

## **Is nuclear power a global warming solution?**

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### **Abstract**

**Global climate change is the most significant challenge to energy and environmental policy. The increasing scientific evidence on global warming leads to the necessity of new approaches in energy policy.**

**Some believe that a nuclear power renaissance will lead to low carbon renewable technologies. The motivation of this paper is to discuss the role of aggressive nuclear power plant construction as the wrong path towards a low carbon electricity future.**

### **Introduction**

**The primary cause of global warming is increased emissions of greenhouse gases, in particular carbon dioxide (CO<sub>2</sub>). These greenhouse gases have an average lifetime in the atmosphere of 50 to 200 years. So, if the emission of greenhouse gases were halted completely, global warming would still continue. It is only possible to mitigate its effects through a drastic reduction of the emission of CO<sub>2</sub>.**



Today there are 435 nuclear plants worldwide, which produce 16 percent of the planet's electricity. In comparison, fossil fuels generate 66 percent of the world's electricity. Global electricity demand is projected to double by 2030 and triple by 2050, based on business-as-usual usage. Much of this demand growth will occur in the developing world.

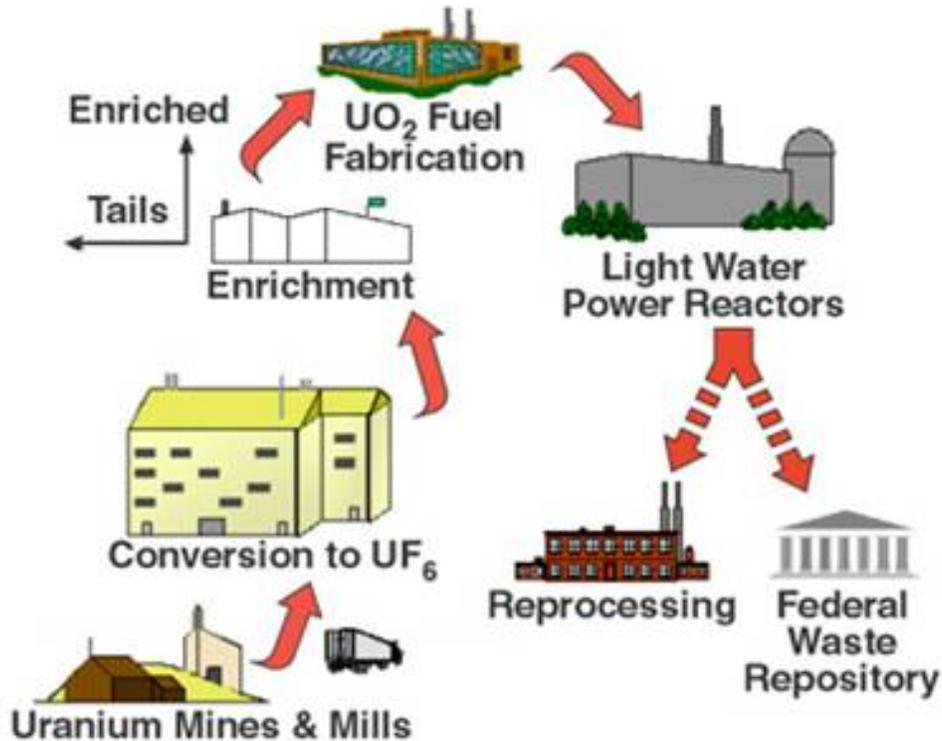
The almost threefold increase in nuclear power by 2050 would increase the global proportion of nuclear energy use from 16 percent to ~20 percent, given the projected increased demands for electricity. As a consequence, this modest increase in contribution from nuclear energy alone would not decrease the emissions of greenhouse gases. How much nuclear energy would be needed to maintain global carbon dioxide emissions at the year 2000 level? Under this very ambitious scenario, each new reactor would have to come online at a rate of less than one per week over the next four decades. By 2025 half of today's nuclear plants will be too old to operate (Assuming 40-year lifespan). Total operating

**capacity will decrease, not increase. Using current nuclear power plants to fight global warming would require an impossible increase in utilized capacity.**

**The industry's scenario is fundamentally flawed, because current nuclear power plants are aging. They are going to require more maintenance and will break down more often. Thus, nuclear power is unreliable for fighting global warming. Scandals, natural disasters and accidents can shut down numerous plants simultaneously. When one of these problems occurs, without sustainable alternative energy sources, fossil fuel plants must kick in which spikes greenhouse gas emissions.**

**For centralized, large systems like nuclear generation, utilities must install a "reserve margin" of extra capacity ready for instant use. For example, in Japan every new nuclear power plant requires additional fossil-fuel-fired capacity. Nuclear power plants and fossil fuel plants come in tandem. If the number of nuclear power plants could be doubled, which is impossible, their total contribution to world energy use would only increase to 12%.**

**Every step of the nuclear power cycle involves the expenditure of energy derived from fossil fuels, which nuclear generated electricity cannot replace. The factories, the transport, and the materials are made using fossil fuels. In particular, plants are made with concrete, which is a CO2 intensive material. Thus, it is untrue to say that nuclear energy is greenhouse friendly.**



**Will nuclear power stop climate change?**

- Too dirty- Greenhouse gas emissions from mining, enrichment, transport and infrastructure.
- Too slow-It takes at least 15 years to build a nuclear power reactor.
- Too dangerous-Nuclear waste is dangerously radioactive now and for hundreds of thousands of years. There is no safe way to store it and it poses a security threat.
- Too expensive- Nuclear power generation is seven times more expensive than energy reductions.

**Nuclear energy can only exist in a society that runs on cheap fossil fuels.**

**Planning and building new nuclear power plants will NOT contribute to combating global warming over the next decade. Over the next decade there will be ZERO additional contribution from nuclear power in the fight to combat global warming.**