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Nuclear power: no solution to global warming



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Whatever else one could say about nuclear power in the old days, it was certainly not considered environment-friendly. Over the past few years, however, a number of so-called environmentalists, generally Western, have come out in support of nuclear power as an essential component of any practical solution to global warming.

Predictably, flailing nuclear establishments everywhere have grabbed this second opportunity to make a claim for massive state investments and resurrect an industry that has collapsed in country after country due to its inability to provide clean, safe, or cheap electricity. But just as the old mantra “too cheap to meter” proved ridiculously wrong, the claims that nuclear energy can contribute significantly to mitigating climate change do not bear scrutiny.

Most prominent of these so-called environmentalists turned pro-nuclear advocates is James Lovelock, who propounded the Gaia hypothesis of the Earth as a self-regulating organism. Last year he entreated his “friends in the [Green] movement to drop their wrongheaded objection to nuclear energy.” Lovelock’s article had several factual errors. For example, “nuclear energy from its start in 1952 has proved to be the safest of all energy sources” One wonders which of the many renewable energy sources promoted by the Green movement – photovoltaics, wind energy, and so on – has had an accident that even remotely compares with Chernobyl.

Even more inexplicable is the assertion: “We must stop fretting over the minute statistical risks of cancer from chemicals or radiation. Nearly one third of us will die of cancer anyway, mainly because we breathe air laden with that all pervasive carcinogen, oxygen.” Despite such nonsense, Lovelock’s article was circulated widely, both by the nuclear lobby and by other environmentalists who were either confused or felt that this sort of argument had to be refuted

strongly.

Lovelock's bloomers aside, the fact that some environmentalists have endorsed nuclear power as a solution to global warming deserves serious consideration and response. The enormity of the potential impact of climate change adds to this imperative.

Two implicit but flawed assumptions underlie most claims about the significance of nuclear energy for the climate-change issue. The first is that climate change can be tackled without confronting and changing Western, especially American, patterns of energy consumption – the primary causes and continuing drivers for unsustainable increases in carbon emissions and global warming. This is plain impossible; there is simply no way global warming can be stopped without significant reductions in the current energy consumption levels of Western/developed countries. Efforts by various developing countries to match these consumption levels only intensify the problem.

The second flawed assumption is that the adoption of nuclear power will lower aggregate carbon emissions. In a strictly technical sense, each unit of electricity produced by a nuclear plant would cause the emission of fewer grams of carbon than a unit of electricity generated by thermal plants. (A false myth often propagated by the nuclear lobby is that nuclear energy is carbon free. In reality, several steps in the nuclear fuel cycle, from uranium mining to enrichment to reprocessing, emit copious amounts of greenhouse gases.) And so, the assumption goes, installing a large number of nuclear power stations will lower carbon emission rates.

The problem is that the assumption holds true only if all else remains constant, in particular consumption levels. But that is never the case. In fact, there is no empirical evidence that increased use of nuclear power has contributed to actually reducing a country's carbon dioxide emissions. The best case study is Japan, a strongly pro-nuclear energy country. As Japanese nuclear chemist and winner of the 1997 Right Livelihood Award, Jinzaburo Takagi pointed out, from 1965 to 1995 Japan's nuclear plant capacity went from zero to over 40,000 MW. During the same period, carbon dioxide emissions went up from about 400 million tonnes to about 1200 million tonnes.

There are two reasons why increased use of nuclear power does not necessarily lower carbon emissions. First, nuclear energy is best suited only to produce baseload electricity. That only constitutes a fraction of all sources of carbon emissions. Other sectors of the economy where carbon dioxide and other greenhouse gases are emitted, such as transportation, cannot be operated using electricity from nuclear reactors. This situation is unlikely to change anytime in the near future.

A second and more fundamental reason is provided by John Byrnes of the University of Delaware's Centre for Energy and Environmental Policy, who observed that nuclear technology is an expensive source of energy service and can only be economically viable in a society that relies on increasing levels of energy use. Nuclear power tends to require and promote a supply-oriented energy policy and an energy-intensive pattern of development.

The high cost of nuclear power also means that any potential decreases in carbon emissions due to its adoption are expensive, certainly higher than energy efficiency improvements as well as other means to lower emissions from thermal power plants.

One other argument advanced by some of these so-called environmentalists is that nuclear power is just an interim solution while better solutions are worked out. The idea is wholly at odds with the history of nuclear establishments around the world and completely underestimates the remarkable capabilities of powerful institutions to find resources for continuing existence and growth. Once such institutions are established, they will find ways to ensure that they are not disempowered.

For nuclear power to make a significant dent in global warming, nuclear capacity must grow manifold (ten-plus). The notion that nuclear power can increase manifold from current levels and then be phased out is wishful thinking, to say the least. Such a projection also completely ignores existing realities – uncompetitive costs, safety concerns, the unresolved problem of radioactive waste, and the link to the bomb – that come in the way of any significant expansion of nuclear power.

Global warming is a serious issue. Providing ill-thought out answers is no way to address such a grave problem.

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