

## Contention 1 is Accidents

### **Trump is decking NRC independence allowing companies to skip steps causing Fukushima 2.0**

**Macfarlane 25** [Allison Macfarlane, Professor and director of the School of Public Policy and Global Affairs at the University of British Columbia, 2-21-2025, Trump just assaulted the independence of the nuclear regulator. What could go wrong?, Bulletin of the Atomic Scientists, <https://thebulletin.org/2025/02/trump-just-assaulted-the-independence-of-the-nuclear-regulator-what-could-go-wrong/>, GZR]

**President Trump, through** his recent **Executive Order**, has **attacked independent regulatory agencies in the US government**. This order gives the Office of Management and Budget power over the regulatory process of until-now independent agencies. **These regulatory agencies include the Federal Elections Commission, the Federal Trade Commission, the Securities and Exchange Commission, the Federal Energy Regulatory Commission**—and my former agency, the Nuclear Regulatory Commission, which I chaired between July 2012 and December 2014.

**An independent regulator is free from industry and political influence. Trump's executive order flies in the face of this basic principle by requiring the Office of Management and Budget to "review" these independent regulatory agencies' obligations** "for consistency with the President's policies and priorities." **This essentially means subordinating regulators to the president.**

In the past, the president and Congress, which has oversight capacity on the regulators, stayed at arm's length from the regulators' decisions. This was meant to keep them isolated, ensuring their necessary independence from any outside interference. Trump's executive order implies there are no longer independent regulators in the United States.

Independent regulators should not only be free from government and industry meddling; they also need to be adequately staffed with competent experts and have the budget to operate efficiently. They also need to be able to shut down facilities such as nuclear power plants that are not operating safely, according to regulations. To do this, they need government to support their independent decisions and rulemaking.

**Independence matters.** When I was chairman, I traveled the world talking about the importance of an independent regulator to countries where nuclear regulators exhibited a lack of independence and were subject to excessive industry and political influence. It is ironic that the US Nuclear Regulatory Commission—often called the "Gold Standard" in nuclear regulation—has now been captured by the Trump administration and lost its independence. So much for the Gold Standard; the Canadian, the French, or the Finnish nuclear regulator will have to take on that mantle now.

**To understand what is at stake, one needs to look no further than the Fukushima accident** in March 2011, **which showed the world how a country's economic security is vulnerable to a captured regulator.** After a magnitude 9.0 earthquake followed by a massive tsunami, the Fukushima Daiichi nuclear power plant, with its six reactors on Japan's east coast, lost offsite power. The tsunami flooded their backup diesel generators, and the plant fell into the station blackout, leading to the complete loss of all power on site.

With no power to operate pumps to get cooling water into the reactors' cores or into spent fuel storage pools, three reactor cores melted down—the first within hours of loss of power—with a concomitant release of large amounts of radionuclides due to containment breaches from hydrogen explosions.

Firefighters desperately tried to get water into the spent fuel pool of Unit 4 to ensure that pool water did not boil off since the pumps were no longer working. Should the spent fuel rods have become uncovered and no longer cooled, the fuel's temperature would rapidly increase, and the fuel rods would melt, causing the release of even larger amounts of radiation material into the atmosphere threatening the Tokyo metropolitan area. Fortunately, the emergency workers got water to the pool within a few days of the fuel being uncovered.

Nonetheless, 160,000 people evacuated from the area near the reactors and along the corridor of radiation contamination to the northwest of the Fukushima Daiichi plant. Overnight, the agricultural and fishing industries near Fukushima were devastated. **Within a year after the**

**accident, all 54 reactors in Japan were shut down—a loss of about a third of the country’s electricity supply.** More expensive diesel plants had to be set up to compensate for some of the missing power. The direct economic costs of the accident were estimated to be on the order of \$200 billion—and even that number excluded the costs of replacing the lost power and multiple reactor shutdowns due to the reassessment of seismic hazards. **Nearly 14 years later, only 13 nuclear reactors have been turned back on, and 21 have been permanently shut down.** (The other 20 reactors are waiting for regulatory and prefecture approval.)

An independent investigation by the Diet (Japan’s house of parliament) into the cause of the Fukushima accident concluded unequivocally that: **“The TEPCO Fukushima Nuclear Power Plant accident was the result of collusion between the government, the regulators and TEPCO, and the lack of governance by said parties.** They effectively betrayed the nation’s right to be safe from nuclear accidents.” Japan’s government and nuclear industry continue to struggle with the clean-up of the Fukushima site, and it purposely began in 2023 to release still-contaminated water into the Pacific Ocean. Nearby countries responded by banning fishing products from the region.

As the industry often says, **a nuclear accident anywhere is a nuclear accident everywhere.** After the Fukushima accident, the US nuclear industry spent over \$47 billion in safety upgrades to respond to lessons learned from the Fukushima accident. **These included the realization that not only more than one reactor could fail at a single power plant,** but also that backup generators needed to be in safe locations, not subject to flooding and other forms of failure; that generic fittings for pumps and equipment were needed so that any nearby equipment could be connected during an accident; that containments should be able to be vented remotely; that natural events such as earthquakes and flooding could be underestimated in the original reactor designs; and that spent fuel pools needed to provide real-time data in accident conditions. The upgrades that resulted from these lessons have greatly increased the safety of reactors in the United States and elsewhere. They were required because each of these upgrades was deemed necessary to address the lessons learned by the independent regulator. On its own, the industry might not have undertaken any of these measures.

What could go wrong? **Several possible outcomes could occur because of Trump’s new executive order assaulting the independence of the Nuclear Regulatory Commission** (NRC).

**Proponents of small modular reactors,** for instance, **have pressured Congress and the executive branch to reduce regulation** and hurry the NRC’s approval of their novel—and **unproven—reactor designs.** **They wish their reactors could be exempted from the requirements that all other designs before them have had to meet: detailed evidence that the reactors will operate safely** under accident conditions. Instead, **these proponents—some with no experience in operating reactors—want the NRC to trust their simplistic computer models** of reactor performance **and essentially give them a free pass to deploy their untested technology** across the country.

An accident with a new small modular reactor (SMR) would perhaps not make such a big mess: After all, the source term of radiation would be smaller than with large reactors, like those currently operating in the United States. But the accident in Japan demonstrated that countries should expect that more than one reactor at a given site can fail at the same time, and these multiple failures can create even more dire circumstances, impeding the authorities’ ability to respond to such a complex radiological emergency. At Fukushima, the first explosion at Unit 1 generated radioactive debris that prevented emergency responders from getting close to other damaged reactors nearby. Since designers plan to deploy multiple SMR units to individual sites, such an accidental scenario appears feasible with SMRs.

Since its creation in 1975, the Nuclear Regulatory Commission has had an excellent and essential mission: to ensure the safety and security of nuclear facilities and nuclear materials so that humans and the environment are not harmed. **Trump’s incursion means the agency will no longer be able to fully follow through with this mission independently**—and Americans will be more at risk as a result. **If any US reactor suffers a major accident, the entire industry will be impacted**—and perhaps **its 94 reactors in operation will even be temporarily shut down.** Can the industry and the American people afford the cost of losing the independence of the nuclear regulator?

## **AND Energy Secretary Chris Wright has a history of neglecting safety.**

**Accountable 25** [Accountable US (Accountable.US (A.US) is a nonpartisan, 501(c)3 organization that shines a light on special interests that too often wield unchecked power and influence in Washington and beyond.) February 4, 2025, Watchdog: Senate Confirms Oil Man & Serial Workplace Safety Violator Chris Wright as Trump's Energy Secretary", <https://accountable.us/watchdog-senate-confirms-oil-man-serial-workplace-safety-violator-chris-wright-as-trumps-energy-secretary/>, GZR]

WASHINGTON, D.C. – Following the Republican-led Senate's vote to confirm Chris Wright as **U.S. Energy Secretary**, Accountable.US Executive Director Tony Carrk released the following statement: "The choice of Chris Wright to run the powerful Energy Department was based on what's best for the bottom line of Donald Trump's big oil megadonors, not everyday consumers and workers. With his Project 2025 ties and financial stakes in the big oil and nuclear industry, Wright is just the wealthy insider Trump needs to carry out his plans for padding profits of energy special interests – even if it means higher prices at the pump. And with Wright's company's history of violating workplace safety standards and anti-discrimination laws, he's now in the driver's seat to sweep such problems under the rug for his industry friends." BACKGROUND: Conflicts Of Interest With Energy Companies **Chris Wright is a member of the board of Oklo nuclear company and has business before the Department of Energy. Oklo's application before the Nuclear Regulatory Commission was previously denied due to a lack of information about accidents and safety. Chris Wright claims he will step down from the board, but questions remain about whether he will fairly regulate and ensure accountability from energy industries** when he has spent so much of his career working for and serving on the boards of oil and gas and nuclear energy companies. Project 2025 Wright has been on the board of the Western Energy Alliance, an oil industry trade group that authored many of Project 2025's oil and gas provisions. Chris Wright has been a member of the board of Western Energy Alliance (WEA) WEA is an oil industry trade group. WEA's president authored the oil and gas provisions of Project 2025. Project 2025 would eliminate "key offices at the DOE, including the Office of Energy Efficiency and Renewable Energy, the Office of Clean Energy Demonstrations, the Office of State and Community Energy Programs, the Office of Grid Deployment, and the Loan Programs Office." Workplace Safety and Racial Harassment **Questions remain whether Wright will look the other way when energy companies violate safety standards** and anti-discrimination laws, considering his company, Liberty Energy, was frequently fined over workplace safety standards and paid \$265,000 to settle lawsuits from black and Hispanic employees who faced hostile work environment and were called slurs. **Under Chris Wright's leadership, Liberty Energy has faced at least three separate penalties for workplace and safety violations** since 2023. Liberty Energy, in 2024, paid \$265,000 to settle an EEOC discrimination lawsuit after black and Hispanic field mechanics faced racial harassment.

## **Affirming gives Wright the keys.**

**Lynch 25** [James Lynch, news writer for National Review & B.A. in Political Science from Notre Dame, 2-7-2025, Chris Wright Makes Unleashing Nuclear Power Priority for American Energy Abundance, National Review, <https://www.nationalreview.com/news/chris-wright-makes-unleashing-nuclear-power-priority-for-american-energy-abundance/>, Willie T.]

In a letter to sent Thursday, American Nuclear Society CEO Craig Piercy suggested that Wright focus securing congressional appropriations to fulfill his promises about advancing the nuclear power industry and supporting innovative reactors.

"Many in the industry think **additional government support will be needed to reach nth-of-a-kind nuclear plant construction costs**, while others believe rising electricity demand alone will take care of that in time," the letter reads.

**"Either way, as secretary of energy, you will need appropriations to engineer any kind of nuclear 'win.' You will spend more time than you think preparing budgets,** arguing with the Office of Management and Budget over what's included, and then defending said budgets on Capitol Hill. Don't let the bean counters steal from you!"

## **Accidents cause BioD Loss.**

**Olsson 11** [Henrik von Wehrden, Joern Fischer, Patric Brandt, Viktoria Wagner, Klaus Kümmerer, Tobias Kuemmerle, Anne Nagel, Oliver Olsson, Patrick Hostert, 12-28-2011, Chair of Material Resources, Institute of Environmental Chemistry, Leuphana University Lüneburg, Scharnhorststr, 1, 21335 Lüneburg, Germany "Consequences of nuclear accidents for biodiversity and ecosystem services," Society for Conservation Biology,  
<https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/j.1755-263X.2011.00217.x>, DOA: 3/30/2025] JZ

To characterize and quantify the potential **consequences of nuclear accidents for biodiversity and ecosystem services, we reviewed 521 published studies investigating the impacts of the Chernobyl disaster**, which, until now, has been the only available baseline event to empirically judge the consequences of catastrophic nuclear accidents (see online Supplementary Material for Methods). Specifically, our study aimed to (1) provide a summary of the spatial and temporal patterns of the documented effects of the Chernobyl disaster on a wide range of organisms, and (2) discuss the implications of nuclear accidents for the provision of ecosystem services, again, drawing on documented evidence in the aftermath of the Chernobyl accident. We conclude with four tangible take-home messages, intended to be **directly relevant to debates about the future of nuclear energy**.

Consequences or impacts to species

Spatially, the documented effects of the Chernobyl disaster broadly follow known fallout patterns (Figure 1). However, variance in radiation levels is extremely high, not only between but also within sites. At a given study location, radiation levels have been shown to vary from 44,300 to 181,100 Becquerel per kilogram (Bq/kg) for mushrooms in southern Sweden (Mascanzoni 2009), from 3,000 to 50,000 Bq/kg for bats in Chernobyl (Gashchak et al. 2010), and from 176 to 587,000 Bq/kg for higher plants in southwestern Russia (Fogh & Andersson 2001); the latter equals almost a hundred times the threshold (600 Bq/kg) set by the European Union for Food that is deemed safe for consumption. High variance in radiation levels means that fallout maps based on extrapolations, models, and climate forecasts are not sufficient to evaluate radiation levels on a fine scale—field data are critically important for this purpose. Furthermore, radiation levels measured in the field and predicted fallout patterns based on meteorological data sometimes do not match (McAulay & Moran 1989), because additional factors, such as dry deposition, are not accounted for by climatic predictors (Arvelle et al. 1990). In addition, **some regions and types of ecosystems are systematically underrepresented in studies to date. For example, existing data is sparse for marine and aquatic ecosystems** (Figure 1).

Although many measurements were undertaken in the aftermath of the Chernobyl accident worldwide, existing **studies are greatly biased toward few taxonomic groups** (Figures 2 and 3). Most studies have focused on topsoil measurements and accumulation in the plant layer, which is where radiation can be most easily measured. **Despite this bias, it is clear that for most well-studied groups, greatly elevated radiation levels can occur up to thousands of kilometers away from the disaster site.** For example, recorded radiation levels in mushrooms were up to 13,000 Bq/kg in Denmark in 1991 (Strandberg 2003) and up to 25690 Bq/kg in Norway in 1994 (Amundsen et al. 1996).

**The consequences of elevated radiation levels in many parts of a given ecosystem remain poorly understood, but are likely substantial.** For example, rats showed changes in sleep behavior after drinking water poisoned with “only” 400 Bq/l (Lestaevl et al. 2006), and onions have shown a significantly elevated rate of chromosomal aberrations at levels as low as 575 Bq/kg (Kovalchuk et al. 1998).

Although numerous studies have investigated physiological and morphological alterations in the vicinity of the Chernobyl accident site, hardly any studies have quantified the possibility of such alterations at larger distances. This could be a major shortcoming, because **radiation levels are known to be greatly increased in some organisms even at large distances from the accident site** (see earlier)—physiological or morphological alterations, therefore, are plausible, at least in isolated instances. Where such alterations occur, their long-term consequences on the ecosystem as a whole can be potentially profound (Kummerer & Hofmeister 2009).

The legacies of the environmental consequences of the Chernobyl accident are still prevalent today, 25 years after the event. Although many studies have shown a peak in radiation immediately after the catastrophe and then a continuous decline, **radiation levels measured throughout the ecosystem are still highly elevated.** For example, radiation levels in mosses (Marovic et al. 2008), soil (Coppelstone et al. 2000), and glaciers (Tieber et al. 2009) have remained greatly elevated in several locations around Europe. The long-lasting legacy of the Chernobyl accident was also illustrated by intense wildfires in the Chernobyl region in 2010, which caused a renewed relocation of radioactive material to adjacent regions (Yoschenko et al. 2006). The persistence of high radiation levels can be attributed partly to the half-life rates of the chemical elements involved (e.g., 31 years for Caesium-137; 29 years for Strontium-90; and 8 days for Iodine-131).

In addition to elevated radiation levels, **morphological and physiological changes are by definition long-term in nature, and can even be permanent if genetic alterations occur.** For example, a range of bird species now have

developed significantly smaller brains inside the core zone around the Chernobyl reactor site compared to individuals of the same species outside this zone (Møller et al. 2011). The consequences of such changes on long-term evolutionary trajectories remain largely unknown.

**Lethal mutations following exposure to nuclear fallout have been observed in various plant** (Abramov et al. 1992; Kovalchuk et al. 2003) and animal species (Shevchenko, et al. 1992; Zainullin et al. 1992), yet research has mainly been conducted within the Chernobyl region. Morphological changes have also been observed in a wide array of species, including plants (Tulik & Rusin 2005), damselflies (Muzlanov 2002), diptera (Williams et al. 2001), and mice (Oleksyk et al. 2004). In addition, some studies have documented.

**Physiological effects, such as changes in the leukocyte level (Camplani et al. 1999) and reduced reproduction rates** (Møller et al. 2008). **Changes in genetic structure** have been recorded in various organisms, including fish (Sugg et al. 1996) and frogs (Vinogradov & Chubinishvili 1999). More broadly, elevated radiation can **negatively affect the abundance of entire species groups**, such as insects and spiders (Møller & Mousseau 2009a), raptors (Møller & Mousseau 2009b), or small mammals (Ryabokon & Goncharova 2006).

How low levels of radiation affect different species is poorly understood; studies have suggested that low levels of radiation can have a **persistent influence on mutation rates** in *Drosophila* (Zainullin et al. 1992), and can **weaken immune (Malyzhev 1993) and reproductive systems (Serkiz 2003) of small mammals**; but again, most studies have been restricted to the Chernobyl accident area. A more obvious measure of permanent change is widespread death of organisms living in the direct vicinity of the disaster site (Figures 1 and 2).

#### Food web and ecosystem impacts

In addition to effects on individual species, **biological accumulation through the food web can negatively affect some species**—particularly those at higher trophic levels and those depending on strongly affected food items. Bioaccumulation poses a risk to affected species because it **exacerbates exposure to elevated radiation levels, and hence, leads to increased chances of physiological or morphological alterations**. For example, can radiation levels in top predators remain elevated for a long time even when species at lower trophic levels show negligible radiation levels, as demonstrated for the Trench (Tinca tinca) in the Kiev Reservoir (Koulikov 1996).

## Extinction!

**Torres 16** [Phil Torres, biologist, science communicator, 2-10-2016, "Biodiversity Loss and the Doomsday Clock: An Invisible Disaster Almost No One is Talking About," Common Dreams, <https://www.commondreams.org/views/2016/02/10/biodiversity-loss-and-doomsday-clock-invisible-disaster-almost-no-one-talking-about>, DOA: 3/30/2025] JZ

But there's another global catastrophe that the Bulletin neglected to consider -- **a catastrophe that will almost certainly have conflict multiplying effects no less than climate change. I'm referring here to biodiversity loss** -- i.e., the reduction in the total number of species, or in their population sizes, over time. The fact is that in the past few centuries, the loss of biological diversity around the world has accelerated at an incredible pace. Consider the findings of a 2015 paper published in Science Advances.

According to this study, we've only recently entered the **early stages of the sixth mass extinction event in life's entire 3.5 billion year history**. The previous mass extinctions are known as the "Big Five," and the last one wiped out the dinosaurs some 65 million years ago. Unlike these past tragedies, though, the current mass extinction -- called the "Holocene extinction event" -- is almost entirely the result of a one species in particular, namely *Homo sapiens* (which ironically means the "wise man").

"If the environment implodes under the weight of civilization, then civilization itself is doomed."

But **biodiversity loss isn't limited to species extinctions**. As the founder of the Long Now Institute, Stewart Brand, suggests in an article for Aeon, one could argue that a more pressing issue is the reduction in population sizes around the globe. For example, the 3rd Global Biodiversity Report (GBO-3), published in 2010, found that the total abundance of vertebrates -- a category that includes mammals, birds, reptiles, sharks, rays, and amphibians -- living in the tropics declined by a whopping 59% between 1970 and 2006. In other words, the population size of creatures with a spine more than halved in only 36 years. The study also found that farmland birds in Europe have declined by 50% since 1980, birds in North America have declined by 40% between 1968 and 2003, and nearly 25% of all plant species are currently "threatened with extinction." The latter statistic is especially worth noting because many people suffer from what's called "plant blindness," according to which we fail "to recognize the importance of plants in the biosphere and in human affairs." Indeed, plants form the very bottom of the food chains upon which human life ultimately depends.

Even more disturbing is the claim that amphibians "face the greatest risk" of extinction, with "42% of all amphibian species ... declining in population," as the GBO-3 reports. Consistent with this, a more recent study from 2013 that focused on North America found that "frogs, toads

and salamanders in the United States are disappearing from their habitats ... at an alarming and rapid rate," and are projected to "disappear from half of the habitats they currently occupy in about 20 years." The decline of amphibian populations is ominous because amphibians are "ecological indicators" that are more sensitive to environmental changes than other organisms. As such they are the "canaries in the coal mine" that reflect the overall health of the ecosystems in which they reside. When they start to disappear, bigger problems are sure to follow.

Yet another comprehensive survey of the biosphere comes from the Living Planet Report -- and its results are no less dismal than those of the GBO-3. For example, it finds that the global population of vertebrates between 1970 and 2010 dropped by an unbelievable 52%. Although the authors refrain from making any predictions based on their data, the reader is welcome to extrapolate this trend into the near future, noting that as ecosystems weaken, the likelihood of further population losses increases. This study thus concludes that humanity would "need 1.5 Earths to meet the demands we currently make on nature," meaning that we either need to reduce our collective consumption and adopt less myopic economic policies or hurry up and start colonizing the solar system.

Other studies have found that 20% of all reptile species, 48% of all the world's primates, 50% of all freshwater turtles, and 68% of plant species are currently threatened with extinction. There's also talk about the Cavendish banana going extinct as a result of a fungus, and research has confirmed that honey bees, which remain "the most important insect that transfers pollen between flowers and between plants," are dying out around the world at an alarming rate due to what's called "colony collapse disorder" -- perhaps a good metaphor for our technologically advanced civilization and its self-destructive tendencies.

Turning to the world's oceans, one finds few reasons for optimism here as well. Consider the fact that atmospheric carbon dioxide -- the byproduct of burning fossil fuels -- is not only warming up the oceans, but it's making them far more acidic. The resulting changes in ocean chemistry are inducing a process known as "coral bleaching," whereby coral loses the algae (called "zooxanthellae") that it needs to survive.

Today, roughly 60% of coral reefs are in danger of becoming underwater ghost towns, and some 10% are already dead. This has direct consequences for humanity because coral reefs "provide us with food, construction materials (limestone) and new medicines." and in fact "more than half of new cancer drug research is focused on marine organisms."

Similarly, yet another study found that ocean acidification is becoming so pronounced that the shells of "tiny marine snails that live along North America's western coast" are literally dissolving in the water, resulting in "pitted textures" that give the shells a "cauliflower" or "sandpaper" appearance.

Furthermore, human-created pollution that makes its way into the oceans is carving out vast regions in which the amount of dissolved oxygen is too low for marine life to survive. These regions are called "dead zones," and the most recent count by Robert Diaz and his colleagues found more than 500 around the world. The biggest dead zone discovered so far is located in the Baltic Sea, and it's been estimated to be about 27,000 square miles, or a little less than the size of New Hampshire, Vermont, and Maryland combined. Scientists have even discovered an "island" of trash in the middle of the Pacific called the "Great Pacific Garbage Patch" that could be up to "twice the size of the continental United States." Similar "patches" of floating plastic debris can be found in the Atlantic and Indian oceans as well, although these are not quite as impressive. The point is that "Earth's final frontier" -- the oceans -- are becoming vast watery graveyards for a huge diversity of marine lifeforms, and in fact a 2006 paper in Science predicts that there could be virtually no more wild-caught seafood by 2048.

Everywhere one looks, the biosphere is wilting -- and a single bipedal species with large brains and opposable thumbs is almost entirely responsible for this worsening plight. If humanity continues to prune back the Tree of Life with reckless abandon, we could be forced to confront a global disaster of truly unprecedented proportions. Along these lines, a 2012 article published in Nature and authored by over twenty scientists claims that humanity could be teetering on the brink of a catastrophic, irreversible collapse of the global ecosystem. According to the paper, there could be "tipping points" -- also called "critical thresholds" -- lurking in the environment that, once crossed, could initiate radical and sudden changes in the biosphere. Thus, an event of this sort could be preceded by little or no warning: everything might look more or less okay, until the ecosystem is suddenly in ruins.

We must, moving forward, never forget that just as we're minds embodied, so too are we bodies environed, meaning that if the environment implodes under the weight of civilization, then civilization itself is doomed. While the threat of nuclear weapons deserves serious attention from political leaders and academics, as the Bulletin correctly observes, it's even more imperative that we focus on the broader "contextual problems" that could inflate the overall probability of wars and terrorism in the future. Climate change and biodiversity loss are both conflict multipliers of precisely this sort, and each is a contributing factor that's exacerbating the other. If we fail to make these threats a top priority in 2016, the likelihood of nuclear weapons -- or some other form of emerging technology, including biotechnology and artificial intelligence -- being used in the future will only increase.

Perhaps there's still time to avert the sixth mass extinction or a sudden collapse of the global ecosystem. But time is running out -- the doomsday clock is ticking.



## Contention 2 is Poland

### **Poland wants nukes BUT lacks capacity.**

**Naughtie 25** [Andrew Naughtie, BSc in Sociology @ the University of Bristol & MA in Social Sciences from UChicago, 3-21-2025, Could another European country develop its own nuclear weapons?, EuroNews, <https://www.euronews.com/2025/03/21/could-another-european-country-develop-its-own-nuclear-weapons>, Willie T.]

Building up a nuclear deterrent from scratch is **no easy feat**, but with the US distancing itself from Europe, the idea has **started to resurface**.

"Poland must pursue the most advanced capabilities, including **nuclear** and modern unconventional weapons," Polish Prime Minister Donald Tusk told his country's **parliament** earlier this month. "This is a serious race — a race for security, not for war."

Coming **as the Trump** administration signalled it is **essentially pulling back** from protecting Europe, Tusk's statement seemed to suggest a potential **lurch toward nuclear weapons** proliferation in Europe — something at odds with decades of European policy.

While questions remain over the US' ongoing commitment to its role as Europe's nuclear security guarantor, **China is expanding** its nuclear **arsenal**. And **Russia**, which maintains the world's largest stockpile of warheads, **repeatedly invokes the threat of using them** to warn NATO and the EU against getting directly militarily involved in Ukraine.

The overall picture raises two difficult questions. How can Europe maintain a continent-wide nuclear deterrent? And is there a possibility that other countries will join the nuclear club?

Although some European states have some of the elements required to develop independent nuclear weapons capability, experts say **the chances of another European state going nuclear are slim.**

Starting from scratch

According to Fabian Rene Hoffmann, a research fellow at the Oslo Nuclear Project, even if one of Europe's NATO powers were keen to develop its own nuclear weapons rather than simply hosting them, it would find itself at a standing start.

"The major issue European countries are facing is that **they** either **don't deploy the civilian nuclear infrastructure** to launch a nuclear weapons programme, or, if they have civilian nuclear infrastructure, that it is highly 'proliferation-resistant'," he told Euronews.

"For example, Finland and Sweden only have light-water reactors, which are not suitable for the production of weapons-grade plutonium. In addition, neither of those countries have chemical reprocessing plants that are needed for separating wanted from unwanted isotopes in fissile material production."

### **They've turned to American company Westinghouse.**

**Hayden 22** [Jones Hayden, Energy & Climate Correspondent @ Politico, 10-29-2022, Poland picks Westinghouse to build its first nuclear plant, POLITICO, <https://www.politico.eu/article/poland-picks-westinghouse-to-build-its-first-nuclear-power-plant/>, Willie T.]

**Poland awarded** a contract to build its first **nuclear** power **plant to a U.S. bid** as the country seeks to burn less coal **and** increase its energy independence.

The government in Warsaw chose Westinghouse for the nuclear project, Prime Minister Mateusz Morawiecki said late Friday in a tweet praising the U.S. company's "reliable, safe technology."

"A strong Poland-U.S. alliance guarantees the success of our joint initiatives," Morawiecki said.

### **America's provided funding BUT only more allows completion.**

**Brodacki 25** [Dominik Brodacki, analyses the energy and fuels sector + co-author of the PI Energy briefing + expert at the Ignacy Lukaszewicz Institute for Energy Policy since 2016 + lawyer for Polish and foreign companies + Author of scientific publications, reports and market analyses, including on energy policy, energy law, nuclear power, offshore wind energy and district heating sector + Graduated in Law and European Studies from the University of Warsaw, 2025, Nuclear Energy in Poland: Assessment of Readiness for the Construction of the First Nuclear Power Plant, Baker McKenzie, [https://www.bakermckenzie.com/-/media/files/locations/poland/nuclear-energy-in-poland/baker-mckenzie-polityka-insight-report-nuclear-energy-in-poland-2025\\_eng.pdf](https://www.bakermckenzie.com/-/media/files/locations/poland/nuclear-energy-in-poland/baker-mckenzie-polityka-insight-report-nuclear-energy-in-poland-2025_eng.pdf), Willie T.]

The above also makes it difficult to precisely determine the final cost of building NPP1 (despite the indicative amount of PLN 192 billion given by the Council of Ministers in its notification to the EC). This is because it depends, among other things, on the outcome of the power plant design process (which will determine the specific solutions to be applied), discussions with the EC and the detailed provisions of the EPC contract. As a result, it is not possible at this stage to make a final decision on the detailed method of financing the investment.

### **None of the nuclear projects under construction in Poland has fully secured financing.**

The investment in NPP1 is the most advanced in this respect – as mentioned above, its implementation is to be supported by public funds, including in the form of a direct capital injection into the NPP of around PLN 60.2 billion.

In February 2025, the Parliament adopted an amendment to the Special Nuclear Act, according to which state aid will be transferred to PEJ in the form of a capital increase by the State Treasury in exchange for shares in the company. Of this amount, PEJ is to receive for the preparation and implementation of the construction of NPP1 and accompanying investments, as well as its current operations: PLN 4.6 billion in 2025, PLN 11 billion in 2026, PLN 14 billion in 2027, PLN 13 billion in 2028, PLN 11 billion in 2029 and PLN 6.6 billion in 2030.

It is known that their disbursement will be possible only after the EC approval following the notification of the support programme for the construction and operation of NPP1.

Approximately 70% of the construction costs of NPP1 will be covered by external financing, of which two-thirds will be provided by export credit agencies and the rest by commercial financial institutions. PEJ has secured declarations (in the form of letters of intent) of financial commitment for approximately PLN 95 billion from, among others: the Export-Import Bank of the United States (EXIM), U.S. International Development Finance Corporation, Bpifrance Assurance Export, Sfil and Export Development Canada. Taking into account the aforementioned capital injection of around PLN 60.2 billion, there are still tens of billions missing to cover the estimated project budget (around PLN 192 billion).

### **Empirically, US investment in Westinghouse got the project started.**

**Kraev 21** [Kamen Kraev, senior editor and secretary-general at NucNet, 9-24-2021, Poland/US Wants To Speed Up Westinghouse AP1000 Study, Says Energy Secretary Granholm, NucNet, <https://www.nucnet.org/news/us-wants-to-speed-up-westinghouse-ap1000-study-says-energy-secretary-granholm-9-5-2021>, Willie T.]

The US government wants to accelerate its support for a front-end engineering and design study for the deployment of US-made AP1000 reactor technology in Poland, US energy secretary Jennifer Granholm said.

In July, US-based Westinghouse Electric Company and Bechtel Corporation announced the start of the study, which will provide Poland's Polskie Elektrownie Jądrowe (PEJ) – the company responsible for managing the country's first nuclear power project – with layout plans for the location of a first nuclear



power station, together with a licensing plan, project schedule and cost estimate.

The **US Trade and Development Agency** has released a grant to **fund** the study.

“US industry and government have come together at a critical juncture in the development of Poland’s nuclear energy programme,” Ms Granholm said during a press conference in Warsaw.

### **Steps to proliferate cause pre-emption.**

**Hoffmann 24** [Fabian Hoffmann, Doctoral Research Fellow @ the University of Oslo, 1-29-2024, The Future of the Zeitenwende: Scenario 5—Poland Becomes a Nuclear Power, International Politik Quarterly, <https://ip-quarterly.com/en/future-zeitenwende-scenario-5-poland-becomes-nuclear-power>, Willie T.]

Similarly, given that Polish nuclear proliferation might occur in the context of a crumbling nuclear order where non-proliferation norms have already been drastically undermined by several other instances of nuclear proliferation, any outcry based on the normative implications of Polish nuclear proliferation may be limited.

Finally, **active steps by Poland toward a nuclear deterrent** may temporarily destabilize the European security environment, due to **heightened pressures on the Russian side for military operations aimed at preempting a Polish nuclear arsenal.** Once Poland has acquired nuclear weapons, Poland’s nuclear deterrent may serve to reinforce European deterrence. This being said, the exact dynamics that a Polish nuclear acquisition might induce into Europe’s security architecture are impossible to predict from today’s point of view.

### **NATO-Russia war goes nuclear.**

**Kulesa 18** [Lukasz Kulesa; Director of Proliferation and Nuclear Policy at the Royal United Services Institute; 02-01-2018; "Envisioning a Russia-NATO Conflict: Implications for Deterrence Stability"; JSTOR; <https://www.jstor.org/stable/resrep17437>; accessed 11-14-2024] leon

Escalation: Can a NATO - Russia conflict be managed?

Once a conflict was under way, the “fog of war” and rising unpredictability would inevitably set in, complicating the implementation of any predetermined theories of escalation, deescalation and inter-conflict management. The actual dynamics of a conflict and the perceptions of the stakes involved are extremely difficult to predict. Simulations and table-top exercises can give only limited insights into the actual decision-making processes and interactions.

Still, **Russian military theorists** and practitioners seem to **assume** that a **conflict with NATO can be managed and controlled** in a way that would bring it to a **swift end** consistent with **Russian aims**. The **Russian theory of victory** would seek to **exploit weak points** in an Alliance war effort. Based on the **conviction** that **democracies are weak** and their leaders and populations are **risk-averse**, Russia may **assume** that its **threats of horizontal or vertical escalation** could be particularly **effective**. It would also **try to bring home the notion** that **it has much higher stakes in the conflict** (regime survival) **than** a majority of the **NATO members** involved, **and** thus **will be ready to push the boundaries of the conflict further**. It would most likely **try to test and exploit potential divisions within the Alliance, combining selective diplomacy and activation of its intelligence assets in some NATO states** with a degree of selectivity in terms of targets of particular attacks.

**Any** NATO-Russia **conflict would inevitably have a nuclear dimension**. The role of **nuclear weapons** as a tool for **escalation control** for Russia has been thoroughly **debated by experts**, but **when and how Russia might use** (and not merely showcase or activate) **nuclear weapons** in a conflict remains an **open question**. **Beyond**

catch phrases such as “escalate to de-escalate” or “escalate to win” there are a **wider range of options** for Russian **nuclear weapon use**. For example, a **single nuclear warning shot** could be **lethal or non-lethal**. It could be **directed against a purely military target or a military-civilian one**. **Detonation could be configured for an EMP effect**. A **“false flag” attack** is also **conceivable**. **These options** might be used to **signal escalation and could significantly complicate NATO’s responses**.

Neither NATO nor its member states have developed a similar theory of victory. Public NATO documents stipulate the general goals for the Alliance: defend against any armed attack and, as needed, restore the full sovereignty and territorial integrity of member states. It is less clear how far the Alliance would be willing to escalate the conflict to achieve these goals, and what mechanisms and means it would use while trying to maintain some degree of **control** over the conflict.

The goals and methods of waging a conflict with Russia would probably have to be limited in order to avoid a massive nuclear exchange. Such limitations would also involve restrictions on striking back against targets on Russian territory. But too narrow an approach could put too much restraint on NATO’s operations: the Russian regime’s stability may ultimately need to be threatened in order to force the leadership into terminating the conflict. NATO would thus need to establish what a proportional self-defence response to Russian actions would involve, and to what extent cyber operations or attacks against military targets in quite different parts of Russia would be useful as tools of escalation to signal NATO’s resolve. Moreover, individual NATO Allies, especially those directly affected by Russia’s actions, might pursue their individual strategies of escalation.

With regards to the nuclear dimension in NATO escalation plans, given the stakes involved, this element would most likely be handled by the three nuclear-weapon members of the Alliance, with the US taking the lead. The existence of three independent centres of nuclear decision-making could be exploited to complicate Russian planning and introduce uncertainty into the Russian strategic calculus, but some degree of “P3” dialogue and coordination would be beneficial. This coordination would not necessarily focus on nuclear targeting, but rather on designing coordinated operations to demonstrate resolve in order to keep the conflict below the nuclear threshold, or bring it back under the threshold after first use.

Relying on concepts of **escalation control** and on lessons from the Cold War confrontation might be misleading. The **circumstances** in which a **Russia-NATO conflict would play out** would **be radically different from the 20th century** screenplay. Moreover, instead of gradual (linear) escalation or salami tactics escalation, it is possible to imagine surprising **“leap frog” escalation**, possibly connected with actions in different domains (e.g. a cyberattack against critical infrastructure). Flexibility, good intelligence and inventiveness in responding to such developments would be crucial.

Conflict termination

Russian and NATO assumptions regarding conflict termination would most likely not survive the first hours of an actual conflict. **Both sides** are capable of **underestimating the resolve of the other side to prevail** in a conflict **and the other side’s willingness to** commit the necessary resources and **endure the costs, especially once both sides start committing their political capital** and resources and the casualties accumulate.

## Extinction!

**Sarg 15** [Dr. Stoyan Sarg, 10-9-2015, Director of the Physics Research Department at the World Institute for Scientific Exploration, PhD in Physics, "The Unknown Danger of Nuclear Apocalypse," Foreign Policy Journal,

<https://www.foreignpolicyjournal.com/2015/10/09/the-unknown-danger-of-nuclear-apocalypse/>, accessed: 11-5-2023] // sid

With the new NATO plan for installation of nuclear tactical weapons in Europe, nuclear missiles may reach Moscow in only 6 minutes, and the opposite case is also possible in the same time. The question is: how can we be sure that this will not be triggered by a human error or computer malfunction. An adequate reaction dictated by the dilemma “to be or not to be” and the **concept of preventive nuclear strike may lead to a nuclear consequence that is difficult to stop**. At the present level of distributed controlled systems and military global navigations, **this will lead to unstoppable global nuclear war**. However, **there is something not predicted**, of which the military strategists, politicians and powerful forces are not aware. Probably, it will not

be a nuclear winter that they hope to survive in their underground facilities. The most probable consequence will be a partial loss of the Earth's atmosphere as a result of one or many powerful simultaneous tornadoes caused by the nuclear explosions. In a tornado, a powerful antigravitational effect takes place. The official science does not have an adequate explanation for this feature due to an incorrect concept about space. The antigravitational effect is not a result of the circling air. It is a specific physical effect in the aether space that is dismissed in physics as it is currently taught. Therefore, the effective height of this effect is not limited to the height of the atmosphere. Then in the case of many simultaneous powerful tornadoes, an effect of suction of the earth atmosphere into space might take place. Such events are observed on the Sun and the present physical science does not have an explanation for them. The antigravitational effect is accompanied by specific electric and magnetic fields with a twisted shape. This is observed in tornado events on the Sun. Some effects in the upper Earth atmosphere known as sprites have a similar combination of electrical and magnetic fields but in a weaker form. They are also a mystery for contemporary physical science.

At the time of atmospheric nuclear tests, made in the last century, a number of induced tornadoes are observed near the nuclear mushroom as shown in Figure 1.

The strongest antigravitational effect, however, occurs in the central column of the formed nuclear mushroom. The analysis of underwater nuclear tests also indicates a strong antigravitational effect. It causes a rise of a vertical column of water. In the test shown in Figure 2, the vertical column contains millions tons of water. Thermonuclear bombs are multiple times more powerful. The largest thermonuclear bomb of the former Soviet Union tested in 1961 is 50 megatons. It is 3,300 times more powerful than the bomb dropped by USA on Hiroshima at the second world war and may kill millions.

It is known that Mars once had liquid water and consequently an atmosphere that has mysteriously disappeared. If the scenario described above takes place, the Earth will become a dead planet like Mars. The powerful politicians, military adventurers and their financial supporters must be aware that even the most secured underground facility will not save them if a global nuclear conflict is triggered. Their disgraced end will be more miserable than the deaths of the billions of innocent human beings, including the animal world.

## Contention 3 is Russia

**Russia's economy is at the brink --- oil is Putin's last straw.**

**Matthews 25** [Owen Matthews, Degree in Modern History at Oxford University, 3-13-2025, The Russian economy is on the brink of collapse and Putin knows it, The Independent, <https://www.the-independent.com/news/world/europe/russia-economy-putin-ukraine-war-deal-talks-trump-b2714371.html>, Willie T.] **\*\*edited for objectionable language\*\***

How close is Russia's economy to collapse? As Donald Trump's negotiators open direct talks with the Kremlin, Kyiv's European allies hope that a final push on sanctions against Russia could be Ukraine's last – and best – hope of victory. Mr Trump has warned that the US could impose a “devastating” financial blow on Russia if Putin refuses to accept the ceasefire agreement. “There are things you can do that wouldn't be pleasant in a financial sense. I can do things financially,” he said in the Oval Office.

Putin intended his full-scale invasion of Ukraine to be a three-day operation that would force regime change in Kyiv. Neither Putin nor his military or economic planners anticipated a grinding war that now soaks up over 40 per cent of Kremlin spending.

Nor did they expect Europe to impose serious sanctions, and even less did they anticipate the destruction of three of the four Gazprom gas pipelines under the Baltic Sea that before the war supplied over 30 per cent of Europe's gas.

The result in Russia has been rampant inflation, currently running at over 9 per cent, [staggering] interest rates of 21 per cent and runaway price hikes on staple goods that far outpace the headline inflation rate and have hit ordinary Russians hard.

Last summer the price of eggs jumped by 42 per cent, bananas by 48 per cent, tomatoes by 39.5 per cent and potatoes by 25 per cent. The Russian ruble has lost over half of its value since Putin first invaded Crimea in 2014, and over \$600bn of the Kremlin's foreign currency reserves have been frozen in Western banks.

More than 1,000 Western businesses – including Ikea and McDonald's – pulled out, as did Western car manufacturers. Imports of Western goods – especially technology – are now expensively routed through sanctions-busting neighbours like Kazakhstan and Georgia. And last month Russian utility companies hiked prices for electricity by up to 250 per cent.

“Everyone drives Chinese cars these days, but there are no spare parts,” says Alexandra, 39, a former journalist who lives in Moscow and whose ex-husband is fighting in Ukraine. “The only foreign cars you buy are right-hand-drive [from Japan]. Anyone with a mortgage is paying crazy interest. People complain how expensive everything has become.”

Russia spent more on its military in 2024 than the rest of Europe combined, according to the International Institute for Strategic Studies' latest Military Balance report – a staggering \$462bn, if adjusted for purchasing power. The Kremlin's spending splurge on its war effort has produced some winners, notably the 1.5 million troops currently serving in Putin's army who are paid up to \$2,500 a month to fight – four times the average salary in Russia's most impoverished provinces.

Massive losses on the battlefield have worsened labour shortages, with a record-low unemployment rate of 2.4 per cent. Factories are running at capacity and beyond. Russia's economy has “reached the limits of its productive capacity while demand continues to be stimulated,” Central Bank chief Elvira Nabiullina warned the Russian parliament in November, predicting a fatal combination of economic stagnation and inflation known as “stagflation”.

For the first three years of the war, the Kremlin's war spending fuelled GDP growth which peaked at a staggering 5.4 per cent in early 2024. But 2025 will be the year that growth flatlines, experts predict.

The Kremlin has been able to afford its spending spree thanks, mostly, to India and China, which have continued to import Russian oil in record quantities. The EU has in theory capped the price that customers can pay for Russian Urals crude at \$60 a barrel – somewhat below the current market price of \$67. But so-called “attestation fraud” – such as making up the difference in fake transportation and other costs – makes the rules easy to bend.

Natural gas has never been sanctioned by the EU at all – and until 1 January of this year, 13 per cent of Europe’s piped gas was still being shipped from Russia through Ukrainian pipelines to Slovakia and Hungary.

### Ukrainian fire and fury are currently doing damage to Russia’s war economy that near-nonexistent European sanctions have failed to achieve

Southern Europe continues to import millions of cubic meters of Russian gas via Turkey. And despite its posturing, Europe still sources more than 15 per cent of its liquefied natural gas or LNG from Russia – with some 17.8m tonnes of LNG docking in European ports in 2024, up by more than 2 million tonnes from the year before, according to analysts Rystad Energy.

In fact the only really effective “sanctions” on the Russian energy sector – which accounts for over two-thirds of government revenues – have been in the form of Ukrainian drone attacks on Russian oil refineries, pumping stations and storage facilities. Ukrainian fire and fury are currently doing damage to Russia’s war economy that European “sanctions” have failed to achieve.

International pressure has made it harder, but not impossible, for the Russian war machine to obtain important components such as semiconductors. And sanctions have certainly “achieved the crucial goal of leaving Russia’s economy highly unstable in the medium to long term”, according to Oliver Ruth of London’s Royal United Services Institute.

The current crazy levels of expenditure are unsustainable, so Putin has a strong economic incentive to bring his war to an end. Ukraine’s economy is also under attack.

But on the flip side, even as Russia’s economy slips into stagflation Ukraine’s economy is doing far worse. Concerted Russian assaults, damage to vital energy infrastructure and mass emigration have inflicted catastrophic damage of up to 40 per cent of the country’s pre-war GDP. Kyiv’s budget payments to millions of soldiers and state employees are currently being paid by the EU. Without those subsidies – the lion’s share of the €60bn in direct financial support so far sent by Brussels – Ukraine’s government finances would instantly collapse.

Ukraine’s European allies hoped that sanctions would force Putin into taking an early off ramp and bring his economy crashing down. That hasn’t yet happened yet – largely because Europe has been unable to kick its addiction to Russian gas, and the US did not want to risk a global oil price spike by cutting off Russian exports.

But while they have not brought Putin to his knees, they have made the war disastrous for Russia. As Moscow and Washington begin talks in Riyadh, and European leaders hold their own emergency meeting, keeping up economic pressure on Putin is the real weapon that they still have left in their arsenal.

### Sanctions won’t come.

**Bush 25** [Daniel Bush, Master of Arts in U.S. politics @ Columbia & B.A. from NYU, 3-13-2025, If Trump wants new pressure on Moscow, oil and gas is 'only thing left', Newsweek, <https://www.newsweek.com/if-trump-wants-new-pressure-moscow-oil-gas-only-thing-left-2044476>, Willie T.] \*\*brackets in original\*\*

Perhaps Trump's best available option to pressure Moscow is the one thing he might be least willing to do, experts said: put a much tighter squeeze on Russia's oil and gas exports, which provide Russia with its main source of revenue and help pay for the war in Ukraine.

"If you're trying to get to a quicker settlement to the conflict in Ukraine, that's what you go after, those continued [Russian] energy sales," said Emily Kilcrease, a senior fellow at the Center for a New American Security. "It's the only thing left."

But Kilcrease said the **Trump** administration may be **hesitant** to take a "full-blown approach **on energy-related sanctions against Russia**, because that would cause additional turmoil" during a **moment of rising economic uncertainty** at home over the president's trade policies.

**Trump's domestic energy agenda** also **makes it harder** for him **to go after** the **heart of Russia's economy**. He has blamed his predecessor for the rise in energy prices that was largely driven by Russia's invasion of Ukraine, and ran on a promise to cut costs and lower inflation. A new spike in prices at the pump sparked **by tougher energy sanctions on Russia could backfire with voters**, analysts said.

"President **Trump** came in **promising to drive prices at the pump down** by half. That highlights the **delicate needle he has to thread in engaging with Russia** on energy right now," said Mark Finley, an energy expert at Rice University's Baker Institute. "I suspect **they'll be very cautious about** sanctions that would risk **taking Russian barrels off the market place.**"

Russia has found ways to skirt the sanctions, however, including by relying on a so-called "shadow fleet" of vessels to continue exporting oil by sea. Russia has also continued exporting natural gas to parts of Europe and ramped up its energy exports to China, India and other countries that have not participated in the sanctions.

**Russian oil and gas revenue increased by 26 percent** to \$108 billion last year, a Reuters report shows. **The European Union spent more on Russian oil and gas in 2024 than it did on financial assistance to Ukraine**, according to a study published last month by the Centre for Research on Energy and Clean Air.

So far, **the West "hasn't wanted to put real pressure** on Russia," Oleksandr Merezhko, the chairman of the Ukraine Parliament's Foreign Affairs Committee, said in a phone interview with *Newsweek*. **Trump could do that, he said, "by depriving Russia of the profits it receives from selling oil and gas."**

There are several steps the U.S. and allies could take, Merezhko and others said. They include lowering the price cap on Russian oil, cracking down harder on the shadow fleet operators and placing secondary sanctions on companies and trading partners like China that continue buying Russian energy.

## **Affirming decreases oil demand AND insulates Americans from sanctioning Russia.**

**Zadrowski 24** [William Zadrowski, Squadron Commander @ the USAF Academy & bound for B.S. in Military and Strategic Studies, 12-8-2024, Nuclear Energy: The Overlooked Energy Solution, Modern Diplomacy, <https://moderndiplomacy.eu/2024/12/08/nuclear-energy-the-overlooked-energy-solution/>, Willie T.]

The U.S. faces a persistent energy worry. Over the last few years, **electricity demand has soared while U.S.-based energy suppliers have tried their best to keep up**. While energy demand usually fluctuates throughout the year due to varying weather conditions and as the seasons change, **the U.S. Energy Information Administration has shown that energy demand has steadily increased over the last fifty years**. This can be attributed to population growth and the expansion of electricity production to meet society's rapidly growing energy needs. While total electricity supply has adequately met the increasing demand over the last fifty years, the steadily increasing need for greater electricity places the U.S. in a vulnerable situation – one that can become susceptible to disruptions and shortages. The power sector already experiences immense strain during peak electricity consumption, namely during periods of intense weather such as heatwaves, snowstorms, and other weather phenomena. **Considering the already-strained power sector in the U.S., further concerns about energy security in the U.S. center around the U.S.'s ability to create viable alternative energy solutions to ensure energy demand is met with adequate supply in the event of energy disruptions.**

Nuclear Energy: Where It's Been and Where It's Going



The U.S.'s energy consumption portfolio **consists largely of fossil fuels, accounting for more than eighty percent of the U.S.'s total energy consumption** in 2023. Putting aside environmental concerns and considerations, the U.S. needs to invest more in another energy source capable of matching fossil fuel consumption in the near future. The best solution to this concern is nuclear energy. Although the U.S. consumes a significant proportion of available electricity from nuclear sources, roughly nine percent, **nuclear energy has the potential to supplement the U.S.'s dependency on fossil fuels**. The nuclear power industry cannot replace the need for fossil fuels, nor should it, but it would provide a safety net for supply chain disruptions and create alternatives to domestic energy consumption. This would prove especially important when considering the fragility of fossil fuel imports from foreign sources and the detriment to national security should there be a fossil fuel shortage in the U.S. and/or abroad. For this to happen, though, obstacles to nuclear power production must be overcome.

**The U.S. already has nuclear energy production facilities and infrastructure to contribute to the existing energy portfolio, but not nearly at the same scale as fossil fuels. Why might this be? The short answer might be that there exist high initial costs to producing the infrastructure and plants required to make a nuclear reactor;** however, the more likely reason would be widespread public opposition to and negative perception of nuclear energy production in the U.S. As many American citizens could point out, nuclear energy's past is riddled with catastrophic meltdowns and lasting environmental impacts – things that pose obvious issues with public support investment into nuclear energy production. Notable incidents such as the Chernobyl meltdown, the Fukushima disaster, and the Three Mile Island Accident are well-known examples the public tends to associate with nuclear energy. The risk of a nuclear meltdown and severe environmental effects from accidents at nuclear power facilities are legitimate concerns and should not be ignored, however, nuclear power plant infrastructure and production technology have progressed significantly, partially influenced by these notable disasters to prevent similar accidents from ever occurring in the future. The nuclear power industry is not the same as it was some twenty years ago – it has seen significant increases in safety, regulation, and output optimization through new technologies. If the public can continue moving towards greater support for widespread nuclear power production, which appears to be trending that way in recent years, **nuclear energy as the main source of consumer energy consumption in the U.S. is a real possibility.**

### **Nuclear Energy as a Domestic Alternative to Fossil Fuels**

Nuclear power production for energy's sake is not the primary reason for the needed increase in nuclear power output. The need for increased output stems from the vulnerabilities in the U.S.'s energy supply and demand trends. Over the last few years, the U.S. has increased its crude oil exports and became a net exporter of crude oil in 2021, according to the U.S. Energy Information Administration. The U.S. being able to produce more crude oil than it consumes is great for energy security interests since it means the U.S. is less dependent on foreign oil, at least when compared to when the U.S. was a net importer of foreign oil. A **decreased dependency on foreign fossil fuel imports provides** a host of benefits to the U.S. One of these is the **increased stability** of fossil fuel supply. Considering that the U.S.'s largest source of crude oil and other fossil fuel imports are from areas of the world with complex geopolitical concerns, such as armed conflict, crude oil supply chains face the ever-persistent threat of disruption, whether from direct conflict or supply management used as a tool of coercion. For example, countries that export crude oil may use their production capabilities as a tool of coercion and pressure by restricting the supply of their exports to certain markets, often those that align with their political goals and ideals. **This disruption of crude oil was seen following the start of the Russo-Ukraine war, where shortly after the invasion of Ukraine, Russian oil exports were drastically decreased to Western countries following embargoes and sanctions,** namely put in place by those in the European Union (EU) and the U.S. **These sanctions were designed to be a form of hard power in which the EU and the U.S. aimed to deter Russian aggression in hopes that it would accomplish a political end.** Whether or not these sanctions are producing their desired effect is beside the point, but **they resulted in the increase in crude oil prices in the U.S.** and abroad, since a major exporter of crude oil, Russia, could not supply crude oil to the U.S. In terms of international diplomacy, the U.S. pursued an option to deal with Russia and its invasion of Ukraine which had **immediate effects on the U.S. economy** and the fossil fuel industry. Whether it proved successful for U.S. interests is yet to be determined, but one thing is certain – **if the U.S. had a greater energy consumption available to consumers from nuclear power, crude oil prices may not have increased, as less crude oil and fossil fuels would be needed to power homes, businesses, and other everyday electricity consumers since nuclear power could have reduced the demand for fossil fuels.**

## **Decreased demand means more exports.**

**Rua 13** [Antonio Rua, Senior Economist @ Banco de Portugal & Associate Professor of Economics @ Nova School of Business and Economics, September 2013, Is there a role for domestic demand pressure on export performance?, European Central Bank, <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1594.pdf>, Willie T.]

Typically, export performance is modeled as a function of the foreign demand for a country's output and a country's price competitiveness indicator. In general, the foreign demand is proxied by the evolution of imports in the trade partners and its relative evolution vis-à-vis exports is used as a measure of market share developments. The relative price advantage of a country over its competitors is often captured by the real exchange rate. Ceteris paribus, a depreciation makes the country's products cheaper relative to its competitors in the foreign market, which will raise the corresponding demand and increase exports leading to an increase of the market share. These factors are essentially related to the demand side. In fact, most studies do not consider supply side variables explicitly when modeling exports. However, it has been recently widely acknowledged that such determinants are far from able to fully explain export performance (see, for example, Fagan et al. (2001, 2005), di Mauro and Forster (2008), European Commission (2010), Dieppe et al. (2012)). Such evidence reinforces the need to search for other factors that may influence exports dynamics.

In line with some previous literature, this paper suggests considering domestic demand pressure as an additional explanatory variable. In fact, it is likely that domestic conditions influence firms willingness or ability to supply exports. In a context of high domestic demand pressure, firms will work at full capacity and will not be able to follow, in the short-run, external demand increases. In contrast, during a domestic recession, firms will be able to allocate more resources to exports. In other words, in periods of slacking domestic demand firms try to compensate for the decline in domestic sales through increased efforts to export while in boom periods production can be mainly sold on the domestic market. Early work focusing on the short-run effects of domestic demand pressure on exports includes Ball et al. (1966), Smyth (1968), Artus (1970, 1973), Zilberfarb (1980), Faini (1994), Sharma (2003), among others. In those studies it was found a significant negative effect of domestic demand pressure on exports for several countries, including the United Kingdom, the United States, Germany, Israel, Turkey, Morocco and India. Thus, when modeling export performance, one should take into account not only the driving forces of external demand but also domestic demand, as the former affect exports from the demand side and the latter from the supply side. More recently, there has been theoretical and empirical research at the firm level that allows for a better understanding of the negative relationship between domestic demand and exports. Such developments will also contribute to influence the macroeconometric modeling of exports.

In this paper, we revisit the theoretical role of domestic demand pressure on exports and assess its importance on modeling the export performance of the Portuguese economy.<sup>1</sup> Besides the recent literature at firm level, such assessment is also motivated by the fact that the standard exports modeling approach is unable to capture properly the Portuguese export performance over the most recent period. In particular, it has been observed a significant and continuous increase of exports market share which cannot be explained by developments on price competitiveness indicators. Such phenomenon is happening along with a dramatic fall of domestic demand. In fact, this relationship could be particularly important in the current economic situation, not only in Portugal but also in other European countries under macroeconomic adjustment and facing strong declines of domestic demand

## **Empirically, increased supply lowers oil prices --- decks Russia's military and economy.**

**Cooper 24** [Luke Cooper, Associate Professorial Research Fellow In International Relations @ The London School Of Economics and Political Science, 11-10-2024, Will oil decide the fate of the Russia-Ukraine War?, International Politics and Society Journal, <https://www.ips-journal.eu/topics/foreign-and-security-policy/will-oil-decide-the-fate-of-the-russia-ukraine-war-7836/>, Willie T.]

Saudi Arabia's decision to increase oil supply at a time of falling global demand could jeopardise the Russian war effort. With Russia already selling its oil at discounted rates and with higher production costs, a low-price environment in oil markets may impact its ability to finance its aggression in Ukraine.

Russia and Saudi Arabia have previously clashed in oil markets. For a brief one-month period at the outset of the Covid-19 pandemic, Russia launched a foolish price war, increasing production as the world moved into lockdown. Once Saudi Arabia responded in kind, the oil price went into freefall. In an illustration of how geopolitics 'overdetermines' oil markets, the trigger for the negotiations that brought the crisis to an end was allegedly US President Donald Trump's threat to withdraw American military assistance from Saudi Arabia. Under this geopolitical pressure and collapsing market demand, making a price war potentially ruinous for all parties, Russia and Saudi Arabia stepped back, agreeing to the supply cuts required to stabilise world prices.

As recounted in Cambridge professor Helen Thompson's *Disorder: Hard Times in the 21st Century*, the oil supply glut in 2014 – 2016 was also shaped by the competitive postures of the United States, Russia and Saudi Arabia. Then as now, Saudi Arabia increased the supply of oil into the world market at a time of falling demand with the economic aim of disincentivising American investment in shale oil and the geopolitical aim of pressuring Russia and Iran to retreat from their support for the Assad regime in Syria. That Russia was able to weather the financial crisis produced by the combination of Western sanctions and the Saudi expansion in oil supply, emerging with the Assad regime intact and Russia's hold on occupied southern and eastern Ukraine stable, provides a salutary warning for the hope that the present conjuncture may prove problematic for Putin's regime. But with Russia facing both much more radical external sanctions – in effect its near-removal from the Western trade and financial order altogether – and fighting an enormously costly all-out war against Ukraine, the conjuncture of late 2024 poses a far more serious challenge.

The limits of military Keynesianism

Trends in the global oil market bear down heavily on Russia's strategic choices. By 2030, the International Energy Agency anticipates that global supply capacity will outstrip demand by some 8 million barrels per day, a situation they describe as 'staggering' and 'unprecedented' (outside of the Covid-19 pandemic). As Iran and the Gulf States have oil wells close to the surface, making them cost-efficient to extract from, these states are in a much more commercially advantageous position to cope with falling oil prices. Their breakeven price for new drilling projects is also far lower than that of their international competitors, including Russia and the United States.

By moving towards a more competitive posture, Saudi Arabia is challenging America's more expensive production but also tacitly acknowledging that the OPEC+ group has a diminished price-setting power. For Russia, this is the worst of both worlds. Unlike the United States, it has an oil-dependent economy, which benefits from the cartel power of OPEC+. Yet, unlike Saudi Arabia, its oil is not cheap to extract, making it poorly equipped to deal with low-price conditions. This drives a short-term escalatory logic for Russia's war on Ukraine, requiring rapid battlefield successes prior to the emergence of low-price oil market conditions.

With oil accounting for between 30-50 per cent of annual state budget revenues since 2014, Russia is, fundamentally, a petrostate.

Russia's successful adaption of its domestic economy to the war effort has been an important story of the full-scale invasion to date. The Russian state has utilised a suite of policies that Volodymyr Ishchenko, Ilya Matveev and Oleg Zhuravlev identify as 'military Keynesianism', with war-related spending stimulating demand in the economy. They note, in particular, the important distributional effects of this in terms of wage growth and industrial expansion, how this may have impacted support for the war effort among the Russian working classes and the internal limits that these policies have encountered in the form of acute labour shortages constraining economic output.

Putting the Russian war economy in a global context that recognises its oil dependency can help us build a fuller picture of its vulnerabilities. While sanctions have ruptured Russia's relationship to Western markets, this does not make its war economy autarchic. On the contrary, revenues from oil exports are critical. As the Oxford Institute for Energy Studies has argued, the Russian economy is dualistic in the sense that it may be divided between revenue-generating sectors (of which the most important is oil) and revenue-dependent sectors that are sustained through the distribution of rents. With oil accounting for between 30-50 per cent of annual state budget revenues since 2014, Russia is, fundamentally, a petrostate. The Putin regime manages these rents and has drawn on them to fund military aggression in Ukraine.

While Russia has not been publishing trade data since the full-scale invasion, estimates from Bruegel suggest that, despite its successful application of military Keynesian instruments, it continues to fund its trade deficit in non-fossil fuel goods through the sale of fossil fuels (delivering an overall surplus). As these imports are necessary to meet the needs of the Russian populace and the state's war effort, maintaining the flow of oil rents is critical.

Russia has faced rising costs while selling to markets at a discounted rate (advantaging non-Western buyers in general and India and China in particular).

### **It's instant AND turns case.**

**Baltvilks 22** [Witajewski; Expert @ the Centre for Climate and Energy Analyses @ the Polish National Centre for Emission Management; April 26; euractiv; "How the green paradox and climate policy can become Putin's nightmare,"

<https://www.euractiv.com/section/energy/opinion/how-the-green-paradox-and-climate-policy-can-become-putins-nightmare/>; DOA: 3-21-2025] tristan

**Russia's invasion of Ukraine pushed global oil and gas prices** even **higher than** they stood in **2021 because of the Russian export restriction**. Many experts believe that **further sanctions on Russia, including the gradual isolation** of Russia in the sphere of global trade, would **keep oil and gas prices high** in the medium term.

Ironically, **high global prices imply** that many **Asian countries are more likely to purchase Putin's oil, especially if it is offered at a lower price**. Should this happen, **Putin's oil revenues will remain high**, and sanctions by G7 countries will not achieve their primary goal.

This risk can be avoided if sanctions are complemented by a firm climate policy.

The ability of climate policy to influence the oil market and oil prices is illustrated in the so-called green paradox. The green paradox is a hypothetical scenario in which **the announcement of a rigid climate policy becomes a signal for oil producers that the demand for oil will end soon, motivating them to sell as much as they can as soon as they can.**

**Flooding the market with oil depresses its price and incentivises consumers to use more.** If this were to happen, **emissions would increase, rendering the climate policy ineffective**. The green paradox is particularly relevant in the context of oil markets, but **the mechanisms of the paradox can also apply to natural gas and coal.**

Until recently, the green paradox was a problem for climate change economists, but the one who should be most concerned is, in fact, Vladimir Putin. **The green paradox has the potential to turn radical climate policy into a weapon against Putin's regime.** It is especially important because **Russia, the second-largest worldwide gas producer and the third-largest oil producer, currently uses fossil fuels as a weapon against the West** for the purpose of pacification.

**A clear and credible commitment** by the largest economies in the world to halve the consumption of oil over the next two decades **would be a clear signal to all oil producers that their resources will soon lose value. No producer with low extraction costs will keep its reserves for the future – they will attempt to pump their oil into the market as long as it exists.**

**Low-cost oil from Saudi Arabia and the United Arab Emirates will, at least partly, crowd out the more expensive product from Russia, Venezuela and Iran.** Even if that crowding out is not complete, the **low oil price will render these countries' oil revenues negligible.** In Russia, where **oil rents constitute more than 9% of the nation's GDP (36% of public-sector revenue), this will unavoidably complicate the financial landscape of the regime.**

### **A losing warfront ensures nukes.**

**Stein 24** [Janice Stein, founding director of the Munk School of Global Affairs & Public Policy and the Belzberg Professor of conflict management with the Department of Political Science at the University of Toronto, "How impossible is the risk of nuclear escalation in Ukraine?", Bulletin of the Atomic Scientists,

20 December 2024,

<https://thebulletin.org/2024/12/how-impossible-is-the-risk-of-nuclear-escalation-in-ukraine/> //akang]

In the bizarre interregnum since the US presidential elections, world leaders have been calling President-elect Donald Trump in Florida before his inauguration on January 20. Some of them worry that the ongoing war between an increasingly desperate Ukraine that kills a Russian general in Moscow as it did this week and an emboldened Russia could spin out of control through miscalculation. The darkest scenario is one that culminates in escalation when Russia detonates a nuclear weapon. How likely is such a scenario in the few weeks left before inauguration day?

The likelihood of nuclear escalation cannot be estimated. The atomic bombings of Hiroshima and Nagasaki by the United States in 1945 are the only cases of the use of nuclear weapons. That strategy was deliberate, not a product of miscalculation, and can best be described as “escalate to de-escalate.” There is no case of nuclear escalation through miscalculation from conventional war to nuclear fighting. No estimate of likelihood has any validity unless there are a large enough number of cases to generate a probability distribution. Nuclear escalation occurs in a world of what Oxford University’s John Kay calls “radical uncertainty” in which historical information provides no reliable guidance.

One way to think about nuclear escalation in the context of Russia’s current war against Ukraine is to build scenarios in which Russia uses a nuclear weapon and then trace a logically compelling pathway back to the present. It then becomes possible to ask what conditions could enable such a pathway to escalation.

Tactical nuclear weapon. In one scenario that has been discussed, Russia explodes a tactical nuclear weapon to force Ukraine to end the fighting and agree to cede Crimea and the four Ukrainian provinces that Russia is currently occupying and claiming as its own. Under what conditions is it possible that Russia might adopt such a strategy? Detonating a single tactical nuclear weapon would provide very limited battlefield advantage to Russian forces, and there is some risk that the radioactive fallout could blow back and inflict harm on nearby Russian troops.

Nor would the damage from a single tactical nuclear weapon be grave enough to so demoralize the Ukrainian public that it would buckle under the pressure. If anything, the use of a tactical nuclear weapon would likely radicalize Ukrainians who have been reluctantly moving toward grudging acceptance of a ceasefire.

Were Russia to use a tactical nuclear weapon, such a strategy might backfire. The Ukrainian public might well rally around the flag, unite behind its leader, and stiffen its resistance to ceasefire proposals that are increasingly the subject of discussion inside Ukraine.

Finally, the detonation of a single tactical nuclear weapon—however small its payload—would break the “nuclear taboo” that has held for almost eight decades. In October 2022, encouraged by the United States, Russia’s key partners—China and India—signaled their strong opposition to the use of any nuclear weapon under any circumstances. Now isolated from the West, Russian President Vladimir Putin would not want to alienate his fellow leaders of the nine BRICS countries, which include China, India, and Iran.

There is, therefore, no compelling logic that supports the use of even a single tactical nuclear weapon. What conditions could change that logic?

Russia could face a situation where its forces are being pushed back and out of Ukraine. Putin faced a version of that scenario in the autumn of 2022 when Ukraine’s armed forces were pushing the Russian army back. It was then that the CIA issued the estimate that there was a 50 percent chance that Russia would use a nuclear weapon.

After Ukrainian troops broke through and pushed Russian forces back from Kharkiv in the northeast and Kherson in the south, US intelligence overheard a conversation among senior Russian military commanders about when and how Moscow might use a tactical nuclear weapon in Ukraine. Putin was reportedly not part of these conversations. That intelligence was circulated inside the US government in mid-October. In addition, there are unconfirmed reports that Russia moved some tactical weapons out of storage and loosened operational controls that would make the use of a tactical nuclear weapon easier. It was these two developments that pushed up the US intelligence estimate that Russia might use a nuclear weapon.

Around the same time, Russian Defense Minister Sergei Shoigu, in one of his calls with US Defense Secretary Lloyd Austin, accused Ukraine of planning to use a “dirty bomb.” Concern among Western officials grew that Putin was preparing a false flag operation. Only a long phone call between Gen. Mark Milley, then chairman of the US Joint Chiefs of Staff, and Russian Gen. Valery Gerasimov, reduced the tensions. The most senior military officer from each country discussed Russia’s doctrine governing the use of nuclear weapons and reassured one another. This episode tells us that even when Russian forces were retreating in Ukraine, Putin did not break the nuclear taboo.

Russia has since significantly lowered the threshold of when it would use nuclear weapons. In November 2024, Putin signed a decree amending Russia’s nuclear doctrine in two important ways. The doctrine now

declares that Russia has the right to use nuclear weapons against a non-nuclear state that attacks Russia or its allies and is supported by a nuclear power. In addition, Russia's nuclear doctrine released in 2020 declared that Russia would use nuclear weapons in response to a conventional attack when the very existence of the state is in jeopardy. The new amendment lowers that threshold to a conventional attack that is a critical threat to Russia's sovereignty or territory.

Putin also railed against the Biden administration's decision in November to allow Ukraine to use US-supplied longer-range Army Tactical Missile Systems, or ATACMS, against military installations inside Russia and warned that this decision was tantamount to NATO declaring war on Russia. Moscow then launched the Oreshnik, an intermediate-range ballistic missile equipped with multiple warheads, against Ukraine. The missile can carry nuclear warheads. Despite the bellicose rhetoric and the new missile launch, Russia has not loosened operational controls on any tactical nuclear weapons nor moved any of these weapons out of storage. Instead, Gerasimov again reassured the current chairman of the Joint Chiefs of Staff, Gen. Charles Q. Brown Jr., in a phone call that the missile launch was planned long before the announcement about the ATACMS.