



Japan's Nuclear Kamikazes: A Morality Tale of Energy Madness

By Rinaldo Brutoco and Madeleine Austin

In the final stages of World War II, Japan found young men willing to give their lives in suicidal missions against Allied warships. Scarves tucked around their necks blowing in the wind identified them as men willing to die for their country.

The modern day kamikazes are the men who have been sent day after day into the unshielded nuclear morass of the smoldering Fukushima nuclear power complex. Why must we ask such noble sacrifices from individuals when this crisis could and should have been avoided?

The inherent danger of nuclear power creates known risks that the world has chosen to ignore, including higher cancer rates, nuclear proliferation and terrorism, and contamination from nuclear waste.

The only way to avoid another nuclear crisis is to decommission nuclear reactors. They persistently emit radiation even during their routine operations

The only way to avoid another nuclear crisis is to decommission nuclear plants.

and generate radioactive waste that no country in the world has found a safe way to permanently store for the millennia it stays radioactive.

Even as radiation levels surge in Japan, media pundits discuss the dangers of radiation as if radiation sickness were limited to instances in which

people experience nausea, diarrhea, vomiting, or death. This is false. A host of studies show that emissions of radioactive strontium-90 during nuclear plants' routine operations increase cancer rates among those who live near the plants, especially in women and children. The cumulative effect of low-levels of radiation—whether from dental or airport x-rays, the routine emissions of nuclear plants, or elevated radiation emissions during nuclear plant emergencies—can be lethal over time.

Nuclear plants' emissions of radiation during their routine operation increases cancer rates among those who live nearby.

In the days following the start of the world's latest nuclear crisis, the media has repeatedly touted Japan's nuclear expertise, marveling that such a crisis could occur in a country with such an advanced nuclear industry. The real marvel is the public's willingness to abide the global nuclear power industry's ability to translate its influence and government connections into taxpayer subsidies, liability caps, and lax regulatory regimes that demonstrate governments' cavalier disregard for public safety. Why is the public willing to subsidize and cap the liability of an industry that is afraid it may cause so much harm it cannot afford to pay for it?



Surely the world has received a wake-up call—the sight of Japanese workers on near-suicide missions trudging and flying back into lethal radiation at the doomed Fukushima plant in a desperate attempt to prevent a wider nuclear catastrophe. Videos present a graphic testament to the failure of human foresight: a country with a supposedly advanced nuclear industry reduced to trying to prevent a full nuclear meltdown by helicopters’ dousing wind-blown water on damaged reactors and their radioactive waste fuel as if they were an out-of-control campfire.

A power failure following an earthquake or other natural disaster is not an unforeseeable event, nor is a massive earthquake or tsunami in the “Ring of Fire”—the area of high seismic and volcanic activity that rings the Pacific. The Japanese government disregarded these known and substantial risks at the Fukushima nuclear plants. The U.S. government continues to disregard these known and substantial risks at the Diablo Canyon and San Onofre nuclear plants in California, which sit just 40 miles from the offshore Cascadia subduction zone where another earthquake and tsunami is highly likely.

“Nuclear power technology is based on the mad idea of generating electricity by using radioactive fuel to boil water.”

But the ultimate failure of foresight is public acceptance of an expanding nuclear industry whose danger exceeds the fallible human race’s ability to manage it. Nuclear power technology is based on the mad idea of generating electricity by using radioactive

fuel to boil water, using a process that can create an uncontrollable nuclear reaction if mismanaged.

So far, the nuclear industry’s false refrain that nuclear power plants have no carbon footprint has

obscured the fact that nuclear plants’ radiation footprint is far more lethal than the carbon footprint of any other industry.

In fact, the nuclear power life cycle produces carbon emissions, especially during uranium milling and mining, which severely harm human health and the environment.



As we have written, [nuclear power is particularly ill-suited to the climate change era](#) because of nuclear plants’ need for vast amounts of cooling water and because new plants cannot be built fast enough to substitute for higher carbon energy sources before climate change reaches a tipping point.

The public pushes back

Around the globe, members of the public are trying to push the reset button. Anti-nuclear protests have spread in Europe, including Germany, France, and Italy. As a result of the crisis in Japan and an anti-nuclear protest in Germany that drew over 100,000 people, the German government has reversed its plans to extend the operating lives of its aging nuclear reactors by 12 years, and has shut 7 nuclear plants for safety inspections. The EU has announced plans to stress test the 143 plants in its 27 countries, and Switzerland has suspended a project to replace its nuclear reactors.

Nature and nuclear power

As people around the world witness and grieve over the profound human suffering and tragedy in Japan, they also struggle with fears for their own safety, from both the impact of Japan’s unfolding nuclear crisis and the risks posed by their own country’s nuclear power industry. Even more than an oil disaster, a nuclear disaster anywhere is a disaster everywhere.



Japan’s 9.0 quake and its aftermath show the stark mismatch between human nature and the forces of nature unleashed by nuclear power. While immediate short-term reforms are necessary to protect the public from existing nuclear reactors—such as picking up the pace at which plants move radioactive spent reactor fuel from largely unprotected spent fuel pools into concrete entombments, and tighter standards for nuclear plants’ backup power—the only real solution to the dangerous, dirty, and uneconomical nuclear fuel industry is for the world to speed its transition to truly clean energy.

Governments all around the world are ignoring the well-documented dangers of nuclear power as part of “a largely out-of-sight worldwide free-for-all among nuclear power companies and their allied national governments to expand their share of the fast-growing nuclear energy international market,” as we wrote in June 2010 in [“The Upcoming Nuclear Peril: Worse than the BP Oil Disaster.”](#)

Seventeen nuclear reactors in the EU and 23 reactors in the U.S. are boiling water reactors similar to the

“17 nuclear reactors in the EU and 23 in the US are GE Mark I reactors similar to the Fukushima reactors in Japan.”

Japanese Fukushima reactors—known as GE Mark I reactors—whose containment structures exploded. Since at least 1972, experts have warned that if the plants’ cooling systems failed, the primary containment vessels would probably burst as the fuel rods inside overheated, spewing radiation.

Despite well-publicized safety problems with new AP1000 reactors, including the likelihood of containment failure, China and the UK are among the countries with

plans to build such reactors. China has already begun construction. Half of the 28 new reactors proposed for the U.S. are AP1000 reactors.

The U.S. Nuclear Regulatory Commission (NRC) has required some design improvements in the AP1000 reactor but even with those, a senior NRC engineer has warned that the reactor’s concrete-steel containment building could shatter “like a glass cup” from the impact of an earthquake, airplane, or storm-carried missile. The NRC is expected to issue its final approval this May. In a [March 7, 2011 letter, Congressman Ed Markey \(D-Mass\)](#) urged the NRC to resolve the safety issues before issuing its approval.

“Half of the 28 new reactors proposed for the US are AP1000 reactors designed with a flawed concrete-steel containment building that is in danger of shattering upon impact.”

China has the world’s most ambitious plans to expand nuclear power, but this week it announced that it would suspend its approval of any new plants pending a review of its safety standards. It is in the midst of [building more nuclear power plants than the rest of the world combined](#) even as it accounts for about [half the earth’s recorded quakes every year](#). The former head of its nuclear program recently received a life sentence for corruption.

China hasn’t given up its plans to quadruple its nuclear-power capacity over the next decade but it has told local officials to temporarily cool their enthusiasm for nuclear power. Other countries from Thailand, to India, and Chile are re-evaluating their plans to expand nuclear power.

The U.S. has stubbornly reaffirmed its support for nuclear power, saying it will look for “lessons learned” from Japan, even as both countries demonstrate a remarkable indifference to the



lessons to be learned from the problems in their own nuclear industry, whether caused by earthquakes and other natural disasters, power failures, or human error.

The fool in “foolproof technologies”

Edward Teller, father of the nuclear bomb, famously said that the problem with foolproof technologies is that the fool always proves greater than the proof. The Japanese and U.S. government’s cavalier attitude toward nuclear safety, including seismic risks, evidences the truth of his statement.

Before Japan’s 9.0 earthquake, its Atomic Energy Commission had claimed that Japan’s reactors were built to withstand an [all but a “once in 10,000 years” earthquake](#). Yet since Japan’s first reactors started up in the 1960s, three earthquakes before the 9.0 quake had produced vibrations that exceeded design assumptions. The Fukushima power plant was designed to withstand only a 7.0 quake.

In 2007, after a 6.8 earthquake damaged and led to an indefinite shutdown of Japan’s Kashiwazaki-Kariwa nuclear plant, which had been built on an undiscovered active fault line, the deputy director

“If you insisted on being 100% sure about finding all active fault lines, you’d never get anything built.”

for nuclear safety at Japan’s Ministry of Economy, Trade and Industry said that the nuclear company had done the best it could when it constructed the plant, adding, “If you insisted on being 100% sure about finding all active fault lines, you’d never get anything built.”

WikiLeaks cables show that in 2008 the International Atomic Energy Agency [warned that Japan’s safety guidelines for protecting nuclear plants from earthquakes were inadequate](#) and out of date.

The NRC also has been slow to update its assessment of seismic hazards. More than five years after NRC staff recommended an updated assessment, the NRC released its August 2010 report that raised the risk of quake damage to U.S. plants from the range of 1 in 100,000 to the range of 1 in 10,000. The plants most at risk are in the East, South, and Midwest because they haven’t been built to withstand earthquakes. The NRC report said that [with risks no higher than 1 in 10,000, “there was no immediate concern regarding adequate protection.”](#) New York Governor Andrew Cuomo has just ordered a review of earthquake danger at the Indian Point plant, which was listed as the U.S. plant most at risk.

Several U.S. nuclear plants sit on or near earthquake fault lines. Despite a newly discovered fault just offshore of the aging Diablo Canyon nuclear power plant, which sits half way between San Francisco and LA, the NRC has so far refused to shut it or even deny a 20-year extension of its operating license. It also has failed to shut California’s San Onofre nuclear plant, which sits in a highly active seismic zone and lacks the freeways necessary for an emergency evacuation of the 7.4 million people who live within 50 miles of the plant.



A new report by the Union of Concerned Scientists, [“The NRC and Nuclear Power Plant Safety in 2010,”](#) shows how NRC tolerates known safety problems at U.S. nuclear plants, and describes the NRC’s 14 nuclear “near-misses” in 2010.

The nuclear industry has been no more immune to fraud and cover-ups than any other industry. The difference is in the potential scale of the consequences. Several examples suffice.



The President of Tokyo Electric Power (TEPCO), which operates the Fukushima plants, resigned along with four of the company's other senior executives after [suspected safety violations and cover-ups](#). TEPCO is Japan's largest utility and a minority investor in a planned new nuclear plant in Texas known as the new South Texas Project.

Local residents sued to shut the Shimane nuclear plant in Japan due to an earthquake fault line 2.5 km (1.5 miles) from the plant that the plant's utility operator, Chugoku Electric Power Co., disclosed in 1998, long after the plant began operations. The utility first reported that the fault line was 8 km long, but gradually upped it to 22 km while still asserting the plant could withstand any quake and pursuing its plans to build a new reactor at the site. In June 2010, the utility announced that it had discovered that it had [failed to perform required inspections or component replacements at 511 locations](#) at the plant, up from the 120 such failures it had reported in March. Last month the company announced that technical problems have delayed the start-up of a new reactor at the site.

Greg Palast, a former lead investigator in U.S. government nuclear plant fraud and racketeering investigations, recently wrote a chilling account about [falsified results of safety tests of back-up diesel generators](#) at the U.S. Shoreham nuclear plant. The generators failed so fast during safety tests that the investigators nicknamed them "Snap, Crackle, and Pop."

Power blackouts and nuclear plants

Standards need to be tightened to protect the public from nuclear accidents caused by nuclear plants' loss of on-site and off-site power. The NRC now requires U.S. plants to be able to cope with such ["station blackouts"](#) for as little as 4-8 hours. A natural disaster, a terrorist attack on infrastructure, or a Nor'easter storm could easily cause a longer station blackout. U.S. nuclear reactors have already experienced power failures as a result of natural

disasters, including a 2008 hurricane, 1998 tornado, and 1992 hurricane.

Every nuclear plant should be subject to safety standards to protect back-up generators from tsunamis and other foreseeable risks. Back-up generators near water, like



those at the Fukushima plant, are in danger of getting swamped. Because of nuclear plants' need for vast amounts of cooling water, they are often built on coastlines or rivers. Coastal plants are particularly vulnerable to the rising sea levels and severe storms that climate change is causing. Nine of the EU's Mark 1 reactors, in Sweden and Finland, are on coastlines, and about 40% of all the EU's reactors are on coastlines.

Nuclear safety standards also must address the risk from a "space weather" event—"an enormous ejection of charged gas from the sun capable of scrambling terrestrial electronic instruments." The history and current understanding of such solar

flares and other space weather events that have the ability to "affect the integrity of the world's power grids," were vividly described in a recent *New York Times* article, ["Celestial Storm Warnings"](#) by prominent scientists John Holdren and John Beddington.

"Nuclear safety standards must address the risk from "space weather" events, which can disable power grids."

The [Foundation for Resilient Societies](#) has filed a rulemaking petition with the NRC to address the problem of loss of backup power for unattended spent fuel cooling at nuclear plants, which will



hopefully stoke public demand for new NRC rules on backup power.

Taxpayer subsidies and liability caps for the nuclear industry

Even before the Fukushima nuclear crisis, the realization was spreading that the much-hyped “nuclear renaissance” was an illusion. The industry has never been able to survive without massive taxpayer subsidies in France, the U.S., or elsewhere. Several years ago as the touted renaissance began, U.S. nuclear CEOs made clear that this time would be no different and that there would be no new plants without new taxpayer subsidies, including taxpayer-financed loans, insurance against delays caused by public participation in the licensing process, and caps on the industry’s liability for nuclear catastrophes.

Countless studies have shown that nuclear power is dirty power that even as a mature industry cannot compete with other energy sources. A comprehensive [report on taxpayer subsidies for nuclear power](#), released last month by the Union of Concerned Scientists, concluded that “in some cases it would have cost taxpayers less to simply buy kilowatts on the open market and give them away.”

The nuclear industry will not passively watch the galvanizing public pushback against its ambitious

plans to expand nuclear power. It will take a sustained and well-organized political movement for people around the world to counter the nuclear industry’s global power, fueled by its political and media connections. Nothing but a powerful political movement can dispel the

confusion and misunderstanding created by the mainstream media’s poor coverage of the dangers of nuclear power, including the dangers of the industry’s routine radiation emissions.



During the 2009-10 U.S. election cycle, the Nuclear Energy Institute (the main trade and lobbying arm of the U.S. nuclear industry) and over a dozen power companies with big nuclear reactor fleets [spent tens of million of dollars on lobbying and campaign contributions](#) to key members of Congress, according to *Politico* and data compiled by the Center for Responsive Politics. A similar tale of corporate power and influence could be told in any country in which the nuclear industry does business.

There’s nothing green about nuclear power

Japan’s nuclear crisis has captured the world’s attention and empathy, as it should and will in the months and years ahead. But as the world struggles with that crisis, it must come to terms with the fact that nuclear power does not need an earthquake and tsunami to be dangerous. We must stop courting disaster through our energy choices. Nuclear power is not green. It does not sustain life. It destroys it.

Common sense dictates that people around the world reject a form of energy that is inherently dangerous, carcinogenic, too risky and expensive for the private sector to fund, and controlled by a few corporations who enrich themselves by demanding liability caps and other taxpayer subsidies as the price of doing business. That price is too high to pay.

About the authors:

Rinaldo Brutoco is the Founding President of the World Business Academy, and a frequent public speaker and a prolific author on renewable energy, climate change, and sustainable business strategies. He is the co-author of [Freedom from Mid-East Oil](#) (2007), a leading book on energy and climate change, and *Profiles in Power* (1997), a college textbook on nuclear power and the dawn of the solar age.

Madeleine Austin is the Vice President of the World Business Academy and the co-author with Rinaldo Brutoco of several articles on nuclear power, including [“The Nuclear Nemesis”](#) (ABA, Trends May/June 2008) and [“The Nuclear Nemesis Redux”](#) (Forum CSR International, Dec. 2008).