## Contention 1: Meltdowns

#### Trump is destroying the independence of nuclear power regulations. This means any new investments are unsafe.

**Huff et al. 3-6** [Katy Huff, Paul Wilson, Michael Corradini, 3-6-2025, [Katy Huff is a former Department of Energy assistant secretary for nuclear energy and is currently an associate professor at the University of Illinois in Urbana-Champaign; Paul Wilson is the Grainger Professor of Nuclear Engineering and the chair of the University of Wisconsin–Madison’s department of nuclear engineering and engineering physics; Michael Corradini a former member of the U.S. Advisory Committee on Reactor Safeguards, a former president of the American Nuclear Society and a professor emeritus at the University of Wisconsin–Madison. "Killing a Nuclear Watchdog’s Independence Threatens Disaster," Scientific American, https://www.scientificamerican.com/article/killing-a-nuclear-watchdogs-independence-threatens-disaster/] //cy

A Trump administration executive order is setting the U.S. on the **fastest path to a nuclear accident**. Announced on February 18, the “Ensuring Accountability for All Agencies” executive order aims to bring independent regulatory agencies under the “supervision and **control” of the president**. Among them, the Nuclear Regulatory Commission is the watchdog that Americans rely on to hold nuclear energy companies accountable for avoiding reactor accidents and releases of radioactive material into the environment. By demanding that the NRC cease to issue regulations and guidance without written permission from the president or the attorney general, the order effectively demands that nuclear safety take a back seat to politics. As nuclear engineers, as well as former government and industry officials, we foresee that this proposed regulatory capture by the Executive Office of the President—where decisions are made for political reasons and not for the benefit of people served—**will severely increase the risk of expensive, unexpected nuclear accidents** in the U.S. This is neither hypothetical nor hyperbole. History provides **too much frightening evidence** to ignore. When Soviet leadership and its captured regulator prioritized national pride over safety, a known flaw in nuclear reactor control rods (which slow the rate of atomic fission in a reactor) went unchecked, safety protocols at the Chernobyl Nuclear Power Plant went unheeded, and in 1986 the **worst nuclear power accident in history** resulted. So too when “regulation was entrusted to the same government **bureaucracy responsible for its promotion**,” the operators of Japan’s Fukushima Daiichi Nuclear Power Plant **failed to deploy countermeasures** demanded by known seismic risks; they failed to plan appropriately for evacuation; and in 2011, they failed to avoid the second worst nuclear power accident in human history. In 1974 Congress recognized the importance of independent nuclear oversight, reorganizing the Atomic Energy Commission into two distinct agencies: the Department of Energy, responsible for research, development and promotion of nuclear energy; and the NRC, to regulate and oversee the then-booming nuclear energy industry. Five NRC commissioners, each appointed by the president and confirmed by the Senate, work together to “formulate policies and regulations governing nuclear reactor and materials safety, issue orders to licensees, and adjudicate legal matters brought before [them].” The president has the authority to designate one of these commissioners as the chair, acting as the chief executive officer of the agency. **International** consensus is clear about what works and what doesn’t in nuclear safety regulation. Most fundamentally, the regulator’s ability to ensure safe nuclear power operation requires independence, especially from entities with a conflict of interest. The International Atomic Energy Agency, humanity’s foremost authority on nuclear energy safety and security, is clear that governments must ensure that the regulatory body is not influenced by “entities having responsibilities or interests that could unduly influence its decision making.” Failure to maintain regulatory independence from commercial, political and ideological influence is not accountability. It is instead regulatory capture. Both President Trump and Secretary of Energy Chris Wright, by virtue of their offices, have responsibilities and interests that demand efforts to expand nuclear power. The country’s continued prosperity relies heavily on secure access to reliable energy, and nuclear energy has a unique role in meeting our energy demands. Nuclear energy is one of the nine pillars of Wright’s secretarial order calling for action to “unleash American Energy.” In a recent CNBC interview, when describing his optimism for growth in nuclear energy, Wright recently declared, “Do we need some government out of the way to make it work economically? Absolutely, but that’s what America is about.” That’s true only if industrial accidents are also what America is about. In reality an independent regulator plays a **fundamental role** in generating public confidence in the safe and secure deployment of nuclear technology. While discussions about the effectiveness of the agency are appropriate, such discussions never question the importance of its continued independence. Even for officials in the Office of Nuclear Energy at DOE, the independence of the NRC is a red line no one would ever consider crossing, precisely because DOE’s role involves the enthusiastic promotion of nuclear energy. Nuclear energy relies on precision technology and an unwavering dedication to safety, so regulating it is a serious technical undertaking meant to shield us from unwanted radiological consequences. The U.S. has historically been a **global leader** in nuclear regulatory practices and principles that **uphold the highest standards of safety globally**. A critical component of their operation is independence from conflicting motives. Nuclear safety is too important to undermine through uninformed political actions. Regulatory capture by industry, politics or the whims of an individual is not merely dangerous—it is the primary cause of the two worst nuclear reactor accidents the world has known. We cannot allow this to occur in the U.S. The NRC must remain independent to provide the public confidence in the safe implementation of this important technology.

#### AND, this lack of independent regulation uniquely makes new technologies more susceptible to meltdowns.

**Macfarlane 2-21** [Allison Macfarlane, 2-21-2025, professor and director of the School of Public Policy and Global Affairs @ the University of British Columbia, chaired US Nuclear Regulatory Commission from 2012-2014, doctorate in geology from MIT, served on the White House Blue Ribbon Commission on America’s Nuclear Future "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/] //cy

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 [NRC] agency will no longer be able to fully follow through with this mission **independently**—and Americans will be more at risk as a result. [o]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, without careful regulations, the increase in nuclear energy could lead to total human extinction.

**Slocum 15** [Christopher Allen Slocum 15, VP @ AO&G, “A Theory for Human Extinction: Mass Coronal Ejection and Hemispherical Nuclear Meltdown,” 07/21/15, The Hidden Costs of Alternative Energy Series, http://azoilgas.com/wp-content/uploads/2018/03/Theory-for-Human-Extinction-Slocum-20151003.pdf]

With our intelligence we have littered the planet with massive spent nuclear fuel pools, emitting **lethal radiation** in over-crowded conditions, with circulation requirements of **electricity**, **water**-supply, and neutron **absorbent chemicals**. The failure of **any** of these conditions for any calculable or incalculable reason, will release all of a pool’s **cesium** in**to** the **atmosphere**, causing 188 square miles to be contaminated, 28,000 cancer deaths and $59 billion in damage. As of 2003, 49,000 tons of SNF was stored at 131 sites with an additional 2,000-2,400 metric tons produced annually. The NRC has issued permits, and the nuclear industry has amassed unfathomable waste on the premise that a deep geological storage facility would be available to remediate the waste. The current chances for a deep geological storage facility look grim. The NAS has required geologic stability for 1,000,000 years. It is impossible to calculate any certainty 1,000,000 years into the future. Humanity could not even predict the mechanical failures at Three Mile Island or Chernobyl, nor could it predict the size of the tsunami that triggered three **criticality** events at Fukushima Daiichi. These irremediable crises span just over 70 years of human history. How can the continued production and maintenance of SNF in pools be anything but a **precedent** to an **unprecedented human cataclysm**? The Department of Energy’s outreach website explains nuclear fission for power production, providing a timeline of the industry. The timeline ends, as does most of the world’s reactor construction projects in the 1990s, with the removal of the FCMs from Three Mile Island. One would think the timeline would press into the current decade, however the timeline terminates with the question, “How can we minimize the risk? What do we do with the waste?” (The History of Nuclear Energy 12). Nearly fifteen years into the future, these questions are no closer to an answer. The reactors at Fukushima Daiichi are still emitting radioisotopes into the atmosphere, and their condition is unstable. TEPCO has estimated it could take forty years to recover all of the fuel material, and there are doubts as to whether the decontamination effort can withstand that much time (Schneider 72). A detailed analysis of Chernobyl has demonstrated that nuclear fall-out, whether from thermonuclear explosions, spent fuel pool fires, or reactor core criticality events are deleterious to the **food-chain**. **Cesium** and strontium are taken into the **roots** of **plants** and **food** crops, causing direct **human** and **animal** contamination from ingestion, causing cancer, teratogenicity, mutagenesis and death. Vegetation suffers mutagenesis, reproductive loss, and death. Radioactive fields and **forest** floor**s** **decimate** **invertebrate** and **rodent variability** and number necessary to supply nature’s **food-chain** and **life** **cycles**. The **flesh and bones** of freshwater and oceanic biota contribute significantly to the total radiation dose in the food-chain. Fresh **water** **lakes**, **rivers** and **streams** become radioactive. Potable **aquafers** directly underlying SNFs and FCMs are penetrated by downward migration of radioisotopes. **Humans must eat to live. Humans must have water.** **No human can survive** **5** **Sv** **of exposure** to ionizing radiation, many cannot survive exposure to 1 Sv.

## Contention 2: Renewables Trade-Off

#### Clean energy is rapidly advancing and would solve energy needs by 2035.

**Beinhocker 25** [Eric Beinhocker, 2-28-2025, "The Clean Energy Revolution Is Unstoppable", [Eric Beinhocker is a Professor of Public Policy Practice at the Blavatnik School of Government, University of Oxford. He is also the founder and Executive Director of the Institute for New Economic Thinking at the University’s Oxford Martin School. INET Oxford is an interdisciplinary research center dedicated to the goals of creating a more inclusive, just, sustainable, and prosperous economy. Beinhocker is also a Supernumerary Fellow in Economics at Oriel College and an External Professor at the Santa Fe Institute.], https://www.wsj.com/business/energy-oil/thecleanenergyrevolution-is-unstoppable-88af7ed5,] //Wenzhuo recut //cy

Since Donald Trump’s election, clean energy stocks have plummeted, major banks have pulled out of a U.N.-sponsored “net zero” climate alliance, and BP announced it is spinning off its offshore wind business to refocus on oil and gas. Markets and companies seem to be betting that Trump’s promises to stop or reverse the clean energy transition and “drill, baby, drill” will be successful.¶ But this bet is wrong. The clean energy **revolution** is being driven by fundamental technological and economic forces that are too strong to stop. Trump’s policies can **marginally slow progress** in the U.S. and harm the competitiveness of American companies, but they cannot halt the fundamental dynamics of technological change or save a fossil fuel industry **that will** inevitably **shrink** dramatically in the next two decades.¶ Our research shows that once new technologies become established their patterns in terms of cost are surprisingly predictable. They generally follow one of three patterns.¶ The first is a pattern where costs are volatile over days, months and years but relatively flat over longer time frames. It applies to resources extracted from the earth, like minerals and fossil fuels. The price of oil, for instance, fluctuates in response to economic and political events such as recessions, OPEC actions or Russia’s invasion of Ukraine. But coal, oil and natural gas cost roughly the same today as they did a century ago, adjusted for inflation. One reason is that even though the technology for extracting fossil fuels improves over time, the resources get harder and harder to extract as the quality of deposits declines.¶ here is a second group of technologies whose costs are also largely flat over time. For example, hydropower, whose technology can’t be mass produced because each dam is different, now costs about the same as it did 50 years ago. Nuclear power costs have also been relatively flat globally since its first commercial use in 1956, although in the U.S. nuclear costs have increased by about a factor of three. The reasons for U.S. cost increases include a lack of standardized designs, growing construction costs, increased regulatory burdens, supply-chain constraints and worker shortages.¶ A third group of technologies experience predictable long-term declines in cost and increases in performance. Computer processors are the classic example. In 1965, Gordon Moore, then the head of Intel, noticed that the density of electrical components in integrated circuits was growing at a rate of about 40% a year. He predicted this trend would continue, and Moore’s Law has held true for 60 years, enabling companies and investors to accurately forecast the cost and speed of computers many decades ahead.¶ Clean energy technologies such as **solar, wind and batteries** all follow this pattern but at different rates. Since 1990, the cost of wind power has dropped by about 4% a year, solar energy by 12% a year and lithium-ion batteries by about 12% a year. Like semiconductors, each of these technologies can be mass produced. They also benefit from advances and economies of scale in related sectors: solar photovoltaic systems from semiconductor manufacturing, wind from aerospace and batteries from consumer electronics.¶ Solar energy is **10,000 times cheaper** today than when it was first used in the U.S.’s Vanguard satellite in 1958. Using a measure of cost that accounts for reliability and flexibility on the grid, the International Energy Agency (IEA) calculates that electricity from solar power with battery storage is less expensive today than electricity from new coal-fired plants in India and new gas-fired plants in the U.S. We project that by 2050 solar energy will **cost a tenth** of what it does today, making it far cheaper than any other source of energy. ¶ At the same time, barriers to large-scale clean energy use **keep tumbling**, thanks to advances in energy storage and better grid and demand management. And **innovations** are enabling the electrification of industrial processes with enormous efficiency gains [and].¶ The falling price of clean energy has **accelerated** its adoption. The growth of new technologies, from railroads to mobile phones, follows what is called an S-curve. When a technology is new, it grows exponentially, but its share is tiny, so in absolute terms its growth looks almost flat. As exponential growth continues, however, its share suddenly becomes large, making its absolute growth large too, until the market eventually becomes saturated and growth starts to flatten. The result is an S-shaped adoption curve.¶ The energy provided by solar has been growing by about 30% a year for several decades. In theory, if this rate continues for just one more decade, solar power with battery storage could **supply all the world’s energy needs by** about **2035**. In reality, growth will probably slow down as the technology reaches the saturation phase in its S-curve. Still, based on historical growth and its likely S-curve pattern, we can predict that renewables, along with pre-existing hydropower and nuclear power, will largely displace fossil fuels by about 2050.¶ For decades the IEA and others have consistently overestimated the future costs of renewable energy and underestimated future rates of deployment, often by orders of magnitude. The underlying problem is a lack of awareness that technological change is not linear but exponential: A new technology is small for a long time, and then it suddenly takes over. In 2000, about 95% of American households had a landline telephone. Few would have forecast that by 2023, 75% of U.S. adults would have no landline, only a mobile phone. In just two decades, a massive, century-old industry virtually disappeared.¶ If all of this is true, is there any need for government support for clean energy? Many believe that we should just let the free market alone sort out which energy sources are best. But that would be a mistake. ¶ History shows that technology transitions often **need** a kick-start from **government**. This can take the form of support for basic and high-risk research, purchases that help new technologies reach scale, investment in infrastructure and **policies that create stability** for private capital. Such government actions have played a critical role in virtually every technological transition, from railroads to automobiles to the internet.¶ In 2021-22, Congress passed the bipartisan CHIPS Act and Infrastructure Act, plus the Biden administration’s Inflation Reduction Act (IRA), all of which provided significant funding to accelerate the development of the America’s clean energy industry. Trump has pledged to end that support. The new administration has halted disbursements of $50 billion in already approved clean energy loans and put $280 billion in loan requests under review.¶ The legality of halting a congressionally mandated program will be challenged in court, but in any case, the IRA horse is well on its way out of the barn. About $61 billion of direct IRA funding has already been spent. IRA tax credits have already attracted $215 billion in new clean energy investment and could be worth $350 billion over the next three years.¶ Ending the tax credits would be **politically difficult,** since the top 10 states for clean energy jobs include Texas, Florida, Michigan, Ohio, North Carolina and Pennsylvania—all critical states for Republicans. Trump may find himself fighting Republican governors and members of Congress to make those cuts.¶ It is **more likely that Trump** and Congress **will take actions that are politically easier,** such as ending consumer subsidies for electric vehicles or refusing to issue permits for offshore wind projects. The impact of these policy changes would be mainly to harm U.S. competitiveness. By reducing support for private investment and public infrastructure, raising hurdles for permits and slapping on tariffs, the U.S. will simply drive clean-energy investment to competitors in Europe and China.¶ Meanwhile, Trump’s promises of a fossil fuel renaissance ring hollow. U.S. oil and gas production is already at record levels, and with softening global prices, producers and investors are increasingly cautious about committing capital to expand U.S. production.¶ The energy transition is a one-way ticket. As the asset base shifts to clean energy technologies, large segments of fossil fuel demand **will permanently disappear**. Very few consumers who buy an electric vehicle will go back to fossil-fuel cars. Once utilities build cheap renewables and storage, they won’t go back to expensive coal plants. If the S-curves of clean energy continue on their paths, the fossil fuel sector will likely shrink to a niche industry supplying petrochemicals for plastics by around 2050.¶ For U.S. policymakers, supporting clean energy isn’t about climate change. It is about maintaining American economic leadership. The U.S. invented most clean-energy technologies and has world-beating capabilities in them. Thanks to smart policies and a risk-taking private sector, it has led every major technological transition of the 20th century. It should lead this one too.

#### Nuclear energy kills renewables and is comparatively worse on carbon.

**CAN 24** [Climate Action Network, 3-18-2024, "POSITION PAPER: The nuclear hurdle to a renewable future and fossil fuel phase-out," Climate Action Network (CAN) Europe is Europe’s leading NGO coalition fighting dangerous climate change. We are a unique network, in which environmental and development organisations work together to issue joint lobby campaigns and maximise their impact, https://caneurope.org/position-paper-nuclear-energy/] //Wenzhuo recut //cy

More than three-quarters of the EU’s greenhouse gas emissions stem from our energy consumption, therefore it is vital to stop burning fossil fuels to limit temperature rise to 1.5°C, the Paris Agreement target. Together with members, and external experts, we developed our Paris Agreement compatible (PAC) energy scenario, which provides a robust, science-based pathway for Europe’s energy landscape. On the basis of this work, CAN Europe advocates for a phase-out of coal by 2030, gas by 2035, and a 100% renewables-based energy system by 2040, which requires the phase-out of nuclear power by then. ¶ The disruption of nuclear power can be observed in many countries, not only in Europe. In Dubai, at COP28, CAN was strongly opposed to and called out countries, supporting and signing the pledge led by the USA, UK, France and 18 other countries to globally triple nuclear power in the next 25 years. This goal is much higher than the high bracket of International Energy Agency (IEA) scenarios, already based on improbable hypotheses and risks to distract from the tripling of Renewable Energy capacities that was agreed by a much larger group of countries at COP28.¶ In 2023, there was an **alarming push** and a surge in support **for nuclear power** within the EU political space. This development is creating significant tension with proponents of energy sufficiency and a fully renewable energy system and marks a regressive step in efforts towards a sustainable and just energy transition. While nuclear champions claim that nuclear energy can work hand-in-hand with renewables, it is becoming increasingly clear that nuclear power acts as a significant hurdle to energy efficiency investments, the roll-out of renewables and fossil fuel phase-out in three spheres: the EU political debate, energy system planning, and decentralisation. ¶ Climate Action Network International, the global umbrella under which CAN Europe participates, with a community of almost 2000 members from civil society, in more than 130 countries, stands united in opposing new and existing nuclear power stations. In 2020, we reviewed and agreed the CAN Charta, the ‘highest’ document for all CAN members, the international secretariat and the regional nodes, and we listed under strategies “Promoting a nuclear-free future”.¶ A hurdle in the policy debate¶ The starting gun for a renewed attempt at a nuclear renaissance was the inclusion of nuclear in the EU Taxonomy in 2022, and can be seen as the nuclear lobby’s blueprint for its future ambitions – creating a large political debate using arguments of “technology neutrality” and a “level playing field” and forming alliances with fossil fuel advocates (in this case, fossil gas) in order to reduce ambition to sustainable solutions.¶ Since then, a French-led campaign, manifested through the 14 Member State “Nuclear Alliance”, coupled alongside the lobbying activities of the nuclear industry, has run roughshod through EU energy and climate policy over the last two years. Continuing the narrative of “technology neutrality” and a “level playing field”, this mission has aimed at promoting nuclear energy at the direct expense of a transition to a 100% renewable-based energy system, in legislation such as the Renewable Energy Directive, Electricity Market Design and Net Zero Industry Act.¶ Attempting to lower renewable ambition ¶ In the context of the Renewable Energy Directive (RED III) revision, France tested the waters in 2023 by calling for a low-carbon ‘weighting’ in EU renewables target in order to support a higher EU 2030 renewable energy target of 45%, where so-called ‘low carbon’ energy sources are taken into account when establishing national renewable energy targets. Though this did not see the light, a concession was won on renewable hydrogen and gained provisions to facilitate nuclear-produced hydrogen – risking further watering down a renewables-based technology pathway. ¶ The EU Commission launched its proposal for the Net Zero Industry Act (NZIA) in March 2023 as a response to the Inflation Reduction Act (IRA) of the United States. While nuclear was included as a list of technologies that were seen as making a contribution to decarbonisation, the EU Commission President, Ursula von der Leyen, refused to include it in the list of “strategic technologies”, which could receive additional support. The list was limited, as to be better targeted, at technologies such as solar, wind, energy storage, heat pumps and grid technologies. The final political agreement has led to the inclusion of “nuclear fission energy technologies” as strategic, while this debate allowed the list to become so extensive it practically loses any strategic element.¶ Delaying fossil phase out via dirty trade-offs During the Electricity Market Design reform, nuclear and fossil fuel promoters in the Parliament attempted to **derail** a deal supporting renewables and flexibility. In the Council, due to the focus of the Nuclear Alliance on the Contracts for Difference (supported by some coal dependent countries) the negotiations were delayed by several months and conversations redirected away from renewables, leading to a deal supporting subsidies for existing and new nuclear reactors and a prolongation of subsidies to coal power plants via capacity mechanisms. ¶ Wasting time and diverting attention As the nuclear debate **aggressively** dominates political negotiations, media, and public discourse, it **blatantly diverts critical attention from** advancing the **existing,** affordable, sustainable solutions to the energy transition. This overwhelming focus on nuclear power not only overshadows but also poses a risk of **derailing** the European **energy transition**, hindering progress towards aligning with the ambitious yet achievable goal of a **100% renewable energy** system by 2040.¶ A hurdle to a fully renewables based power system¶ CAN Europe’s assessment of the draft National Energy and Climate Plans highlights that not a single Member State plan is aligned to a 1.5ºC compatible trajectory, nor minimum EU climate and energy requirements for 2030. **Increased ambition is required** on energy efficiency, energy savings, renewables and fossil fuels phase-out, while Member States are **betting on false solutions** to the challenge at hand, such as nuclear energy. ¶ As highlighted in our NECP analysis, the EU has inadequate renewables expansion, grossly insufficient investment in energy efficiency, late coal phase-out deadlines and gas dependence, while countries such as Bulgaria, Czechia, Estonia, France, Hungary, the Netherlands, Poland, Romania and Slovenia, are considering new nuclear that might never materialise. In 2023, Sweden has revised its 2040 target for 100% renewable electricity to 100% decarbonised electricity, to allow for continued and new nuclear power, and it is now clear that it can only happen with direct state aid. Italy, which voted against nuclear power in a referendum, is now investigating future nuclear power, while delaying quitting coal by 4 years. ¶ The largest nuclear power plant in Europe, the Zaporizhzhia Nuclear Power Plant in Ukraine, is currently occupied by the Russian military and Rosatom in an active warzone, but has not prevented Ukraine from including new nuclear power in its reconstruction.¶ The Paris Agreement Compatible (PAC) scenario, on the other hand, emphasises renewables-based electrification, calling for determined and heightened attention to enable a 100% renewable-based EU energy system by 2040, and foresees no need for nuclear power in Europe.¶ Nuclear power is too expensive ¶ When compared to renewables, the latest analysis from World Nuclear Industry Status Report, using the data from Lazard, determines that the levelized cost of energy (LCOE) for new nuclear plants makes it the most expensive generator, estimated to be nearly **four times more expensive** than onshore wind, while unsubsidized solar and wind combined with energy storage (to ensure grid balancing) is always cheaper than new nuclear. When compared against energy savings, analysis by Hungarian NGO Clean Air Action Group highlights that it is more economically efficient to invest in the renovation of households to save energy than in the construction, operation, and decommissioning of a new nuclear reactor. These findings were confirmed by a separate study by Greenpeace France, that showed that by investing 52 billion euros in a mix of onshore wind infrastructure/photovoltaic panels on large roofs, it would be possible to avoid **four times** more CO2 emissions than by investing the same amount in the construction of six EPR2 nuclear reactors by 2050, while electricity production triples. By investing 85 billion euros of government subsidies in energy savings by 2033, it would be possible to avoid six times more cumulative CO2 emissions by 2050 than with the construction program of six EPR 2 reactors. This would also make it possible to lift almost 12 million people out of energy poverty in a decade.¶ Recent European projects in Slovakia, the UK, France, and Finland demonstrate the dramatic rising costs. EDF admitted that the costs for the British nuclear facility Hinkley Point C will skyrocket to 53.8 billion euros for the scheduled 3.2 GW power plant, more than twice as much as scheduled in 2015 when the plant was approved. The French project in Flamanville was originally projected to cost 3.3 billion euros when it began construction in 2007, but has since risen to 13.2 billion euros (16.87 billion euros in today’s money). The Finnish Olkiluoto-3 project 1.6GW reactor cost 3 times more than the original forecast price, reaching 11 billion euros. Slovakia’s second generation reactors Mochovce 3 and 4 ballooned costs to 6.4 billion euros from an initially estimated 2.8 billion. Slovenia’s president announced that a new 1.6GW reactor would cost 11 billion euros, following the Finnish example, demonstrating that these high prices are here to stay.¶ In order to finance new and ongoing projects, the EU has approved State Aid for nuclear, in the case of Hungary, Belgium, and the United Kingdom, while national governments seek support schemes. Despite making references to technology-neutrality, this creates an unlevel playing field slanted against renewable energy. Given the significant investment gap to achieve 2030 climate targets, and the limited fiscal space of many Member States, investments in nuclear risk **diverting precious public resources** into projects of poor value-for-money compared to alternatives in a renewables-based system, while reducing the availability of public resources for all other components of the energy transition. Such a choice would equally fail to reduce prices for consumers in the context of the current fossil fuel energy crisis. ¶ Finally, the costs would be even larger if accounting for “unpaid externalities” borne by taxpayers and the public at large, from nuclear accident risks that are impossible to insure against by private actors. The costs of decommissioning of a nuclear power plant, which can cost 1-1.5 billion euros per 1000 MW, are often borne by the public as these costs are poorly taken into account when planning a new nuclear installation. The cost associated with storing radioactive waste for hundreds of thousands of years is also often undervalued, alongside costs associated with radioactive leaks from plants or storage facilities, as demonstrated by the radioactive leaks in the UK Sellafield site, causing tension with Ireland and Norway. To lower costs, attempted lowering of safety and environmental standards can be expected, posing risks to communities, nature, and society at large, also as a burden to future generations.¶ New nuclear construction is too slow¶ A rapid transition requires the use of existing technologies and solutions which can most quickly be rolled-out such as renewables, primarily solar and wind, energy efficiency, and system flexibility. For years, new nuclear energy projects in Europe have been plagued with delays and, coupled with an untrained workforce, are unable to support the speed of decarbonisation necessary. New nuclear plants typically take 15-20 years for construction, hence failing to address immediate decarbonisation needs to 2030. Indicatively, France’s six new reactors are estimated by its network operator to enter into use in 2040-2049, much too late to have any meaningful impact on emissions reduction needed already now, with a view to pathways to 2050, and beyond, for a sustainable future. ¶ The decision to build the UK’s Hinkley Point C nuclear reactor was announced in 2007 with an operational start date of 2017, however it has been delayed several times over, and is now estimated to start in 2031. In France, the Flamanville project is 16 years into construction and hitting new delays, while Finland’s Olkiluoto took a full 18 years to come online. ¶ Nuclear does not support energy autonomy¶ Nuclear power units equally fail to pass an “energy security” test, and run counter to the RepowerEU target of enhancing Europe’s autonomy, given that more than 40% of the EU’s Uranium is imported from Russia and no EU country is currently mining uranium within its own borders . Though Kazakhstan is seen as an alternative, its uranium industry is directly tied to Rosatom. While import bans have been placed on Russian coal and liquified natural gas, and Russian oil and natural gas have been targeted, this has not been the case for uranium.¶ A hurdle to a decentralised future¶ The declaration to triple nuclear power by 2050 signed by only 22 countries, 5 of which do not have nuclear reactors, on the sidelines of COP28 describes nuclear power as “source of clean dispatchable baseload power”, a common message of the nuclear industry used to argue against a 100% renewable system and nuclear’s use as a substitute for traditional fossil fuel generation. This claim, however, is misleading and outdated.¶ Europe is moving beyond a highly centralised energy system, towards one which is decentralised, digitalised, and able to flexibly adjust to changing patterns of generation and consumption. In a 100% renewable energy system, the need for traditional “baseload” power is obsolete and with distributed energy production, in a far more interconnected European Union, security of supply is better managed.¶ Nuclear power production is not reliable¶ Nuclear power units across Europe have been proven as **unreliable** in providing power when needed. Future climatic conditions, such as **heatwaves, droughts, flooding** and rising sea-levels only increase the likelihood of future nuclear power plant disconnections and pose further security risks. In 2022, on average French nuclear reactors had 152 days with zero-production. Over half of the French nuclear reactor fleet was not available during at least one-third of the year, one-third was not available for more than half of the year, and 98% of the year 10 reactors or more did not provide any power for at least part of the day. ¶ The myth of the need for nuclear baseload has been debunked for years. The energy system can be reliably and safely managed with 100% renewables and system flexibility.¶ Blocking renewables integration into the electricity grid The inflexibility of nuclear, caused by technical limitations, safety requirements and economic factors, **prevents the feed-in of renewable electricity** into the grid, causing grid congestion and curtailment. Nuclear’s dominance over grid capacity can **block the connection of new renewable energy projects**, where even announced and then abandoned plans for a new nuclear unit can delay renewable projects connection, allowing for continued fossil fuel usage. Grid structures designed for large-scale, centralised nuclear power, make it more challenging, time-consuming and costly to introduce small-scale distributed renewable power.¶ An example can be found in Romania where Cernavodă 3 and 4 reactors have reserved grid capacity for years, blocking new renewable energy projects in the Dobrogea region, the most wind-intensive region in the country. Delayed grid investments, due to uncertainty of new nuclear units, have also meant that capacity bottlenecks exist today for renewables online. ¶ In the Netherlands, the only current nuclear power station, Borssele is competing for landing space for off-shore electricity. Post-Fukushima, renewables were blocked from connecting to the grid in Japan as the government considered restarting the reactors, despite public opposition to nuclear restarts and support for renewables. Rather than taking the opportunity to invest in grids and integrate renewables twenty years ago, Japan still heavily relies on fossil fuels today.¶ Prolonging the inevitable with nuclear extensions¶ While European governments may be tempted to prolong existing nuclear reactors beyond their original foreseen lifespans, in the context of phasing out Russian gas, costly upgrades to the ageing nuclear fleet, just like investing in new ones, risks diverting investment away from more cost-effective solutions such as renewables, energy efficiency, and system flexibility, in addition to risking lowered safety standards and security of supply as ageing increases unplanned outages. Any prolongation of existing nuclear power plant units risks the continued crowding out of renewable energy sources from the electricity grid, preventing their price-dampening effects on the market. ¶ So-called “Small Modular Reactors”¶ European lawmakers are increasingly persuaded by the empty promises of Small Modular Reactors (SMRs). Argued to be more flexible, decentralised, smaller, and cheaper than existing nuclear designs, countries are wasting public resources in favour of a non-existent product, riddled with the same limitations as their predecessors, and presenting poor value-for-money compared to existing alternatives. The focus on SMRs risks delaying the development of renewable energy technologies already available at the moment, and thereby prolonging the usage of fossil fuels., ,¶ Burdened by the same high capital costs, SMRs would have to run near constantly to reduce losses, thereby further congesting the grid and making them useless in providing back-up power needed for peak hours against renewables and energy storage.¶ Nuclear energy is too risky and unsafe ¶ Nuclear technology inherently carries the risk of severe nuclear accidents with the release of large amounts of radioactivity as shown by catastrophic accidents in Fukushima or Chornobyl. **Extreme** and more frequent **weather** events due to climate change create **unprecedented** risks through storms or flooding that are not captured in planning standards for nuclear plants based on historic frequencies and severeness. Extreme weather events may also indirectly affect nuclear plants, such as breaking dams above nuclear plants or longer disconnection from electricity grids after storms. **Cyber attacks, military aggression** e.g. Russia’s occupation of the Zaporizhzhia Nuclear Power Plant, and terrorist attacks, e.g. via drone attacks, could also lead to severe accidents of nuclear plants. Nuclear waste remains a risk worldwide to the health of all living creatures, including humans, for thousands of years after its use in energy production. Management of any future storage facility would still be at risk of natural disasters and decisions of future generations, whereas currently without any long-term solutions risks are increasingly shifting to interim storage which were not planned for the current supply and length of storage. ¶ Beyond decarbonisation¶ For heightened climate ambition, renewables, energy efficiency, storage, interconnection and flexibility are best suited to make up this gap in generation and support increased renewables-based electrification, while phasing out fossil fuels in parallel. Given the poor speed and high costs of future nuclear projects, the difficulty to build several units at the same time, and the realities of SMRs, it is unlikely nuclear will be able to cover any significant part of Europe’s energy needs by 2040. ¶ The future energy system will be far more decentralised, and active consumer and flexibility oriented, which are not the ideal conditions for new nuclear plants. For these reasons stated above, it is in the nuclear industry’s interest to delay Europe’s progress and keep in place the current centralised, fossil-based energy system, jeopardising climate goals, in the hope that projects are able to materialise in the future, and to lower safety standards to reduce costs. Nuclear energy is also at odds with an energy system based on democratic ownership of energy production, as opposed to renewables.¶ A true democratic debate on nuclear has not been underway, but rather a capture by geopolitical interests and corporations. Problems in three identified spheres, the political debate, energy system planning, and decentralisation have been mapped as current and possible future areas where nuclear advocates may be actively hostile towards renewables and fossil fuel phase out. Though we must look beyond energy and decarbonisation, and have a holistic vision of nuclear power, incorporating drawbacks such as safety, waste, weapon proliferation, uranium dependency, operation in warzones and biodiversity.

#### AND, transitioning to nuclear will kill tens of millions per year

**Jacobson 24** [Mark Z. (Professor of Civil and Environmental Engineering & Director of the Atmosphere/Energy Program @ Stanford University), “7 reasons why nuclear energy is not the answer to solve climate change,” OneEarth, Oct. 10, 2024, https://www.oneearth.org/the-7-reasons-why-nuclear-energy-is-not-the-answer-to-solve-climate-change/)]DOA 03-17-2025//abhi☺\*\*\*Ellipsis in OG\*\*\*

There is a small group of scientists that have proposed replacing 100% of the world’s fossil fuel power plants with nuclear reactors as a way to solve climate change. Many others propose nuclear grow to satisfy up to 20 percent of all our energy (not just electricity) needs. They advocate that nuclear is a “clean” carbon-free source of power, but they don’t look at the human impacts of these scenarios. Let’s do the math...¶ One nuclear power plant takes on average about 14-1/2 years to build, from the planning phase all the way to operation. According to the [World Health Organization](https://www.who.int/gho/phe/outdoor_air_pollution/en/), about 7.1 million people die from air pollution each year, with more than 90 percent of these deaths from energy-related combustion. So switching out our energy system to nuclear would result in about 93 million people dying**, as we wait** for all the new nuclear plants to be built in the all-nuclear scenario.¶ Utility-scale wind and solar farms, on the other hand, take on average **only** **two** to five years, from the planning phase to operation. Rooftop solar PV projects are down to only a 6-month timeline. So transitioning to [100% renewables](https://www.oneearth.org/100-renewable-energy/) as soon as possible would result in tens of millions fewer deaths. ¶ This illustrates a major problem with nuclear power and why renewable energy -- in particular Wind, Water, and Solar (WWS) -- avoids this problem. Nuclear, though, doesn’t just have one problem. It has seven. Here are the seven major problems with nuclear energy:¶ 1. Long Time Lag Between Planning and Operation¶ The time lag between planning and operation of a nuclear reactor includes the times to identify a site, obtain a site permit, purchase or lease the land, obtain a construction permit, obtain financing and insurance for construction, install transmission, negotiate a power purchase agreement, obtain permits, build the plant, connect it to transmission, and obtain a final operating license.¶ The planning-to-operation (PTO) times of all nuclear plants ever built have been 10-**19 years or more**. For example, the Olkiluoto 3 reactor in Finland was proposed to the Finnish cabinet in December 2000 to be added to an existing nuclear power plant. Its latest estimated completion date is 2020, giving it a PTO time of 20 years.¶ The Hinkley Point nuclear plant was planned to start in 2008. It has an estimated the completion year of 2025 to 2027, giving it a PTO time of 17 to 19 years. The Vogtle 3 and 4 reactors in Georgia were first proposed in August 2006 to be added to an existing site. The anticipated completion dates are November 2021 and November 2022, respectively, given them PTO times of 15 and 16 years, respectively.¶ The Haiyang 1 and 2 reactors in China were planned to start in 2005. Haiyang 1 began commercial operation on October 22, 2018. Haiyang 2 began operation on January 9, 2019, giving them PTO times of 13 and 14 years, respectively. The Taishan 1 and 2 reactors in China were bid in 2006. Taishan 1 began commercial operation on December 13, 2018. Taishan 2 is not expected to be connected until 2019, giving them PTO times of 12 and 13 years, respectively. Planning and procurement for four reactors in Ringhals, Sweden started in 1965. One took 10 years, the second took 11 years, the third took 16 years, and the fourth took 18 years to complete. ¶ Many claim that France’s 1974 Messmer plan resulted in the building of its 58 reactors in 15 years. This is not true. The planning for several of these nuclear reactors began long before. For example, the Fessenheim reactor obtained its construction permit in 1967 and was planned starting years before. In addition, 10 of the reactors were completed between 1991-2000. As such, the whole planning-to-operation time for these reactors was at least 32 years, not 15. That of any individual reactor was 10 to 19 years.¶ 2. Cost¶ The levelized cost of energy (LCOE) for a new nuclear plant in 2018, based on [Lazard](https://www.solarempower.com/news/levelized-cost-energy-storage/), is $151 (112 to 189)/MWh. This compares with $43 (29 to 56)/MWh for onshore wind and $41 (36 to 46)/MWh for utility-scale solar PV from the same source. ¶ This nuclear LCOE is an underestimate for several reasons. First, Lazard assumes a construction time for nuclear of 5.75 years. However, the Vogtle 3 and 4 reactors, though will take at least 8.5 to 9 years to finish construction. This additional delay alone results in an estimated LCOE for nuclear of about $172 (128 to 215)/MWh, or a cost 2.3 to 7.4 times that of an onshore wind farm (or utility PV farm).¶ Next, the LCOE does not include the cost of the major nuclear meltdowns in history. For example, the estimated cost to clean up the damage from three Fukushima Dai-ichi nuclear reactor core meltdowns was [$460 to $640 billion](https://www.washingtonpost.com/world/asia_pacific/eight-years-after-fukushimas-meltdown-the-land-is-recovering-but-public-trust-has-not/2019/02/19/0bb29756-255d-11e9-b5b4-1d18dfb7b084_story.html?utm_term=.8344c816d5bb). This is $1.2 billion, or 10 to 18.5 percent of the capital cost, of every nuclear reactor worldwide. ¶ In addition, the LCOE does not include the cost of storing nuclear waste for hundreds of thousands of years. In the U.S. alone, [about $500 million](https://earth.stanford.edu/news/qa-what-should-we-do-nuclear-waste#gs.1sfx0x) is spent yearly to safeguard nuclear waste from about 100 civilian nuclear energy plants. This amount will only increase as waste continues to accumulate. After the plants retire, the spending must continue for hundreds of thousands of years with no revenue stream from electricity sales to pay for the storage.¶ 3. Weapons Proliferation Risk¶ The growth of nuclear energy has historically increased the ability of nations to obtain or harvest plutonium or enrich uranium to manufacture nuclear weapons. The Intergovernmental Panel on Climate Change (IPCC) recognizes this fact. They concluded in the Executive Summary of their 2014 report on energy, with “robust evidence and high agreement” that nuclear weapons proliferation concern is a barrier and risk to the increasing development of nuclear energy:¶ Barriers to and risks associated with an increasing use of nuclear energy include operational risks and the associated safety concerns, uranium mining risks, financial and regulatory risks, unresolved waste management issues, nuclear weapons proliferation concerns, and adverse public opinion. ¶ The building of a nuclear reactor for energy in a country that does not currently have a reactor allows the country to import uranium for use in the nuclear energy facility. If the country so chooses, it can secretly enrich the uranium to create weapons-grade uranium and harvest plutonium from uranium fuel rods for use in nuclear weapons. This does not mean any or every country will do this, but historically some have and the risk is high, as noted by IPCC. The building and spreading of Small Modular Reactors (SMRs) may increase this risk further.¶ 4. Meltdown Risk¶ To date, 1.5 percent of all nuclear power plants ever built have melted down to some degree. Meltdowns have been either catastrophic (Chernobyl, Ukraine in 1986; three reactors at Fukushima Dai-ichi, Japan in 2011) or damaging (Three-Mile Island in 1979; Saint-Laurent France in 1980). The nuclear industry has proposed new reactor designs that they suggest are safer. However, these designs **are** generally **untested**, and there is no guarantee that the reactors will be designed, built, and operated correctly or that a natural disaster or act of terrorism, such as an airplane flown into a reactor, will not cause the **reactor** to **fail**, resulting in a major **disaster**. ¶ 5. Mining Lung Cancer Risk¶ Uranium mining causes lung cancer in large numbers of miners because uranium mines contain natural radon gas, some of whose **decay** **products** are **carcinogenic**. A [study](https://www.cdc.gov/niosh/pgms/worknotify/uranium.html) of 4,000 uranium miners between 1950 and 2000 found that 405 (10 percent) died of lung cancer, a rate six times that expected based on smoking rates alone. 61 others died of mining-related lung diseases. Clean, renewable energy does not have this risk because (a) it does not require the continuous mining of any material, only one-time mining to produce the energy generators; and (b) the mining does not carry the same lung cancer risk that uranium mining does.¶ 6. Carbon-Equivalent Emissions and Air Pollution¶ There is no such thing as a zero- or close-to-zero emission nuclear power plant. Even existing plants emit due to the **continuous** **mining** and **refining** of **uranium** needed for the plant. **Emissions** from new nuclear are 78 to 178 g-CO2/kWh, not close to 0. Of this, 64 to 102 g-CO2/kWh over 100 years are emissions from the background grid while consumers wait 10 to 19 years for nuclear to come online or be refurbished, relative to 2 to 5 years for wind or solar. In addition, all nuclear plants emit 4.4 g-CO2e/kWh from the water vapor and heat they release. This contrasts with solar panels and wind turbines, which reduce heat or water vapor fluxes to the air by about 2.2 g-CO2e/kWh for a net difference from this factor alone of 6.6 g-CO2e/kWh.¶ In fact, China’s investment in nuclear plants that take so long between planning and operation instead of wind or solar resulted in China’s **CO2** **emissions** **increasing** 1.3 percent from 2016 to 2017 **rather** **than** **declining** by an estimated average of 3 percent. The resulting **difference** **in** **air** **pollution** emissions may have caused **69,000 additional air pollution deaths** in China in **2016** **alone**, with additional deaths in years prior and since. ¶ 7. Waste Risk¶ Last but not least, consumed fuel rods from nuclear plants are radioactive waste. Most fuel rods are stored at the same site as the reactor that consumed them. This has given rise to hundreds of radioactive waste sites in many countries that must be maintained and funded for at least 200,000 years, far beyond the lifetimes of any nuclear power plant. The more nuclear waste that accumulates, the greater the risk of **radioactive** **leaks**, which can **damage** **water** supply, **crops**, **animals**, and **humans**.

#### Must reduce carbon to stop climate change.

**Borenstein 23** [Seth Borenstein, 3-20-2023, "Humanity can still stop worst consequences of climate change, but time is running out, IPCC warns," Borenstein is an Associated Press science writer, covering climate change, disasters, physics and other science topics. He is based in Washington, D.C., https://www.pbs.org/newshour/science/humanity-can-still-stop-worst-consequences-of-climate-change-but-time-is-running-out-ipcc-warns]//wenzhuo

BERLIN (AP) — Humanity still has a chance, close to the last one, to prevent the **worst of climate change’s** future **harms**, a top United Nations panel of scientists said Monday.¶ But doing so requires **quickly slashing carbon pollution and fossil fuel use** by nearly two-thirds by 2035, the Intergovernmental Panel on Climate Change said. The United Nations chief said it more bluntly, calling for an end to new fossil fuel exploration and rich countries quitting coal, oil and gas by 2040.¶ “Humanity is on thin ice — and that ice is melting fast,” United Nations Secretary-General Antonio Guterres said. “Our world **needs climate action** on all fronts — everything, everywhere, all at once.”¶ Stepping up his pleas for action on fossil fuels, Guterres not only called for “no new coal” but also for eliminating its use in rich countries by 2030 and poor countries by 2040. He urged **carbon-free electricity generation** in the developed world by 2035, meaning no gas-fired power plants too.¶ That date is key because nations soon have to come up with goals for pollution reduction by 2035, according to the Paris climate agreement. After contentious debate, the U.N. science panel calculated and reported that to stay under the warming limit set in Paris the world needs to cut 60% of its greenhouse gas emissions by 2035, compared with 2019, adding a new target not previously mentioned in the six reports issued since 2018.¶ “The choices and actions implemented in this **decade** will have impacts for **thousands of years**,” the report, said calling climate change “a threat to **human well-being** and planetary health.”¶ “We are not on the right track but it’s not too late,’’ said report co-author and water scientist Aditi Mukherji. “Our intention is really a message of hope, and not that of doomsday.’’¶ With the world only a few tenths of a degree away from the globally accepted goal of limiting warming to 1.5 degrees Celsius (2.7 degrees Fahrenheit) since pre-industrial times, scientists stressed a sense of urgency. The goal was adopted as part of the 2015 Paris climate agreement and the world has already warmed 1.1 degrees Celsius (2 degrees Fahrenheit).¶ This is likely the last warning the Nobel Peace Prize-winning collection of scientists will be able to make about the 1.5 mark because their next set of reports will likely come after Earth has either breached the mark or locked into exceeding it soon, several scientists, including report authors, told The Associated Press.¶ After 1.5 degrees “the **risks are starting to pile on**,” said report co-author Francis X. Johnson, a climate, land and policy scientist at the Stockholm Environment Institute. The report mentions “https://apnews.com/article/science-climate-and-environment-10b36a73b486ed5c0bde05db4151ccb0″>tipping points” around that temperature of species extinction, including coral reefs, irreversible melting of ice sheets and sea level rise on the order of several meters (several yards).¶ “The window is closing if emissions are not reduced as quickly as possible,” Johnson said in an interview. “Scientists are rather alarmed.”¶ “1.5 is a critical **critical limit**, particularly for small islands and mountain (communities) which depend on glaciers,” said Mukherji, who’s also the climate change impact platform director at the research institute CGIAR.¶ Many scientists, including at least three co-authors, said hitting 1.5 degrees is inevitable.¶ “We are pretty much locked into 1.5,” said report co-author Malte Meinshausen, a climate scientist at the University of Melbourne in Australia. “There’s very little way we will be able to avoid crossing 1.5 C sometime in the 2030s ” but the big issue is whether the temperature keeps rising from there or stabilizes.¶ Guterres insisted “the 1.5-degree limit is achievable.” Science panel chief Hoesung Lee said so far the world is far off course.¶ “This report confirms that if the current trends, current patterns of consumption and production continues, then … the global average 1.5 degrees temperature increase will be seen sometime in this decade,” Lee said.¶ Scientists emphasize that the world, civilization or humanity won’t end if and when Earth hits and passes the 1.5 degree mark. Mukherji said “it’s not as if it’s a cliff that we all fall off.” But an earlier IPCC report detailed how the harms – from coral reef extinction to Arctic sea ice absent summers to even nastier extreme weather – are much worse beyond 1.5 degrees of warming.¶ “It is certainly prudent to be planning for a future that’s warmer than 1.5 degrees,” said IPCC report review editor Steven Rose, an economist at the Electric Power Research Institute in the United States.¶ If the world continues to use all the **fossil fuel-power**ed infrastructure either existing now or proposed Earth will warm **at least 2 degrees Celsius** since pre-industrial times, blowing past the 1.5 mark, the report said.¶ Because the report is based on data from a few years ago, the calculations about fossil fuel projects already in the pipeline do not include the increase in coal and natural gas use after Russia’s invasion of Ukraine, said report co-author Dipak Dasgupta, a climate economist at The Energy and Resources Institute in India. The report comes a week after the Biden Administration in the United States approved the huge Willow oil-drilling project in Alaska, which could produce up to 180,000 barrels of oil a day.¶ The report and the underlying discussions also touch on the disparity between rich nations, which caused much of the problem because carbon dioxide emissions from industrialization stay in the air for more than a century, and poorer countries that get hit harder by extreme weather.¶ If the world is to achieve its climate goals, poorer countries need a “many-fold” increase in financial help to adapt to a warmer world and switch to non-polluting energy. Countries have made financial pledges and promises of a damage compensation fund.¶ If rich countries don’t cut emissions quicker and better help victim nations adapt to future harms, “the world is relegating the least developed countries to poverty,” said Madeline Diouf Sarr, chair of a coalition of the poorest nations.¶ The report offers hope if action is taken, using the word “opportunity” nine times in a 27-page summary. Though opportunity is overshadowed by 94 uses of the word “risk.”¶ The head of the IPCC said the report contains “a message of hope in addition to those various scientific findings about the tremendous damages and also the losses that climate change has imposed on us and on the planet.”¶ “There is a pathway that we can resolve these problems, and this report provides a comprehensive overview of what actions we can take to lead us into a much better, livable future,” Lee told The Associated Press.¶ Lee was at pains to stress that it’s not the panel’s job to tell countries what they should or shouldn’t do to cap global temperature rise at 1.5 Celsius.¶ “It’s up to each government to find the best solution,” he said, adding that scientists hope those solutions will stabilize the globe’s temperature around 1.5 degrees.¶ Asked whether this would be the last report to describe ways in which 1.5 C can be achieved, Lee said it was impossible to predict what advances might be made that could keep that target alive.¶ “The possibility is still there,” he said. “It depends upon, again I want to emphasize that, the political will to achieve that goal.”¶ Activists also found grains of hope in the reports.

#### And this is crucial, as failure to address climate change is existential. Specktor ’19…

Brandon **Specktor 19**, 6-4-2019, "Civilization could crumble by 2050 if we don't stop climate change now, new paper says," NBC News, <https://www.nbcnews.com/mach/science/civilization-could-crumble-2050-if-we-don-t-stop-climate-ncna1013701> || DOA 9/6/2023 BRP

It seems every week there's a scary new report about how man-made climate change is going to cause the [collapse of the world's ice sheets](https://www.livescience.com/65524-antarctica-ice-unstable.html), result in the extinction of up to [1 million animal species](https://www.livescience.com/65314-human-influence-species-extinction.html) and — if that wasn't bad enough — make our [beer very, very expensive](https://www.livescience.com/63832-climate-change-will-ruin-beer.html). This week, a new policy paper from an Australian think tank claims that those other reports are slightly off; the risks of climate change are actually much, much worse than anyone can imagine. [According to the paper](https://docs.wixstatic.com/ugd/148cb0_b2c0c79dc4344b279bcf2365336ff23b.pdf), climate change poses a "near- to mid-term existential threat to human civilization," and there's a good chance society could collapse as soon as 2050 if serious mitigation actions aren't taken in the next decade. Published by the Breakthrough National Centre for Climate Restoration in Melbourne (an independent think tank focused on climate policy) and authored by a climate researcher and a former fossil fuel executive, the paper's central thesis is that climate scientists are too restrained in their predictions of how climate change will affect the planet in the near future. [[Top 9 Ways the World Could End](https://www.livescience.com/36999-top-scientists-world-enders.html)] The current climate crisis, they say, is larger and more complex than any humans have ever dealt with before. General climate models — like the one that the [United Nations' Panel on Climate Change](https://www.ipcc.ch/sr15/) (IPCC) used in 2018 to predict that a global temperature increase of 3.6 degrees Fahrenheit (2 degrees Celsius) could put hundreds of millions of people at risk — fail to account for the sheer complexity of Earth's many interlinked geological processes; as such, they fail to adequately predict the scale of the potential consequences. The truth, the authors wrote, is probably far worse than any models can fathom. How the world ends What might an accurate worst-case picture of the planet's climate-addled future actually look like, then? The authors provide one particularly grim scenario that begins with world governments "politely ignoring" the advice of scientists and the will of the public to decarbonize the economy (finding alternative energy sources), resulting in a global temperature increase [of] 5.4 F (3 C) by the year 2050. At this point, the world's ice sheets vanish; brutal droughts kill many of the trees in the Amazon rainforest(removing one of the world's largest carbon offsets); and the planet plunges into a feedback loop of ever-hotter, ever-deadlier conditions. "Thirty-five percent of the global land area, and 55 percent of the global population, are subject to more than 20 days a year of le[thal heat conditions](https://www.livescience.com/55129-how-heat-waves-kill-so-quickly.html), beyond the threshold of human survivability," the authors hypothesized. Meanwhile, droughts, floods and wildfires regularly ravage the land. Nearly one-third of the world's land surface turns to desert. Entire ecosystems collapse, beginning with the planet's coral reefs, the rainforest and the Arctic ice sheets. The world's tropics are hit hardest by these new climate extremes, destroying the region's agriculture and turning more than 1 billion people into refugees. This mass movement of refugees — coupled with [shrinking coastlines](https://www.livescience.com/51990-sea-level-rise-unknowns.html) and severe drops in food and water availability — begin to stress the fabric of the world's largest nations, including the United States. Armed conflicts over resources, perhaps culminating in nuclear war, are likely. The result, according to the new paper, is "outright chaos" and perhaps "the end of human global civilization as we know it." How can this catastrophic vision of the future be prevented? Only with the people of the world accepting climate change for the emergency it is and getting to work — immediately. According to the paper's authors, the human race has about one decade left to mount a global movement to transition the world economy to a zero-carbon-emissions system. (Achieving zero-carbon emissions requires either not emitting carbon or balancing carbon emissions with carbon removal.) The effort required to do so "would be akin in scale to the [World War II](https://www.livescience.com/65025-nazi-massacre-site-artifacts.html) emergency mobilization," the authors wrote. The new policy paper was endorsed with a foreword by Adm. Chris Barrie, a retired Australian defense chief and senior royal navy commander who has testified before the Australian Senate about the devastating possibilities climate change poses to national security and overall human well-being. "I told the [Senate] Inquiry that, after [nuclear war](https://www.livescience.com/65603-doomsday-plane-can-survive-nuclear-attack.html), human-induced global warming is the greatest threat to human life on the planet," Barrie wrote in the new paper."Human life on Earth may be on the way to extinction, in the most horrible way."

## Contention 3: Managerialism

#### The Aff’s reduction of environmental essence to a resource makes it something to be exploited – this ensures our separation from the earth and attempts absolute conceptual mastery over nature.

**McWhorter 92** [LaDelle McWhorter, Prof. of Phil. @U.of Richmond, 1992, Heidegger and the Earth, https://scholarship.richmond.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1022&context=philosophy-faculty-publications]

What it most illustrative is often also what is most common. Today, on all sides of ecological debate we hear, with greater and greater frequency, the word management. On the one hand, business people want to manage natural resources so as to keep up profits. On the other hand, conservationists want to manage natural resources so that there will be plenty of coal and oil and recreational facilities for future generations. These groups and factions within them debate vociferously over which management policies are the best, that is, the most efficient and manageable. Radical environmentalists damn both groups and claim it is human population growth and rising expectations that are in need of management. But wherever we look, wherever we listen, we see and hear the term management. We are living in a veritable age of management. Before a middle class child graduates from high school she or he is already preliminarily trained in the arts of weight management, stress management, and time management, to name just a few. As we approach middle age we continue to practice these essential arts, refining and adapting our regulatory regimes as the pressures of life increase and the body begins to break down. We have become a society of managers – of our homes, careers, portfolios, estates, even of our own bodies – so is it surprising that we set ourselves up as the managers of the earth itself?

#### AND, nuclear energy uses technological thought to reduce nature to a standing resource for human use.

**Kinsella 06** [Wiiliam, Ph.D Assistant Professor at North Carolina State University, “Heidegger and Being at the Hanford Reservation: Linking Phenomenology, Environmental Communication, and Communication Theory”, http://www.allacademic.com//meta/p\_mla\_apa\_research\_citation/0/9/0/9/8/pages90982/p90982-1.php]

In his essay on “the question concerning technology,” Heidegger (1977c) critiqued the reduction of nature to a “standing reserve” (Bestand), a stockpile of phenomena appropriated for human use and exploitation. Hanford is an archetypical example, as the place was taken from its former residents, farmers and ranchers who had taken it in turn from their Native American predecessors, by the government for use as a plutonium factory. Hanford’s plutonium “product,” as it is known in the jargon of workers and officials, remains an essential element in the U.S. nuclear “stockpile.” The example is even more fitting, however, because Heidegger viewed atomic energy as the quintessential expression of both modern technology and Western metaphysics, which he linked in an instrumental “enframing” (Ge-stell) of the natural world(Foltz, 1995; Heidegger, 1966, 1969, 1977c). Enframing involves a stance toward the world that “challenges,” “regulates,” and “secures” its elements to create a standing reserve of use able resources (Heidegger, 1977c, p. 16). Human intervention in nuclear processes enframes nature in a way that is historically unprecedented, but was already implicit in the founding premises of modernism (Kinsella, 2004, 2005).

#### AND, this managerial mode of thinking culminates in nihilism.

**McWhorter 92** [LaDelle McWhorter, Prof. of Phil. @U.of Richmond, 1992, Heidegger and the Earth, https://scholarship.richmond.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1022&context=philosophy-faculty-publications]

The danger of a managerial approach to the world lies not then in what it knows – nor in its planetary on into the secrets of galactic emergence or nuclear fission – but in what it forgets, what it itself conceals. It forgets that any other truths are possible, and it forgets that the belonging together of revealing with concealing is forever beyond the power of human management. We can never have, or know, it all; we can never manage everything. What is now especially dangerous about this sense of our own managerial power, born of forgetfulness, is that it results in our viewing the world as mere resources to be stored or consumed. Managerial or technological thinkers, Heidegger says, view the earth, the world, all things as mere Bestand, standing-reserve. All is here simply for human use. No plant, no animal, no ecosystem has a life of its own, has any significance apart from human desire and need. Nothing, we say, other than human beings, has any intrinsic value. All things are instruments for the working out of human will. Whether we believe that God gave Man dominion or simply that human might (sometimes called inteligence or ratlonality) in the face of ecological fragility makes right, we managerial, technological thinkers tend to believe that the earth is only a stockpile or a set of commodities to be managed, bought, and sold. The forest is timber; the river, a power source. Even people have become resources, human resources, personnel to be managed, or populations to be controlled. This managerial, technological mode of revealing Heidegger says is embedded in and constitutive of Western culture and has been gathering strength for centuries. Now it is well on its way to extinguishing all other modes of revealing, all other ways of being human and being earth. It will take tremendous effort to think through danger, to think past it and beyond, tremendous courage and resolve to allow thought of the mystery to come forth; thought of the inevitability along with revealing, of concealment, of loss, of ignorance; thought of the occurring of things and their passage as events not ultimately under human control. And of course even the call to allow this thinking - couched as it so often must be in a grammatical imperative appealing to an agent - is itself a paradox, the first that must be faced and allowed to speak to us and to shatter us as it scatters thinking in new directions, directions of which we have not yet dreamed, directions of which we may never dream. And shattered we may be, for our self-understanding is at stake; in fact, our very selves – selves engineered by the technologies of power that shaped, that are, modernity – are at stake. Any thinking that threatens the notion of human being as modernity has posited it – as rationally self-interested individual, as self-possessed bearer or rights and obligations, as active mental and moral agent – is thinking that threatens our very being, the configuration of subjective existence in our age.

#### AND, the need for quick solutions to problems is motivated by guilt for the status quo – trapping us in a cycle of consumption, guilt, and then management, ensuring ecological harms are replicated.

**McWhorter 92** [LaDelle McWhorter, Prof. of Phil. @U.of Richmond, 1992, Heidegger and the Earth, https://scholarship.richmond.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1022&context=philosophy-faculty-publications]

Thinking today must concern itself with the earth. Wherever we turn on newsstands, on the airwaves, and in even the most casual of conversations everywhere - we are inundated by predictions of ecological catastrophe and omnicidal doom. And many of these predictions bear themselves out in our own experience. We now live with the ugly, painful, and impoverishing consequences of decades of technological innovation and expansion without restraint of at least a century of disastrous "natural resource management” policies, and of more than two centuries of virtually unchecked industrial pollution - consequences that include the fact that millions of us on any given day are suffering, many of us dying of diseases and malnutrition that are the results of humanly produced ecological devastation; the fact that thousands of species now in existence will no longer exist on this planet by the turn of the century; the fact that our planet's climate has been altered, probably irreversibly, by the carbon dioxide and chlorofluorocarbons we have heedlessly poured into our atmosphere; and the mind-boggling fact that it may now be within humanity's Power to destroy all life on this globe. Our usual response to such prophecies of doom is to ignore them or, when we cannot do that, to scramble to find some way to manage our problems, some quick solution, some technological fix. But over and over again new resource management techniques, new solutions, new technologies disrupt delicate systems even further, doing still more damage to a planet already dangerously out of ecological balance. Our ceaseless interventions seem only to make things worse, to perpetuate a cycle of human activity followed by ecological disaster followed by human intervention followed by a new disaster of another kind. In fact, it would appear that our trying to do things, change things, fix things cannot be the solution, because it is part of the problem itself. But, if we cannot act to solve our problems, what should we do?

**HOWEVER, In the face of the Aff’s prophecies of doom, the judge should vote negative to do nothing.**

#### The call to action invites future disaster – doing nothing in response to Aff invites disruptive acceptance of more aesthetic relationship with nature– this mode of thinking avoids reducing things to standing reserve and allows for an ethical mode of existence

**McWhorter 92** [LaDelle McWhorter, Prof. of Phil. @U.of Richmond, 1992, Heidegger and the Earth, https://scholarship.richmond.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1022&context=philosophy-faculty-publications]

Heidegger's work is a call to reflect, to think in some way other than calculatively, technologically, pragmatically. Once we begin to move with and into Heidegger's call and begin to see our trying to seize control and solve problems as itself a problematic approach, if we still believe that thinking's only real purpose is to function as a prelude to action, we who attempt to think will twist within the agonizing grip of paradox, feeling nothing but frustration, unable to conceive of ourselves is anything but paralyzed. However, as so many peoples before us have known, paradox is not only a trap; it is also a scattering point and passageway. Paradox invites examination of its own constitution (hence of the patterns of thinking within which it occurs) and thereby breaks a way of thinking open, revealing the configurations of power that propel it and hold it on track. And thus it makes possible the dissipation of that power and the deflection of thinking into new paths and new possibilities. Heidegger frustrates us. At a time when the stakes are so very high and decisive action is so loudly and urgently called for, Heidegger apparently calls us to do - nothing. If we get beyond the revulsion and anger that such a call initially inspires and actually examine the feasibility of response, we begin to undergo the frustration attendant upon paradox; how is it possible, we ask, to choose, to will, to do nothing? The call itself [this] places in question the bimodal logic of activity and passivity; it points up the paradoxical nature of our passion for action, of our passion for maintaining control. The call itself suggests that our drive for acting decisively and forcefully is part of what must be thought through, that the narrow of the power configurations of current thinking that must be allowed to dissipate. But, of course, those drives and those conceptual dichotomies are part of the very structure of our self-understanding both as individuals and as a tradition and a civilization. Hence, Heidegger's call is a threatening one, requiring great courage, "the courage to make the truth of our own presuppositions and the realm of our own goals into the things that most deserve to be called in question." Heidegger's work pushes thinking to think through the assumptions that underlie both our ecological vandalism and our love of scientific solutions, assumptions that also ground the most basic patterns of our current ways of being human.

## OV

#### The question “What is?” is a prior political question – the way that we organize and structure the world is not neutral or inevitable – only allowing ontology to become a radically open question can we realize ethics and justice

**Dillon 99** [Michael Dillon, Prof. of IR @ U. of Lancaster, April 1999, https://www.jstor.org/stable/191827?seq=1, Another Justice, Political Theory Vol. 27, No. 2, 155-175]

I take the defining feature of contemporary continental thought to be the return of the ontological. The return of the ontological has been developed in terms of a critical genealogy of political problematisations consequent upon a fundamental reappraisal of the basic categories of philosophical modernity. Specifically, the modern understanding of narrative, order and justice, value, identity, and continuity, together with an aspiration to a rigorously methodological access to truth and totality, secured always from the perspective of the cogito (without asking about the sum), were all disrupted by the ontological turn. It was precisely because the ontological turn did devastatingly target the sum that the putatively secure ground of the cogito was radically unsecured. Because you cannot say anything about anything, that is, without always already having made assumptions about the is as such, however, the return of the ontological has even wider ramifications than that of genealogy. For any thought, including, therefore, that of Justice, always already carries some interpretation of what it means to be, and of how one is as a being in being. To call these fundaments into question is to gain profound critical purchase upon the thought that underpins the thought and practices of distributive justice itself. We are at the level of those fundamental desires and fears which confine the imagination and breed the cruelties upon which it relies in order to deflect whatever appears to threaten or disturb its various drives for metaphysical security. 12 Politics and philosophy have always been wedded since their first inception in the polis. The return of the ontological was therefore prompted by the twin political and philosophical crises that assailed European civilisation at the end of the nineteenth and the beginning of the twentieth centuries. Hence the crisis of (inter)national politics (to which E. H. Carr, for example, responded) was as much a crisis of thought as the crisis of thought, as expressed in debates about Empiricism, Scientism, Positivism, and Historicism at that time, was a crisis of politics. Forwhat was at issue was a thinking way of life—complexly diverse and radically plural in its composition— that had hit the buffers in terms of the elevated universal expectations of reason and justice which its thought and politics had promised. Historicism’s failure to meet the challenges of Empiricism, Positivism, and Scientism nonetheless served to expose the crisis of political modernity itself: bureaucratisation, rationalisation, global industrialisation, technologisation, the advent of mass society, world war and genocide. 13 On the one hand, a return to “basics” was prompted by the ways in which the slaughter of the Great War, the holocaust of the Second World War, and the subsequent advent of the terminal dangers of the nuclear age undermined the confidence of a European civilisation gone global. This “failure of nerve” was enhanced by the impact of its racial and economic imperialism, together with the subsequent experience of postcolonialism. On the other hand, the return of the ontological was indebted philosophically, amongst other influences to Nietzsche’s overturning of the metaphysical deceits of ontotheology, and to Heidegger’s early attempt to formulate a fundamental ontology. In neither instance am I claiming that the outcome of the ontological turn has resulted in some new orthodoxy or canon. 14Levinas, for example, through moves too complicated to retrace in this exercise, championed the metaphysical over against the ‘ontological’. Quite the contrary. The question of ontology has, instead, been split wide open, and the formulations, desires, institutions, and practices of our established ways of being—justice and Justice included—are shown to be suspended in that very opening. Irrespective of this return to basics, the preoccupation of both thought and politics nonetheless also became the future. Just as the self-annihilationist capacities of European civilisation gone global posed the question of a habitable global future, so, in thought too, the crossover from the nineteenth to the twentieth centuries became preoccupied with “an affirmation of the future or of an opening onto the future.” 15 Think of the problem of messianicity in Benjamin, the question of the future in Nietzsche, the privilege of the futural ecstasis in Heidegger. . . . These thinkers are all thinkers of the future.16 In each instance, also, the thought of and for the future is associated with destruction. The experiencing of an abyss resonates somehow with the thinking of the abyss and, there—“where the mouth gapes” 17 —both politics and philosophy think, and seek to affirm, the future. The return of the ontologic always, then, a plural one radically disturbing the fundaments of all regional thought such as that of politics and justice as well as the more well-known and elaborated, though intimately related, subject of reason. This movement of thought was positive in that, while providing a critical reappraisal of ontology (cf. Heidegger), a certain ‘ontological’ sensibility has also emerged from it. It is based upon a profound, if variously interpreted, appreciation of the ontological difference—the difference between beings, as existing entities, and being as such. It offers for all other thought the alternative and radically dualistic starting point of the mutually disclosive belonging together of being and beings. 18 The return of the ontological thus became the driving force behind what William Connolly calls ontopolitical interpretation. Connolly reminds us that all political acts and every interpretation of political events, no matter how deeply they are sunk in specific historical contexts, “or how high the pile of data,” upon which they sit, contain an “ontopolitical dimension.” 19 What that means, simply, is that all political acts, and all political utterances, express—enact—a view of how things are. They establish fundamental presumptions, “fix possibilities, distribute explanatory elements, generate parameters.” 20 In short, they establish a fundamental framework of necessity and desire. That is why the ontological turn has a direct bearing upon the question of Justice as well as upon the allied questions of freedom and belonging. It therefore challenges the language of politics as much as it challenges the politics of Language, and thus re-poses the very question of the political itself.21

#### Even if they win nuclear war causes extinction, a loss of Being is still worse

Zimmerman 93 Professor of Philosophy at Tulane University

(Michael E., “Rethinking the Heidegger-Deep Ecology Relationship,” Environmental Ethics, Fall, Vol. 15, p. 201-202)

Deep ecologists are sometimes suspicious of Heidegger’s claims about the uniqueness of humanity’s capacity for understanding being, for Western society has always justified its domination of nature by portraying it as inferior to what is “uniquely” human: soul, rationality, spirit, language. Such suspicions are fueled by Heidegger’s claim that there is something worse than the destruction of all life on earth by nuclear war. Supposedly, worse would be material “happiness” (associated with Nietzche’s “last man”), which stems from a one-dimensional technological disclosure of things. Presumably, in such a constricted world, entities could show so little of themselves that they would virtually not “be” at all. Contented survival is worse than nuclear annihilation because in the former condition humanity has lost its relation to being. Here, one may recall the biblical teaching that it is better to forfeit the world than to lose one’s soul. Preserving openness for being is more important than preserving entities, for the latter can only manifest themselves or “be” within that openness. Early Heidegger once remarked: [“]Over against the duration of the starry world of the cosmos in general, human existence and its history are certainly only the most fleeting, only a “moment” – but the fleetingness [if authentic] is nevertheless the highest mode of being….[“]

## On Grid

#### We are investing more into the current grid to meet energy demand – nuclear not needed.

**Garcia 25** — (Eduardo Garcia [*New York-based journalist covering renewable energy. Eduardo worked as a Reuters correspondent in Guatemala, Bolivia, Argentina, and Ecuador before moving to the U.S. in 2014. He has written about climate solutions for The New York Times and Slate and is the author of "Things You Can Do: How to Fight Climate Change and Reduce Waste."*], 1-28-2025, "US grid investments take off as power demand hikes", archive.is, https://archive.is/ZeiN4, accessed 4-3-2025) //FK

Transmission investments will be spurred by Order 1920, a rule issued by the Federal Energy Regulatory Commission in May 2024 that requires regional transmission organizations (RTOs) to issue long-term investment plans. Many transmission operators have unveiled hefty investment plans. In December, the Midcontinent Independent System Operator (MISO) announced a $22 billion investment to install high-voltage transmission lines in the Midwest, in addition to the $10.3 billion in transmission projects that it approved in 2022. Southwest Power Pool (SPP) approved $7.7 billion in transmission projects in October and PJM, which operates the largest network mostly in eastern U.S., is in the process of approving around $6 billion in transmission investments. Key clean power states including California, opens new tab, Texas and New York — where Con Edison is building the $810 million Brooklyn Clean Energy Hub — have also announced large transmission projects in recent years. The optimization of new power generation benefits consumers, as well as developers. **New England states are pursuing a portfolio of transmission and battery projects** that last year secured $389 million in federal funding, including a grant for utility Eversource Energy to build a switching station in Connecticut to distribute up to 2.4 GW of offshore wind capacity. These kinds of infrastructure investments effectively “allow generators to share the costs of transmission investments, reduce project risks and lower prices for consumers,” Vandan Divatia, Vice President of Transmission Policy at Eversource, told Reuters Events. Grid enhancements Federal Order 1920 also encourages faster rollout of technologies that enhance current existing grid networks, avoiding the obstacles faced when planning new transmission lines. “**We can get at least 50% more out of the existing grid with grid enhancing technologies**, power flow control devices and high performance conductors that can help RTOs address the rapid load growth that's coming and do so at a lower cost,” Pfeifenberger said. Minnesota Power will seek to install grid enhancement technologies such as Static Synchronous Compensator (**STATCOM**), which is **used to stabilize the grid when more intermittent sources of generation are added**, Gunderson said. The utility wants to expand existing corridors and/or replace existing facilities rather than build new infrastructure because the siting and routing of new projects is “always challenging due to the size of structures and substations within proximity of inhabited areas,” he said. **Advanced conductors can double transfer capacity of existing lines and reduce losses** within months, versus several years for new infrastructure, Theodore Paradise, Chief Policy and Grid Strategy Officer at conductor supplier CTC Global, told Reuters Events. California, Massachusetts and Montana have rolled out policies encouraging utilities to prioritize grid enhancement technologies and advanced conductors but adoption is lagging compared to other markets like Europe and Asia, Paradise said. A lack of transmission infrastructure could see lead tech groups look to build data centers elsewhere.

#### The existing grid is 99% reliable – outages always occur but decentralized renewables solve back, not nuclear

**Underwood 24’**

Adrienne Underwood, BA in Environmental Sustainability and Social Justice @ SFSU, Director of communications at PSE Healthy Energy, August 20 2024, Reliability, Resilience, and the Power Grid, *PSE,*<http://psehealthyenergy.org/reliability-resilience-and-the-power-grid/>, //DS

Modern life depends on reliable electricity. From data centers to air conditioning, energy-intensive technologies have [driven up](https://www.canarymedia.com/articles/transmission/suddenly-us-electricity-demand-is-spiking-can-the-grid-keep-up#:~:text=In%20the%20past%20year%2C%20estimates,according%20to%20Grid%20Strategies'%20analysis.) electricity demand across the U.S. Increased demand has amplified the risks posed by power outages, which can disrupt the essential systems that underpin economic productivity and public safety. To mitigate these risks, many states are investing in fortifying the electric grid. Yet these investments do little to protect the public when power outages inevitably occur.

So what can be done to ensure that every day life continues, even when there are disruptions to the grid? To answer that question, we must first understand the difference between grid reliability and energy resilience.

What’s the difference between grid reliability and energy resilience? When it comes to the electrical grid, reliability is defined by the capacity to avoid power disruptions. Reliability is a measure of dependability, or lack thereof. Resilience, on the other hand, is measured by the experience of the user and their individual ability to withstand and recover when power outages arise. Distributed energy resources like generators, solar panels, and backup batteries—or even alternative fuels like propane heaters and camp stoves—can increase energy resilience because they allow individuals to maintain normalcy, even when the power grid isn’t operating normally.

How do we keep the lights on, even when the power goes out? According to the National Renewable Energy Laboratory, the U.S. power grid is already 99.5% reliable. While there is always room to improve electrical systems, the grid can’t be hardened against everything. Power outages will always occur, especially as climate change and rising energy demand test the system’s limits. At a certain point, investments in resilience can deliver a greater return on investment than reliability alone—both for communities and, at times, the grid itself. This is especially true if we account for the avoided costs and damages from power outages.

“One way to improve energy resilience is to install technology that provides backup power, like solar and storage systems. You can do this at a household level, or at the community scale with a resilience hub, which provides people a place they can go during an outage to access reliable electricity,” says PSE Healthy Energy Scientist Bethany Kwoka. If you use medical services at home, an outage could seriously impact your health, so having household energy resilience can help you avoid that, or throwing away food that goes bad when the refrigerators and freezers fail during power outages.” These distributed clean energy systems can be leveraged to lower the frequency of power outages. During a recent heat wave in California, over 16,000 household batteries were used to [supplement grid power](https://www.solarpowerworldonline.com/2024/07/sunruns-calready-vpp-dispatched-to-support-grid-recent-heat-wave/) and avoid rolling blackouts—part of a virtual power plant program administered by the California Energy Commission. According to Kwoka, investments in community-scale resilience can offer many of the same benefits. “Until energy resilience is affordable for all homes, having energy resilience within the community can give people a place to store their medication or charge their devices, and have access to other resources, when those resources aren’t available at home,” says Kwoka. What does it mean to increase energy resilience to power outages? Energy resilience during a power outage means more than keeping refrigerators cold and households lit at night. A power outage can have a ‘cascading impact,’ says Kwoka, which could be felt in all kinds of ways, many of which are not immediately apparent. Minimizing and recovering from these impacts is also core to resilience. For example, hospitals are required to have backup power systems, yet patients may not be able to travel to their appointments. Medical staff may rely on childcare facilities during work hours, but those facilities may not be able to operate if the power is out, which could leave a hospital understaffed. “Even if your life is only disrupted for a day or two, the real measure of resilience is how quickly, and how easily, you can recover. If you’re living paycheck to paycheck and had to miss a couple shifts at work, and now have to replace everything in your fridge or reschedule a doctor’s appointment, it’s that much more difficult to pay your rent or keep up with your healthcare needs,” Kwoka says.

## On climate leadership

1. The K answers this perfectly, their constant calls for another perfect solution just means that they will never solve the actual problem because they try to solve the earths problems while extracting resources from the earth.
2. Renewable transition kills millions each year. That’s Jacobson 24 from case that goes conceded.

#### LT. Nuclear is too slow and raises net emissions.

**Ramana 24** [M.V. Ramana, Simons Chair in Disarmament, Global and Human Security and Professor of Public Policy and Global Affairs @ University of British Columbia, 7-29-2024, "Atomic Fallacy: Why Nuclear Power Won’t Solve the Climate Crisis" Literary Hub, https://lithub.com/atomic-fallacy-why-nuclear-power-wont-solve-the-climate-crisis/, accessed: 4-1-2025] OA

Some might argue that these risks are the price we must pay to counter the threat of climate change. I disagree, but even if one were to adopt this position, my **research** shows that **nuclear energy** is just **not** a **feasible solution** to climate change. A nuclear power plant is a **really expensive** way to produce electricity. And nuclear energy simply cannot be scaled **fast enough** to match the rate at which the world needs to **lower** **carbon emissions** to stay under 1.5 degrees Celsius, or even 2 degrees.¶ Cost and the slow rate of deployment largely explain why the share of global **electricity** produced by nuclear reactors has been **steadily declining**, from around 16.9 percent in 1997, when the Kyoto Protocol was signed, to 9.2 percent in 2022. In contrast, as the costs of **wind** and **solar** energy **declined dramatically**, and modern renewables (which do not include large dams) went from supplying 1.2 percent of the world’s electricity in 1997 to **14.4 percent** in 2022.¶ Another contrast is revealing. When pro-**nuclear advocates** talk about solving climate change with **nuclear energy**, they call for building **lots and lots** of **reactors**. The World Nuclear Association, for example, proposes building **thousands** of nuclear reactors, which would together be capable of generating a million megawatts of electricity, by **2050**. Such a goal is completely at odds with **historical rates** of building nuclear **reactors**.¶ Some proponents of nuclear energy refuse to give up on the technology. They blame the decline in nuclear energy and the high costs and long construction periods on the characteristics of older reactor designs, arguing that alternative designs will rescue nuclear energy from its woes. In recent years, the alternatives most often advertised are small modular (nuclear) reactors—SMRs for short. These are designed to generate between 10 and 300 megawatts of power, much less than the 1,000–1,600 megawatts that reactors being built today are designed to produce.¶ For over a decade now, many of my colleagues and I have consistently explained why these reactors would not be **commercially viable** and why they would never resolve the **undesirable consequences** of building **nuclear power plants**. I first started examining small modular reactors when I worked at Princeton University’s Program on Science and Global Security. Our group largely comprised physicists, and we used a mixture of technical assessments, mathematical techniques, and social-science-based methods to study various problems associated with these technologies. My colleague Alex Glaser, for example, used neutronics models to calculate how much uranium would be required as fuel for SMRs, which we then used to estimate the increased risk of nuclear weapons proliferation from deploying such reactors. Zia Mian, originally from Pakistan, and I showed why the technical characteristics of SMRs would not allow for simultaneously solving the four key problems identified with **nuclear power**: its high **costs**, its **accident risks**, the difficulty of dealing with **radioactive waste**, and its linkage with the capacity to make **nuclear weapons**. My colleagues and I also undertook case studies on Jordan, Ghana, and Indonesia, three countries advertised by SMR vendors as potential customers, and showed that despite much talk, none of them were investing in SMRs, because of various country-specific reasons such as public opposition and institutional interests.¶ We were not the only people coming up with reasons for not believing in the claim that new reactor designs would solve all these problems. Other scientists and analysts also highlighted the dangers and false promises of SMRs.¶ Nuclear advocates are not deterred by such arguments. They **insist** that this time it will be **different**. Nuclear plants would be cheap, would be quick to build, would be safe, would never have to be shut down in unplanned ways, and would not be affected by climate-related extreme weather events. The evidence from the **real world**, which I elaborate on later, suggests **otherwise**. Nuclear reactors are unlikely to possess any of these characteristics, let alone all of them. Thus, what is actually being advocated might be termed faux nuclear plants, existing only in the imagination of some, not in the real world.¶ My bottom line is that nuclear energy, whether with **old reactor designs** or **new faux alternatives**, will simply **not** resolve the **climate crisis**. The threat from **climate change** is **urgent**. The world has neither the **financial resources** nor the luxury of **time** to **expand** **nuclear power**. Meanwhile, even a limited expansion would aggravate a range of **environmental** and **ecological risks**. Further, nuclear energy is deeply imbricated in creating the conditions for nuclear annihilation. Expanding nuclear power would leave us in the **worst** of **both worlds**.

#### TURN: Green Paradox locks in carbon emissions.

Don **Grant** et. al, 8-29-20**24**, "A worldwide analysis of stranded fossil fuel assets’ impact on power plants’ CO2 emissions", Nature, https://www.nature.com/articles/s41467-024-52036-8 [Grant: Department of Sociology, University of Colorado Boulder, Boulder, CO, USA Renewable and Sustainable Energy Institute, University of Colorado Boulder, Boulder, CO, USA. Hansen: Department of Environmental Studies, Dartmouth College, Hanover, NH, USA. Jorgenson: Department of Sociology, University of British Columbia, Vancouver, BC, Canada Department of Theoretical Economics, Vilnius University, Vilnius, Lithuania. Longhofer: Goizueta Business School, Emory University, Atlanta, GA, USA] DOA: 4/1/2025 //RRM

* Green Paradox: policies meant to reduce emissions cause spikes in emissions
* Stranded assets: assets that cannot produce revenue before the end of their lifetime

The baseline model (model 1) reveals that plants release more carbon when they emitted at high levels in 2009, use coal or gas as their primary fuels, have more electrical capacity, use a higher percentage of their capacity, and have capacity utilization rates that have increased over time. Plants also emit more carbon in countries that are highly dependent on the fossil fuel industry to generate power. After accounting for the effects of these and other controls, the baseline model shows that in countries with more potentially stranded fossil fuel assets, plants have significantly higher emission levels compared to plants whose countries have fewer assets at risk. Specifically, a 1% change (measured in millions of euros) of potentially stranded assets results in a .050% change in emissions, holding constant all other variables in the model. This finding is consistent with our first prediction that stranded assets increase plants’ emissions by fostering a more lenient regulatory climate. In models 2 through 5, we examine whether changes in coal, oil, and gas prices influence plants’ emissions and can explain the effect of stranded assets observed in model 1. Findings indicate that none of the price variables has a significant effect on emissions regardless of whether they are added individually (models 2, 3, and 4) or as a group (model 5) to the equation. Their inclusion, therefore, has a negligible effect on the stranded assets effect across all four specifications. These results contradict the conventional green paradox thesis that fossil fuel suppliers will induce more emissions in the short run by lowering the price of coal, oil, and gas inputs. Instead, they comport with Di Maria et al.’s argument that plants’ long-term future contracts with fossil fuel suppliers often prevent them from responding to spot market changes in coal, oil, and gas. To determine whether contractually constrained plants might still burn fossil fuels faster in countries where more carbon reserves are financially at risk, we interact our measures of stranded assets and change in plant capacity utilization rate in model 6. Results indicate there is a statistically significant interaction between these two factors. This is in keeping with our second prediction that when located in countries with more at-risk assets, plants have a stronger incentive to speed up the processing of the fuels they have already purchased and thus increase their CO2 emissions in the short term. Figure 2 shows the predicted effect of changes in plants’ utilization rate on their CO2 emission levels at a mean level of (logged) stranded assets (9.1), at 1 standard deviation below the mean (5.5), and at 1 standard deviation above the mean (12.8). Here we see that where more fossil fuel reserves are in jeopardy, plants utilize a larger percentage of their capacity over time, causing their emissions to rise. (Supplementary Table 1, which shows the determinants of plants’ CO2 emission levels under a 2 °C climate stabilization scenario that would regularly expose close to three times as many people to extreme heat, reports results nearly identical to those shown in Table 1). Fig. 2: How the predicted effect of change in plant capacity utilization rate on power plants’ CO2 emission levels varies depending on total stranded assets. figure 2 Reports the predicted effect of changes in plants’ capacity utilization rate on their (logged) CO2 emission levels at a mean level of (logged) stranded assets (9.1), at 1 standard deviation below the mean (5.5), and at 1 standard deviation above the mean (12.8). Full size image In Table 3, we assess the robustness of the association between our dependent and key independent variables. Models 1 and 2 are estimated for only plants that officially report their emissions, and the latter model includes the interaction between stranded assets and change in plant capacity utilization rate. In Model 3, we operationalize total stranded assets using an inverse hyperbolic sine function. The results of these three models are nearly identical to those reported in models 5 and 6 in Table 2. In models 4, 5, and 6, we examine whether plants emit more carbon because particular types of fossil fuels are at risk. **Findings reveal that unburnable coal, gas, and oil are each significantly related to plants’ CO2 emission levels, providing further proof that the effects of our key independent variable – total stranded assets – are robust.** Table 3 Robustness checks of the association between the dependent and key independent variables Full size table Relative magnitude of the stranded assets effect Having determined that stranded assets have a statistically significant effect on plants’ CO2 emission levels, we now consider the relative magnitude of that effect. In Table 4, we compare the total annual tonnes of carbon released by (the world’s or a nation’s) plants solely in response to at-risk assets to the remaining annual carbon budgets31 of the world’s and individual nations’ electricity sectors (see Methods). The first two columns of Table 4 reveal that for the world as a whole, the increase in annual CO2 emissions triggered by potentially stranded assets is 12.08 million metric tonnes per year or 0.21% of the electricity sector’s annual carbon budget when the chance of limiting global warming to 1.5 °C above pre-industrial levels is set to 50%. The third column shows that when the world’s annual budget is constrained further to have a 66% chance of staying below 1.5 °C, the relative magnitude of plants’ emissions is 0.28%. Table 4 Magnitude of extra annual electricity-based CO2 emissions associated with stranded assets under a 1.5 °C scenario Full size table The first three columns of Table 4 also report the same estimates for the five countries with the most absolute CO2 emissions. Here we see, for instance, that the additional annual emissions associated with at-risk assets in China (3.09 million metric tonnes) are 0.19% to 0.26% of the budget for this country’s electricity sector. The extra emissions triggered by at-risk assets amount to even smaller percentages for India (0.02% to 0.04%) and Japan (0.0010% to 0.0013%). The relative magnitudes of plants’ extra emissions in the United States and Russia are higher, ranging, respectively, from 1.12% to 1.61% and .84% to 1.19%. Although these findings might suggest that the percentage of carbon budgets used up by plants due to potentially stranded assets is modest, when one adds up these percentages over time, a more concerning picture emerges. As the last column reveals, during a period when the carbon budget will almost surely be breached and, therefore, **every** **fractional “expenditure**” of that budget **matters32**, the extra emissions associated with stranded assets could amount to between 2.1% to 2.8% of the world’s carbon allowance over a ten-year period. In the United States and Russia, the situation is even more troubling. These countries could exhaust 11.2% to 16.1% and 8.4% to **12%**, respectively, **of** their electricity sectors’ **carbon budgets** due just to the stranded assets effect. **This suggests that the financial pressures to “use it or lose it” are especially great among these two key incumbents of the carbon regime**. In fact, the United States and Russia stand to lose the most profits from the physical stranding of assets12 and their power plants are older, on average, (30.3 and 30.6 years, respectively) than those in other countries (25.5 years). Discussion Past research on the green paradox has emphasized reactions on the supply side, whereby fossil fuel companies accelerate the extraction of carbon reserves, leading to a reduction in current fossil fuel prices and, in turn, an increase in CO2 emissions. While there is ample evidence that suppliers extract more fossil fuels and sell them at cheaper prices in anticipation of stronger environmental policies, there is less support for the idea that price decreases result in more CO2 emissions, which has cast doubt on the green paradox thesis. In contrast, our study redirects attention to the demand side, positing that regulatory leniency and power plants’ vested interest in their long-term fossil fuel contracts make plants more willing to burn fossil fuels earlier and thus are the mechanisms that produce the green paradox. In keeping with our argument that at-risk fossil fuel assets give government actors a financial incentive to relax environmental standards, results show that plants emit more carbon pollution in countries where vast amounts of fossil fuel reserves would be stranded under the Paris Agreement. And in keeping with our other argument that at-risk reserves motivate contractually constrained plants to speed up the processing and burning of their purchased inputs, findings indicate that stranded assets and plants’ capacity utilization rates positively interact, causing plants to further increase their emissions. **While the extra amount of carbon released each year due to the stranded asset effect is moderate, its cumulative impact on the electricity sector’s remaining carbon budget could be significant in certain key countries**. In addition to encouraging more theory building on the green paradox, therefore, our study’s findings suggest that if important policy-making communities are to develop effective transition strategies, they, too, must pay greater attention to the demand side of fossil fuel consumption.

An important topic for future research is whether the effect of stranded fossil fuel assets on plants’ emissions is strengthening over time33. The volume of emissions from the effect could dwindle as the fossil fuel sector shrinks. Or it could grow if more fossil fuel reserves are discovered through new production technologies. Additional research is also needed on the mechanisms we have theorized linking the key independent variable to the dependent variable. Although stranded assets’ direct and interactive effects on power plants’ CO2 emissions can be plausibly explained by countries’ regulatory leniency and plants’ vested interest in their long-term fossil fuel contracts, measures of these concepts are needed to determine to what extent they, as variables, mediate the observed effects of stranded assets in a causal chain of relationships34.

#### No climate solvency – technical obstacles and uranium shortages mean the aff is too slow

Nikolaus Muellner et al, August 2021, [Institute of Safety and Risk Sciences, University of Natural Resources and Life Sciences, Vienna, Austria], "Nuclear energy – The solution to climate change?," Energy Policy Journal, https://www.sciencedirect.com/science/article/pii/S0301421521002330, accessed 3-29-2025 //cy

With increased awareness of [climate change](https://www.sciencedirect.com/topics/engineering/climate-change) in recent years nuclear energy has received renewed attention. Positions that attribute nuclear energy an important role in [climate change mitigation](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/climate-change-mitigation) emerge.

We estimate an upper bound of the CO2 saving potential of various nuclear energy growth scenarios, starting from our projection of nuclear generating capacity based on current national energy plans to scenarios that introduce nuclear energy as substantial instrument for climate protection. We then look at needed uranium resources.

The most important result of the present work is that the contribution of nuclear power to mitigate [climate change](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/climate-change) is, and will be, **very limited**. At present nuclear power avoids annually 2–3% of total global [GHG emissions](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/greenhouse-gas-emission). Looking at announced plans for new nuclear builds and lifetime extensions this value would decrease even further until 2040. Furthermore, a substantial expansion of nuclear power will not be possible because **of technical obstacles and limited resources**. Limited uranium-235 supply inhibits substantial expansion scenarios with the current nuclear technology. New nuclear technologies, making use of uranium-238, **will not be available in time**. Even if such expansion scenarios were possible, their climate change mitigation potential **would not be sufficient** as single action.