



## CONVERGING CRISES: CLIMATE CHANGE AND NUCLEAR POWER

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One of the problematic legacies of the modern era is a tendency toward rigid categorization. Recently a Catholic peace group here in New York rejected my proposal to do a workshop on ‘hydro-fracking’<sup>1</sup>; as they said their focus is peace, not the environment. But the world water shortage, which ‘fracking’ promises to worsen, is a major cause of war.

The issue of nuclear power is similarly intertwined with questions of world peace and climate change. Most people are aware of the harm caused by nuclear weapons, as seen in the first, and, we pray, only use of them, the US attacks on Japan in 1945. Deaths at Hiroshima and Nagasaki are estimated at 150,000 - 246,000, though some experts put them higher.

Some also include in their assessment of the evils of the US attacks on Japan the radiation discharged by the nuclear explosions causing thousands more people to become ill or die for years in the areas around Hiroshima and Nagasaki. Awareness of this horror of nuclear war is less likely, however, because the US intentionally covered up the extent of radiation sickness caused by its 1945 attacks.

A third dimension of the incalculable harm caused by a nuclear explosion is its impact on the physical environment. A ten-megaton weapon does severe damage for eleven miles (17.7 km.) from the point of impact and moderate damage for eleven more miles. It also creates a mushroom cloud that blocks out sun-

light for several days, bringing about severe micro-climatic change.<sup>2</sup> And after the extreme heat has receded, a nuclear attack can then cause temperatures to plummet below freezing. Some scientists argue that a large-scale nuclear exchange could cause a ‘nuclear winter’—and the accompanying loss of growing seasons—for one to three years. Even underground nuclear tests result in extreme seismic variations that can cause earthquakes up to a thousand miles away.

This would seem to be quite enough to contemplate. But a number of the dangers of nuclear attacks mentioned above also accompany the ‘peaceful’ generation of nuclear power. And the extreme weather events that climate change causes make other aspects of the generation of nuclear power almost as dangerous as nuclear weapons themselves.

### Problems with Nuclear Power

The first problem with nuclear power is that it is produced with the same technology that produces nuclear weapons. As the Nuclear Energy Information Service reports:

‘It is the same nuclear fuel cycle with its mining of uranium, milling, enrichment and fuel fabrication stages which readies the uranium ore for use in reactors, whether these reactors are used to create plutonium for bombs or to generate electricity. In the end, both reactors produce the plutonium. The only difference between them is

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<sup>1</sup> ‘Hydro-fracking’ is a method used in obtaining coal seam gas. It means forcing a large volume of water under pressure into underground rock to fracture the rock and thus gain access to the gas.

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<sup>2</sup> ‘Nuclear Darkness, Global Climate Change, and Nuclear Famine.’ <http://www.nucleardarkness.org/warconsequences/default.asp?tabid=1&pageid=1> Accessed December 27, 2012.

the concentration of the various isotopes used in the fuel. Each year a typical 1000 megawatt commercial power reactor will produce 300 to 500 pounds of plutonium - enough to build 25 - 40 Nagasaki-sized atomic bombs'.<sup>3</sup>

It is precisely because the technology for nuclear weapons and nuclear power is one and the same, as is the training that scientists receive to operate that technology, that it is virtually impossible to determine whether a nation is developing nuclear weapons or nuclear energy generating capacity. Given the numbers of non-nuclear attacks in recent years by terrorists of all stripes, the appropriation of nuclear energy technology for violent ends is guaranteed sooner or later. Yet the inherent connection between ostensibly peaceful nuclear technology ('Atoms for Peace', as US President Dwight D. Eisenhower put it) and the manufacture of nuclear weapons is far from the only danger that accompanies the production of nuclear energy. Others include the use and pollution of huge quantities of water in the generation of nuclear power, and the accompanying destruction of sea life—and this when nuclear accidents have not occurred. The further damage to water, environment and living creatures in the face of a nuclear accident is incalculable.

Another problem attending the generation of nuclear power is where to store the large quantities of waste produced by the generating process. Such waste remains radioactive for thousands of years and must be stored far from groundwater and geological activity so that that radioactivity will not be released into the environment. Local communities, such as those near Yucca Mountain in the US state of Nevada, are strenuously resisting the storage of such waste 'in their backyards', though ironically, and insanely, German nuclear waste was being shipped to Virginia for processing, at least until the recent German withdrawal from nuclear power.

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<sup>3</sup> Nuclear Energy Information Service. 'Nuclear Power and Nuclear Weapons.' <http://www.neis.org/literature/Brochures/weapcon.htm> Accessed December 1, 2012

And when accidents do happen, the hazards multiply, as they did at Chernobyl in 1986, and most recently in Fukushima, Japan, with stunning damage to rivers, lakes and reservoirs, and fauna and flora, not to mention the immediate loss of human life and the ongoing effect of radioactivity on people and geographical regions. It is also worth noting that nuclear energy production is financially unsustainable because of the huge cost of building the generators and storing the waste, and because only governments are willing to indemnify the plants; they are so dangerous that the insurance industry will have nothing to do them.

Before Fukushima Daiichi, because of the imminence of peak oil<sup>4</sup> and the undeniable (though widely denied) increase in global warming, we saw the first real move toward nuclear energy production since Chernobyl. After Fukushima, there has been some movement away from nuclear power generation, as in Germany, where a huge outcry after the meltdown in Japan resulted in a decision to move from nuclear to renewable power sources. Yet some countries, France and the USA, for example, are far from ending nuclear energy production.<sup>5</sup> And you may be sure that, even if the US were not as profoundly politically divided as it is, the energy lobby here would not concede the production of nuclear energy without an enormous struggle.

### **The Future of Nuclear Power**

The United States is the largest generator of nuclear power in the world, accounting for more than 30% of the worldwide nuclear generation of electricity. In the thirty years after the Three Mile Island accident in 1979, the US built few new nuclear reactors. With the passage of the

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<sup>4</sup> 'Peak oil' refers to the time when world oil production reaches its maximum and from then on decreases in quantity and availability.

<sup>5</sup> Approximately 70% of France's energy is nuclear. The US has 100 commercial nuclear reactors and 36 that are used for research. <http://www.nrc.gov/reactors/operating.html>. Accessed December 27, 2012.

Energy Policy Act of 2005, however, the US began subsidizing new reactors, and new plants were expected to begin coming on line after 2012. Nuclear power is also attractive because, before the shale gas boom in the US, the power it generates cost 68% of that generated from coal and a quarter of the power generated from gas. The proliferation of natural gas in the US resulting from the hydro-fracking of shale rock may reduce this difference, however. And of course, when capital costs are factored in, nuclear power becomes significantly more expensive, something government subsidies obscure.<sup>6</sup>

Some experts advocate a return to nuclear power because the generation of nuclear energy does not produce CO<sub>2</sub> as does the generation of power by plants using coal or oil. But climate change also increases the dangers of the production of nuclear power. For one thing, nuclear plants are frequently built on the shores of oceans because of the vast supply of water that nuclear cooling requires. Yet one of the serious effects of climate change is sea-level rise, which threatens the long-term security of nuclear plants. Extreme weather events which accompany climate change, including tsunamis, tornadoes and hurricanes, also endanger nuclear power plants, as we saw in the failure at Fukushima. Likewise, scientists now believe that the hydro-fracking of natural gas, portrayed by many as an alternative solution to the global warming crisis because it produces half the CO<sub>2</sub> that oil does, can cause earthquakes, which are also not too good for nuclear power plants, as the Fukushima melt-down illustrated.

One would hope that nations would determine their future use of nuclear power in light of the damage it does to human beings, other living creatures, the wider environment, and even national security. At this point it seems more likely that such decisions will be almost entirely economic, with the decreasing cost of natural gas, at least in the United States, and the power

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<sup>6</sup> Nuclear Power in the USA. <http://www.world-nuclear.org/info/inf41.html>  
Accessed December 28, 2012.

of the nuclear energy lobby, playing decisive roles.

### Now what?

As we confront the converging crises of nuclear weapons, nuclear power and climate change, the question of what to do becomes ever more pressing. On the face of it, nothing is more important than organizing politically, communicating with other citizens and our political representatives about the dangers these developments present to our own futures and those of our children and grandchildren. Angela Merkel deserves credit for leading Germany's move toward renewable energy. But it is inconceivable that she would have done so without hundreds of thousands of Germans taking to the streets after the meltdown at Fukushima to demand such a move.<sup>7</sup>

Yet it's unlikely that political action will be sufficient to turn the tide against the use of nuclear power and other energy sources that threaten the planet's future. This is so because underlying any return to nuclear power as well as the continued burning of coal and the increasing use of natural gas is commitment to a way of life based in unlimited access to cheap energy. Such a way of life involves not only energy-based transportation, lighting and communication, but also the possession of virtually limitless commodities, at least for many residents of the North and West.

Since the nations of these regions of the world have basked in the luxury of a cheap-energy way of life for decades, it is virtually impossible for them to unshamefacedly discourage other nations from pursuing it. Yet the energizing of mega-nations like India and China with carbon-based fuels (especially coal) guarantees the destruction of much of the earth's environment through climate change.<sup>8</sup>

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<sup>7</sup> Germany Nuclear Power Protest Draws 200,000." *The Huffington Post*,  
[http://www.huffingtonpost.com/2011/03/26/germany-nuclear-power-protest\\_n\\_841023.html](http://www.huffingtonpost.com/2011/03/26/germany-nuclear-power-protest_n_841023.html) Accessed December 28, 2012.

<sup>8</sup> As a result of the increasing availability of natural gas through the hydro-fracking of shale rock, the

Some political leaders have been successful at moving their constituents toward more sustainable energy sources, but it remains to be seen if they can maintain these commitments when the costs of such shifts become apparent. European economists are already predicting that Germany will increase its coal use as the shift to renewables raises consumers' energy bills. The excitement generated by protesting crowds is hardly enough to sustain long-term sacrifice. What's needed is a genuine conversion to a more abstemious way of life, and this is where the world's spiritual and religious traditions play a crucial role. Indeed, a range of religious and spiritual groups have organized around environmental sustainability and climate change, among them, eco-Buddhists, green Muslims, and Jewish environmentalists.<sup>9</sup>

As a major religious/spiritual force throughout the world, Christianity also has a critical role to play in this conversion process. Some Christian leaders have already made inspiring statements about the environmental crisis and even taken limited actions; the United States Conference of Catholic Bishops, for example, established the Catholic Coalition on Climate Change in 2006.<sup>10</sup> The truth is, however, that most US Catholics have never heard of the Catholic Coalition on

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United States is exporting increasing amounts of coal to Asia, especially China, to be used in the generation of electricity. While the US exported 40 million tons of coal in 2002, it projects 125 million tons of coal exports in 2012.

<http://thinkprogress.org/climate/2012/10/23/1072041/us-coal-exports-on-pace-to-hit-all-time-high/?mobile=nc> Accessed December 27, 2012.

<sup>9</sup> For information about these groups, see Ecological Buddhism: A Buddhist Response to Global Warming <http://www.ecobuddhism.org> ; Muslim Environmentalists <http://islam.about.com/od/activism/a/Muslim-Environmentalists.htm> ; and the Coalition on the Environment and Jewish Life <http://coejl.org>. All accessed December 27, 2012.

<sup>10</sup> Catholic Coalition on Climate Change. <http://catholicclimatecovenant.org/about-us/coalition-members/> Accessed December 28, 2012

Climate Change - indeed, have never heard the words 'climate change' spoken from the pulpit. In the face of superstorms, droughts, and rising sea levels, it's time for Christian leaders and communities to issue a ringing call for something like a new asceticism. In using this term I am reminded of the great turn to asceticism and community by the Desert Mothers and Fathers beginning in the late 3<sup>rd</sup> Century CE. These women and men rejected the worldliness of late Roman civilization and the pursuit of riches; instead, they practised self-sacrifice for the sake of the reign of God.

Some argue that traditional Christian asceticism overemphasizes suffering almost to the point of masochism. But it's hard to deny that in our time, the renunciation of the consumerist lifestyle is needed desperately, especially here in the West. Movements like the Green Sisters, the *New Monasticism and the Transition Network* point the way toward such a new asceticism, aimed not at suffering as an end in itself but at self-sacrifice for the sustaining of creation.<sup>11</sup>

In the months to come perhaps Grail women around the world will join together to discuss our role in living and promoting such a new asceticism for the sake of creation and to reach out to others with whom to collaborate in this much-needed undertaking.<sup>12</sup>

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<sup>11</sup> For more on these movements, see Sarah McFarland Taylor, *Green Sisters: A Spiritual Ecology* (Harvard University Press, 2009); Genesis Farm <http://www.genesisfarm.org> ; Rutba House, *Twelve Marks of a New Monasticism* (Cascade Books: 2005), 137-148; and Transition Network <http://www.transitionnetwork.org>. All accessed December 27, 2012.

<sup>12</sup> Since 2011, The Grail at Grailville, in Loveland, Ohio, USA, has been collaborating with the Transition Town movement on issues of local resilience and sustainability. <https://www.grailville.org/files/Loveland%20Herald%20Article%202012-11.pdf>. (Cut and paste into search engine to access; January 8, 2013.)