



Nuclear Power and Global Warming

Global warming is an undeniable and urgent problem, and support for taking federal action is increasing. Now, a debate is raging about the proper course of action – what will produce the greatest gains in the shortest time? The nuclear industry is attempting to hijack the issue to revive a dying technology, crowding out renewable energy in the process. However, nuclear power cannot rescue us from climate change.

The vast majority of public interest and environmental groups are adamantly opposed to nuclear power. Over 300 national, state, and local organizations have endorsed a statement clearly outlining why nuclear power is not a viable solution to global warming.² Earlier this year, the environmental ministers of Austria, Iceland, Ireland and Norway also stated that the risks and problems of nuclear energy could not be outweighed by its potential to mitigate climate change.³

How Many Reactors Would it Take?

An unfeasible number of nuclear reactors would have to be built by mid-century in order to make a substantial reduction in carbon dioxide emissions. According to a report from the Institute for Energy and Environmental Research, between 1,900 and 3,300 nuclear plants would need to be built worldwide by 2050 in conjunction with renewable energy measures in order to stabilize carbon emissions at their year 2000 levels.⁴ Carrying out this scenario would mean building about one reactor each week for the next 40 years.⁵ Given the long construction time and tremendous expense of nuclear plants, building this many reactors is simply unachievable. Since no new reactors have been built in the US in the past 30 years, rapid growth of nuclear energy would require exorbitant government subsidies and place stress on the declining numbers of nuclear engineers, safety inspectors, and building materials.⁶

Scientists from Princeton describe a less ambitious scenario in which about 700 large nuclear plants would need to be built by 2050 – two every month – in order to reduce the expected increase in carbon emissions by 15%. An additional 300 plants would also be needed just to replace the current fleet that will retire over the next few decades. Even this number of nuclear plants would be difficult to build by 2050. In addition to the construction of nuclear plants, this huge amount of nuclear capacity would require 11-22 large enrichment plants, 18 fuel fabrication plants, and 10 more waste disposal sites the size of Yucca Mountain.⁷

A Council on Foreign Relations report explains that even if the production of nuclear energy remained at its current capacity in the U.S., just replacing the current fleet over the next 40 years would be extremely difficult given our 30-year nuclear hiatus.⁸

Clean Energy?

Nuclear energy is claimed to be the answer to our climate problems since it is clean-burning. However, a life-cycle analysis, which takes into account the energy-intensive processes of mining and enriching the uranium ore, constructing and dismantling the nuclear plant, and disposing the hazardous waste, shows that nuclear is definitely not carbon-free. In fact, emissions from a nuclear plant in the U.S. can range from 16-55 grams of CO₂ per kilowatt-hour over the lifetime of the plant.¹¹ Compared to wind (11-37 gCO₂/kWh) and biomass (29-62 gCO₂/kWh)¹², nuclear is no cleaner than renewables.



A large uranium enrichment and nuclear power plant in France¹³

Furthermore, nuclear power will only become more polluting in the future since increased nuclear production will decrease the supply of high-grade uranium and much more energy is required to enrich uranium at lower grades. At the same time, the International Atomic Energy Agency has already acknowledged that current uranium

resources are not sufficient to meet increased demand in the future.¹⁴ A report from The Oxford Research Group predicts that in 45 to 70 years, nuclear energy will emit more carbon dioxide than gas-fired electricity.¹⁵

Running Out of Time

Nuclear power plants are a slow technology that cannot address global warming in a quick enough time period. The nature of climate change demands that we begin reducing greenhouse gas emissions now and continue doing so over the next few decades. NASA scientist James Hansen says that we have a 10-year window before global warming reaches its tipping point and major ecological and societal damage becomes unavoidable.¹⁶ Even if a nuclear energy project was given government approval today, it would take about 10 years for the plant to start delivering electricity.¹⁷ Before that time, emissions would increase from construction, speeding up the process of global warming.

Real Solutions Are Waiting On the Shelf

Nuclear power might be a reasonable option to solving climate change if it were the only alternative to coal and natural gas. Fortunately, cleaner, cheaper, quicker solutions to global warming are already available. We can also take advantage of huge potential energy savings through efficiency. That doesn't mean being forced to do without; it simply means going further with each kilowatt of electricity.

Energy efficiency is not only the cheapest and easiest way to reduce our carbon dioxide emissions; it will actually save consumers money. A report from the McKinsey Global Institute stated that the installation of highly efficient light bulbs and appliances nation-wide could displace the equivalent output of more than 60 large nuclear plants.¹⁹ Clearly, there's room for improvement.

The primary argument made for the necessity of increased energy consumption is to fuel economic growth. However, we can still achieve much economic growth without building a new power plant except to replace ones that retire. In fact, since 1990, about half of our increased energy demand worldwide has been met with increased efficiency, not new generation.²⁰

The promise of renewable energy options continues to improve as well; modern-day wind turbines are already less expensive than nuclear power and, as the technology continues to improve, costs are dropping even lower. The U.S. Department of Energy predicts that for the foreseeable future, nuclear power will continue to be more expensive than wind.²¹



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