



Ten Reasons To Reject Nuclear Power

1. Nuclear power is too expensive

The cost of building new reactors is typically far higher than the original estimates — sometimes three times more. This means that every dollar spent on subsidizing existing reactors or investing in new ones, impedes progress on climate by diverting funds away from faster, cheaper options such as renewable energy and energy efficiency measures.

The cost per kilowatt hour of electricity generated by new reactors will be far higher than the cost of the same electricity delivered by renewables. The cost of keeping existing reactors running makes electricity generated by them more expensive than power from new renewables. Small modular reactors (SMR) will actually be even more expensive given their small size and the need to build many more to meet the equivalent energy output of a single large reactor. A huge upfront investment in the materials needed and the factory to build them, means SMRs will have poor economies of scale compared to large reactors. Research shows that the construction cost of a 200 MW SMR would be 40% of the cost of a 1,000 MW reactor but generate just 20% of the electricity. As a result, electricity from SMRs will be even more expensive than power from large reactors.

2. Nuclear power is too slow

Despite the so-called advances in technology, building new nuclear power plants takes very long, on average at least a decade. In addition, it takes five to ten years for all the preparatory work to be done, including safety assessments and environmental and licensing permits, and for the necessary financing to be arranged. This means that any new nuclear plant that begins construction today cannot arrive within a reasonable enough time to make any meaningful contribution to climate mitigation and carbon reduction. Given the current climate emergency, we cannot afford to wait 15-20 years or longer for a handful of nuclear power plants, when cheaper renewable energy can be scaled up far more quickly.

Claims that thousands of reactors can be built by 2050 to reduce significant amounts of carbon are unrealistic. There is no precedent in the nuclear industry for such a rate of new build. Instead, nuclear plants are taking longer to build than ever. SMRs, still designs on paper, will never arrive in time or in enough quantity to address the current climate crisis.

3. “Low-carbon” is a red herring

No energy source is “zero carbon” despite nuclear industry claims. But even if nuclear power was low- or zero-carbon, it would still be the wrong choice as more carbon reductions could be made faster for the same investment by choosing renewables instead. A low-carbon energy source that is too slow or too expensive will impede climate protection. The “do everything” or “all of the above” approach does not work, either. Research shows that countries that plan large-scale new nuclear investments risk suppressing climate benefits that would have been greater had they invested in renewables instead. Scarce resources allocated to slower or less cost-effective options detract from greater progress with more effective options such as renewables.



4. Nuclear power is not reliable

The nuclear industry asserts that because it is on all the time it is “reliable”, whereas the sun and wind are variable. But nuclear power plants are typically out of operation for routine maintenance, or for technical or safety reasons, at least 7% to 12% of the time. Once powered off, nuclear power plants cannot be brought back quickly to the grid, making them highly inflexible as compared to renewables.

During extreme weather events, inherently dangerous nuclear plants, with their large radioactive inventories, must be shut down due to the risk of loss of offsite and onsite power that could lead to a meltdown. Under the extreme heat of the climate crisis, nuclear plants, which rely on water intake, cannot function if the intake water is too hot, or the water level too low. Inherently safe renewables do not face these challenges. Nuclear power, far from being reliable and an answer to climate change, is actually a liability as climate change becomes worse.

5. Nuclear power will not deliver on jobs

New reactors are unlikely to be built on time, on budget, or at all. The jobs they promise will therefore not materialize any time soon and maybe never. The time wasted waiting for new nuclear jobs could have been dedicated to bringing on fast renewable projects that, along with the supply chain they stimulate, deliver more long-lasting jobs faster over a wide range of sectors.

Nuclear jobs tend to be temporary — in construction — or highly specialized, meaning that qualified personnel will not necessarily be drawn from the local community being promised the jobs.

6. Nuclear power produces long-lived lethal waste

The long-lived, lethal high-level radioactive waste produced by all nuclear power plants must be safely shielded from humanity for tens of thousands of years. But since the first radioactive waste was generated in 1942, no such solution has been found. Only one still unfinished geological repository exists in the world, in Finland, with many technical and ethical questions unanswered. To continue to generate radioactive waste, let alone promote further nuclear power development around the world, is irresponsible and means that we will continue to pass both the problem and the deadly detritus of nuclear waste on to future generations.

7. Nuclear power is harmful to human health

Exposure to ionizing radiation released at every phase of nuclear power operations is harmful to human health, especially to more susceptible women and children. This disproportionate harm has rarely been taken into account when protecting for radiation exposure. In the US, radiation exposure standards are still based on the protection needed for a healthy, white male in his twenties to thirties — Reference Man. Instead, efforts are now underway to further weaken these standards so that new nuclear reactors can be sited in densely populated areas.

Replacing fossil fuels with nuclear power also imposes health burdens. Professor Mark Jacobson, has calculated that waiting for nuclear power to replace fossil fuels over its typical long lead times “would result in about 93 million people dying”, whereas new renewables could have been brought on in a fraction of the time, significantly reducing those fatality figures.

8. Nuclear power violates human rights

The placement of uranium mines, mills, enrichment and processing factories, nuclear power plants and waste dump sites tends to discriminate against communities the least resourced to fight back. Most nuclear power countries have sourced their uranium supplies from distant nations and Indigenous lands, leaving those who mined the ore without protection, health care or adequate compensation.

Nuclear operations have contaminated land, air and water supplies, the fundamental needs to sustain life. Nuclear projects have violated treaties with Indigenous peoples — such as Ruby Valley in the case of the proposed Yucca Mountain nuclear waste repository on Western Shoshone land — or threatened to plunder sites that are sacred to Native peoples. In almost every instance, the affected communities were not consulted when their lands were targeted, nor were they afforded their right to free, prior and informed consent and the right to say ‘no.’ New nuclear projects will continue to prey on the most vulnerable in society. The nuclear industry is also deeply colonialist, plundering far off lands, often in the Global South, to feed Western energy greed.

9. Nuclear power is too dangerous

No other energy technology has the same capacity for catastrophic and far-reaching failure resulting in long-lasting harm as nuclear power. We have already seen the serious health and environmental outcomes of a major nuclear power plant accident three times — at Three Mile Island (US), Chernobyl (Ukraine) and Fukushima Daiichi (Japan). There have been countless nuclear near-misses and close calls, partial meltdowns, leaks and spills at nuclear power plants, uranium mines and mills, reprocessing facilities and waste storage sites.

We are now seeing nuclear power plants recklessly embroiled in war zones in Ukraine and Iran.

The costs of a major accident are also astronomical. For example, the Chernobyl disaster has already cost an estimated \$700 billion, while the Fukushima accident could soar higher than \$500 billion once all the cleanup and remediation costs and compensation for its victims are taken into account.



10. The pathway to nuclear weapons

Uranium-235 is the source material for reactor fuel. When it is enriched to less than 5%, it is considered “civil grade.” At higher than 90%, it becomes weapons grade. This means any country with a “civil” nuclear power program is in possession of the necessary technology, skills and materials to develop nuclear weapons. The path from a civil nuclear program to a military one is made even smoother by a flaw in the nuclear Non-Proliferation Treaty that affords signatories who forego nuclear weapons the “inalienable right” to develop nuclear energy. But this “consolation prize” — coupled with the false prestige associated with the possession of nuclear weapons — has left the door perpetually open to the possibility of nuclear weapons development emerging from nuclear power programs. This is precisely why no one is sure whether Iran already is — or is planning on — developing nuclear weapons. As long as civil nuclear technology is exported around the world, the risk remains that more countries will develop nuclear weapons.

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