

Series: Guardian Environment Network

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# Don't buy Obama's greenwashing of nuclear power

Last month, inspectors found dangerous chemicals in the groundwater near the Vermont Yankee nuclear reactor. The situation demonstrates that from the mining of uranium ore to the storage of radioactive waste, nuclear reactors remain as dirty, risky, and as costly as they ever were. If President Obama's recent enthusiasm for nuclear reactors has led you to believe otherwise, you've bought in to the administration's greenwashing of nuclear. From [Grist](#), part of the [Guardian Environment Network](#)

Erich Pica for [Grist](#), part of the [Guardian Environment Network](#) guardian.co.uk, Tuesday 9 March 2010 11.10 GMT

On February 16, while President Obama was in Maryland announcing an \$8.3bn taxpayer-backed loan guarantee for Southern Company to build two new nuclear reactors in Georgia, inspectors at the Vermont Yankee reactor were finding dangerously high levels of tritium, a radioactive cancer-causing chemical, in the groundwater near the plant.

The next week, the Vermont state Senate voted overwhelmingly to shut down Vermont Yankee when its current license expires in 2012.

Vermont Gov. Jim Douglas (R) called the timing of the nuclear loan guarantee announcement and the Vermont Senate's decision "ironic." More than just some coincidence, though, the Vermont Yankee situation demonstrates that from the mining of uranium ore to the storage of radioactive waste, nuclear reactors remain as dirty, risky, and as costly as they ever were. If President Obama's recent enthusiasm for nuclear reactors has led you to believe otherwise, you've bought in to the administration's greenwashing of nuclear.

President Obama has justified his proposed \$55 billion in taxpayer-backed loan guarantees for new nuclear reactors by misrepresenting nuclear reactors as the largest "carbon-free" energy source in the United States. That's like saying McDonald's should be put in charge of a nationwide obesity campaign because it's the largest restaurant in the U.S. that sells salads.

The argument that nuclear is "carbon-free" conveniently omits the entire process of mining uranium, which produces greenhouse gases, along with other pollutants. In Virginia, where a study has just been commissioned to determine its safety, uranium is mined in open pits. This destroys topsoil and increases runoff, which contaminates drinking water with cancer-causing toxins.

The uranium-enrichment process also emits greenhouse gases and is highly wasteful. Eighty percent of the ore that goes through the enrichment process ends up as waste. And this is to say nothing of the lye, sulfuric acid, and other caustic agents that must be used to turn the uranium into reactor-ready fuel.

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Heat sensitive CO2

While on the surface, the steam billowing from the cooling tower of a nuclear reactor is less harmful than the toxic smoke that spews from a coal plant, nuclear reactors still create byproducts that are dangerous to human health and welfare. There's also the huge problem of radioactive nuclear waste, which can stay hot for [hundreds of thousands of years](#). Storing the radioactive waste isn't just a [security threat](#); there's potential for radioactive chemicals to leak, as they are in Vermont and at [other aging reactors](#) around the country.

Spent radioactive waste continues to sit at reactor sites and wait for a scientific breakthrough that is 50 years overdue. But a long-term waste storage solution doesn't exist. The Yucca Mountain facility, the government's radioactive waste repository project in Nevada, was marked by billions of wasted dollars, numerous legal challenges, and [fundamental infeasibility](#). President Obama recognized Yucca Mountain's failure and [cut the funding](#) for it in 2009. Secretary of Energy Steven Chu followed up by [issuing a request](#) last week to revoke Yucca Mountain's application to be licensed as a waste repository.

In [Maryland last month](#), President Obama told us the United States needs to build new nuclear reactors to keep up with France's nuclear investments. But France has had its own problems with radioactive waste contamination. The government has had to [close down entire rivers](#) because of leaks.

In the same speech, President Obama also used China's nuclear growth to greenwash his administration's push for more nuclear reactors. But his argument doesn't stand up. The United States already gets a [greater percentage](#) of its energy from nuclear reactors than China will after it reaches its [target for nuclear growth](#), and China has [pledged to invest even more](#) toward increasing its solar and wind output. The goal of the United States should not be to build more nuclear reactors, but to make them irrelevant through our own investment in truly clean, renewable sources of energy.

In another inapt comparison, President Obama contrasted the emissions from a nuclear reactor with the emissions from a coal plant. But that [false dichotomy](#) ignores the cleaner and safer forms of renewable energy that exist and [will do more](#) to [reduce greenhouse gases](#). Worldwide, renewables have actually [outpaced nuclear reactors](#) in energy capacity and fossil fuels in investment.

The \$55 billion in taxpayer money the [Obama administration](#) wants to risk on more nuclear reactors would produce a far [greater return](#) if spent on truly clean, renewable energy. Building new nuclear reactors would be the [most ineffectual method](#) to reducing greenhouse gases, whereas building more wind turbines or installing more [photovoltaic solar panels](#) would not only do a better job at mitigating climate change, but would create more jobs. President Obama's nuclear industry bailout instead pushes us back to the energy future of the 1950s and gives cover to the nuclear industry to continue to be [lax on safety enforcement](#) and [lethargic in technological advancement](#).

President Obama has said that "environmentalists and entrepreneurs" should no longer retread the same arguments about nuclear energy. But Vermont Yankee shows us that there's nothing new in nuclear that merits revisiting: clean and safe nuclear energy remains an "[Atoms for Peace](#)" pipedream. There may be a shiny green coat of paint on the cooling tower, but dangerous chemicals still leak from the pipes.

- Erich Pica is president of Friends of the Earth

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[g](#) Staff  
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<b>Radio</b> 1950s style retro radio with advanced DAB features and 120 Hours Battery Life	<b>Mug</b> The colours change to reveal the world's most severe carbon footprint offenders!
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The Guardian Environment Network brings together the world's best websites focusing on green topics

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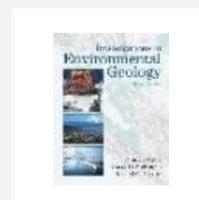
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**doherty**  
9 Mar 2010, 11:51AM

You should always check the fuel mix from your supplier. As an office manager, I have questioned certain "green" suppliers who still use nuclear in their fuel mix. e.g. [Ecotricity](#)

The waste issue alone is enough for me to try to avoid nuclear at all costs.

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Coastal Change Pathfinder Project Coordinator  
Dorset County Council.  
Dorchester.  
£25,472 - £29,236.

**USA**

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**capitalistsockpuppet**  
9 Mar 2010, 12:18PM

@doherty Hi, Mike from Ecotricity here...

Don't be too blinded by the '100% green' claims. Other '100% green' energy tariffs are simply 'robbing Peter to pay Paul' - taking some of the current measly 5% renewables in everyone's energy mix, repackaging it as a 'green' tariff and selling it to you (often at a premium). All it means is your neighbours are now getting slightly less green in their mix, and you're getting theirs.

Ecotricity is the only energy supplier in the UK dedicated to actually building more sources of green energy in the UK. We've grown our supply from one turbine 15 years ago, to 45.6% today from our own 51 turbines. And we're aiming for 100% and beyond, with the help of our 32,000 customers.

As a social enterprise, the money from your Ecotricity bill goes back into building more new green sources, not into shareholder's pockets.

In the last 6 years, we've spent an average of £388 per customer, per year, building more new sources. That's more than 10 times any other energy supplier, in fact it's more than all of them put together.

As you point out with your link, the remainder of the electricity for our New Energy tariff comes from the national UK grid mix. Customers who want it can choose to have New Energy Plus, which is 100% renewable made up of electricity produced by our own turbines topped up with other green supplies.

Ecotricity is all about changing where Britain's energy comes from, increasing the security of our supply and moving us from 'brown' to green. We'd love you to join us.

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**doherty**  
9 Mar 2010, 12:44PM

I have no doubt you are doing very well on renewables, but the issue here is nuclear waste.

I'm not about to get into a sales pitch debate (partly because we are already your customer in 2 of our buildings) but [http://www.scottishpower.co.uk/Home\\_Energy/Customer\\_Services/Where\\_we\\_get\\_our\\_energy/](http://www.scottishpower.co.uk/Home_Energy/Customer_Services/Where_we_get_our_energy/) rel="nofollow">Scottish Power for example don't use nuclear at all.

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**doherty**  
9 Mar 2010, 12:46PM

Hmm link fail

[http://www.scottishpower.co.uk/Home\\_Energy/Customer\\_Services/Where\\_we\\_get\\_our\\_energy/](http://www.scottishpower.co.uk/Home_Energy/Customer_Services/Where_we_get_our_energy/) rel="nofollow">Scottish power

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**sellafieldsoulsinger**  
9 Mar 2010, 3:14PM

This is a worthy article, but I wish people would start to question why it is that the nuclear industry receives so much veiled support. The UK nuclear industry (as I am sure it is in the states) is a self perpetuating organisation with political ambitions, which will put a millstone of pollution around the neck of humanity for hundreds of thousands of years.

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**ratherbered**  
9 Mar 2010, 4:28PM

It's about big central state controlled power of course. What do you think would happen if they couldn't turn your lights out in order to keep you in line. Why do you think it has taken us ten years to follow the Germans down the feed in tariff path? Nuclear power is a very costly solution to a problem that sensibly demands a

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small scale local community solution, but you can't have that because what else would spring from empowered communities?

Now I personally do not have sleepless nights worrying about where they'll store the waste, but I do object to the false accountancy that surrounds Nuclear Power.

We've just seen the near meltdown of our economy due to the false accounting practiced by the banking industry so please please please, spare us more of the same with Nuclear Power.



hayes4

9 Mar 2010, 4:38PM

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'Nuclear reactors remain as dirty, risky, and as costly as they ever were'. Oh good. When all deaths, from low profile mining accidents right up to high profile explosions are taken into account, nuclear power is a miniscule killer compared to gas, coal or hydro (thats based per watt produced). And dirty? Well on average flight crews receive higher radiation doses than workers in a nuclear power plant.

There are a number of one sided arguments here. That when everything is taken into consideration nuclear does have carbon emissions? Well there is no true green energy, and when full cycle analysis is considered its highly possible that many renewables such as wind and wave are more damaging. For Bio-fuels it is almost a given. That renewables give a higher contribution than nuclear? Well I presume they always have; hydro is one of the oldest and most reliable forms of energy there is. It also accounts for around 90% of renewables. Unfortunately you have it or you dont.

Nuclear power is not perfect and it is not natural. But we are not a natural species. As long as we want to live into our fifties, visit other countries, import things as trivial as water or fruit, and as long as we disapprove of things like infant mortality and poverty that is going to stay the case.



omnivore

9 Mar 2010, 5:50PM

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I have been a lifelong opponent of nuclear energy. But I recently saw a Google talk by Joe Bonometti <http://www.youtube.com/watch?v=AHs2Ugxo7-8> that has me seriously reconsidering my position. I agree that the existing standard technologies for the generation of nuclear power are not acceptable. My objection is the long-term radioactivity and storage of waste; I in no way believe that any practical plan can be formed to preserve safely nuclear waste for the hundreds of thousands of years referred to in the article.

But I do believe that such a task could be reasonably contemplated over hundreds of years, and that is what Liquid Fluoride Thorium Reactors, which use Thorium, not Uranium as their primary energy source would require. These reactors do use small amounts of refined uranium but orders of magnitude less than the current crop of reactors. Instead, Thorium is used. Thorium itself does not sustain reactions that can reach runaway reaction levels. Thorium is cheaper, safer to mine, more plentiful and cannot be weaponized. Thorium reactors are much, much smaller, and can be built at more modest scales than either light or heavy water systems. They can be shut down and restarted very quickly which means that they integrate far better with other energy sources like wind or solar that may be sporadic. Indeed the standard design automatically shuts itself down safely if heat levels rise above set limits, without relying on complex sensors, actuators or valves, software, or any of the other complexities of standard uranium reactors.

I am not a convert: I've been looking for informed objections to these systems -- which have a history of safe, productive operation in which the engineering problems were well worked out -- but I have yet to find any such information: if anyone here has any sources of arguments against this type of reactor, I'd very much like to see them.

The implications of the Thorium Reactor system aka (LFTR) are almost as threatening to nuclear energy industry orthodoxy as they are to the traditional positions held by environmental organizations. What is a real shame is that neither group seems to advance beyond positions that were established in the 70's, when there were certainly incontrovertible arguments against nuclear which I still hold. But just as new technologies like momentum energy storage devices, advanced Stirling cycle designs, tidal power and less expensive photovoltaics have changed the green landscape, it seems clear that there is serious engineering done in the nuclear side that needs to be taken account of.

Sadly, neither Obama nor Erich Pica seems aware of these.



GRLCowan

9 Mar 2010, 6:57PM

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I in no way believe that any practical plan can be formed to preserve safely nuclear waste for the hundreds of thousands of years referred to in the article.

The article, and any article that defines nuclear waste as an 'X'-kiloyear problem,

is misleading. Suppose you lived next to a (fairly) freshwater lake, like Lake Superior, which contains only a billion tonnes of salt, and found it convenient to dump another million tonnes of salt in it every ten years. At what time would you have unacceptably compromised its potability?

Never, of course, because the time you would take to double its salinity, if it were totally stagnant, is long compared to the time in which all its water goes to the sea, with the salt you put in, and is replaced by rain.

The arithmetic of burying man-made radioactivity in the Earth's crust is similar. Rather than going anywhere, the radioactive nuclei make themselves nonradioactive by emitting radiation -- they aren't perpetual motion machines -- and for burial depths of more than a few inches, the radiation is converted to heat. The greatest effect a continued practice of nuclear waste burial can have is to increase this subterranean production of heat by a few percent.

So for instance if 100 trillion thermal watts of nuclear power plant put their junk in containers like [these](#) for its first 100 years, and it then is buried a kilometre deep, after many centuries the buried radioactivity will level off at 17 thermal gigawatts. This artificial radioactivity will be about seven percent of the total -- natural plus artificial -- in the Earth's crust down to 1 km depth.

If, after that levelling-off has occurred, humanity stops using those 100,000 nuclear GW up top, the buried seven percent will of course stop being maintained, and will quickly dwindle to a much smaller fraction.

([Boron: A Better Energy Carrier than Hydrogen?](#))



**Plutonium**

9 Mar 2010, 7:04PM

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I guess we all have to starve to death in the dark. World needs ~70 Mt-P2O5/y to feed the 10 billions and save the rain forests. At ~50 ppm uranium in phosphates this represents ~ 35,000 tonnes uranium. I do not see anyone raving about the uranium in fertilizer...yet. 35,000 tonnes uranium will fuel ~50 TWe atomic power in breeder reactors. After ~1000 y, fission product curies is less than uranium consumed. Above-ground testing released 50 times as much fallout as from Chernobyl. Gave us the name for swimware and increased time between World Wars by a factor of 3 so far. Perhaps it is the part about stopping communism at Berlin that makes the no-nukes so angry. We save energy by sealing up the house, just to have indoor radon increase. Somehow owning a basement has not increased lung cancer in never-smokers.

Existing atomic power plants produce power for not much more than the cost of coal plants. The ability to place atomic plants closer to loads erases most of the advantage of coal over atomic power. A hidden benefit of atomic power is the ability to run two years without refueling. Coal plants can not have more than 45 days worth of fuel because a coal pile fire can only be extinguished by using up the coal. Guess which labor unions are antinuclear no matter what. The English blackouts in 1984 were very expensive.

California tore down 850 MWe Rancho Seco. 2001 power shortage never exceeded 650 MWe. If a state purposely wipes out the competition, then guess what happens to the price of electricity, Enron or not.

I wonder of the author goes to the dentist. And sends his children. Dental X-rays are not required to have a full life. Just plan on putting teeth in jar by age 40. Inconvenient perhaps? So real choice is how much inconvenience is paranoia worth?



**Ausername**

9 Mar 2010, 7:56PM

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*"Don't be too blinded by the '100% green' claims. Other '100% green' energy tariffs are simply 'robbing Peter to pay Paul' - taking some of the current measly 5% renewables in everyone's energy mix, repackaging it as a 'green' tariff"*

The sterile 'bash Good Energy' argument from Ecotricity again.

Ecotricity use income to build their own wind generation. Great.

Good Energy use income to pay others who have invested in renewable generation. Great.

Both are helping increase renewable generation, one more directly than the other. I am sick and tired of hearing Ecotricity having a go at the wrong target.



**Ausername**

9 Mar 2010, 8:18PM

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*"This is a worthy article, but I wish people would start to question why it is that the nuclear industry receives so much veiled support."*

Gordon Brown's brother Andrew was a nuclear lobbyist for the French government for many years (EDF, which Andrew Brown worked for, is an arm of the French government). Many more examples at [Nuclear Spin](#).

The French government carried out a terrorist attack in Auckland, murdering one

person in the process, and has spied on Greenpeace.



**Ausername**

9 Mar 2010, 8:35PM

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"There are a number of one sided arguments here."

Friends of the Earth US have more information on their web site.

"when full cycle analysis is considered its highly possible that many renewables such as wind and wave are more damaging."

You are not a politician or lawyer by any chance? Your words seem carefully chosen to give an impression that you know something, but if challenged you have allowed yourself wriggle room.

The Sustainable Development Commission looked at the carbon dioxide emissions of nuclear some years ago. Their conclusion is that nuclear generation emits about as much carbon dioxide as wind generation.



**ColinG**

9 Mar 2010, 9:24PM

[Recommend? \(14\)](#)

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Many renewables do cause more damage than nuclear.

The EU has done lengthy research into the external costs (health and environmental damage) of electricity generation from all sources. Nuclear is one of the better options. It is certainly better than biomass and probably better than PV. In some cases it is better than hydro. The only source that is consistently less damaging is wind (and not by much). (Table p13)

<http://www.externe.info/externpr.pdf>

Friends of the Earth advocate fossil fuel (primarily gas) and biomass to avoid nuclear. That shows where their priorities are.



**Chronos**

9 Mar 2010, 11:40PM

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Gordon Brown's brother Andrew was a nuclear lobbyist for the French government for many years (EDF, which Andrew Brown worked for, is an arm of the French government).

Something to be concerned about but it doesn't change any of the facts surrounding energy generation.

The French government carried out a terrorist attack in Auckland, murdering one person in the process, and has spied on Greenpeace.

At least they did one thing right, Greenpeace these days are little more than a hindrance to mainstream environmentalism.

BTW it was never murder.



**Plutonium**

10 Mar 2010, 12:38AM

[Recommend? \(2\)](#)

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Actually 70 Mt-P2O5/y requires about 200 tonnes phosphate rock per year. At 50 ppm uranium this is only 10,000 tonnes uranium per year. Oops!, got in a hurry. Some phosphate rock does range up to 300 ppm uranium. Total is probably enough for 20 TW breeder reactor. There is also byproduct uranium from copper and gold mining.

Erich Pica seems to argue in favor of the breeder reactor. Between the byproduct uranium and the DU that is already out there, there is probably enough fuel for 50 TW. There is always seawater uranium. Japan developed a process for extracting it. With the breeder reactor, uranium would have to cost more than gold to be uncompetitive with natural gas. There is also the thorium-U233 breeder cycle which can use slow neutrons, although doubling time may longer than 15 years in a CANDU reactor.

The greens constantly hold up wind energy as how to save the planet. Windmills average ~25% utilization (DOE, Spain, CA ISO data). That means backup "airplane motors" run 3/4 of the time. It is not obvious how the combination of wind energy and "airplane motors" running 3/4 of the time uses less fuel than CCGT running all the time. It is also not obvious how natural gas can be better than coal if the marginal natural gas supply is LNG. Depending on process losses and how it is used, LNG may not be much better than coal. Methane is ~800,000 kJ-LHV/kg-mole-C versus Illinois Volatile B which is 480,000 kJ-LHV/kg-mole-C. Breakeven for LNG is using 320,000 kJ-LHV/kg-mole C for liquification and shipping, 40% of the energy. Oil refineries lose ~20% of the energy. Overall result is wind energy may not be much better than burning coal in an ultracritical coal plant. I am sure this is way too much



**TheNuclearOption**  
10 Mar 2010, 1:02AM

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From the article:

"inspectors at the Vermont Yankee reactor were finding dangerously high levels of tritium, a radioactive cancer-causing chemical, in the groundwater near the plant."

From [Vermont department of health](#):

As you have likely heard in the news, on Jan. 7, 2010, the Vermont Department of Health was notified by Vermont Yankee Nuclear Power Station that samples taken from a groundwater monitoring well on site at the plant contained tritium in concentrations above historical background levels.

Tritium is a radioactive form of hydrogen. It is a by-product of the nuclear fission process in a nuclear reactor, and it also occurs naturally in the environment as the result of cosmic ray interactions with the earth. There is no immediate threat to public health, but this event is of high concern because it signals an unscheduled and unintended release or leak of radioactive materials.

and

Testing by the Vermont Department of Health and Vermont Yankee of on-site and off-site drinking water well samples, as well as water taken from the Connecticut River, continue to show no tritium in excess of the lower limit of detection. No on-site or off-site wells show any other radioactive materials related to nuclear power plant operations.



**capitalistsockpuppet**  
10 Mar 2010, 8:58AM

[Recommend? \(1\)](#)

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@Ausername: I wasn't looking to bash Good Energy at all, only to point out that what would automatically seem to be the best claims - and what could be better than 100%? - isn't always as straightforward as that.

In fact, it was aimed much more squarely at the Blg Six, who talk about renewables and offer 'green' tariffs while their real focus is on burning coal and running nuclear plants.

Re. nuclear, renewables are often criticised for receiving support from the RO, but as has been pointed out, no one seem to talk about generous support for nuclear.

As [this BBC story](#) points out, Europe's latest and greatest third generation nuclear power station being built in Finland is current three years and 1.7 BILLION euros over budget, largely because of safety concerns. And we're talking about building 11 of these in the UK...

The toxic clean-up from our current nuclear has already cost at least £50bn, expected to go easily north of £100bn. And how are we going to pay for all this, travellers cheque? That sort of money could pay for an awful lot of wind turbines...

But wind couldn't replace nuclear, right? Well, it seems last Nov in Spain, [53% of the country's energy needs were generated entirely from wind](#), the same as... 11 nuclear power stations. OK, it was a for a few hours with relatively low demand, but makes you think that perhaps nuclear isn't the silver bullet?



**harrydamar**  
10 Mar 2010, 9:36AM

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This is probably the most divisive argument among environmentalists. Mackay's approach would tell us to consider the numbers only, which decisively come down in favour of nuclear. Unless there is a paradigm shift towards international energy cooperation and supergrid building (hints of this going on in EU), nuclear will remain the preferred choice for governments worried about energy security. Renewables are by definition too dispersed and difficult to harness.

A video was posted earlier on Liquid Fluoride Thorium Reactors, this is a highly relevant addition to the argument. LFTR's cannot meltdown, they are more efficient and produce less waste which decays quicker. Thorium can be found just about anywhere, unlike the few uranium deposits we currently have. Guess why we aren't currently running the world on them? Thorium reactors were ditched in favour of Uranium ones during the cold war, which could be used in submarines and produced weapons grade byproducts.

Unfortunately, there is a lot of inertia in the nuclear industry. Thorium Reactors require new legislation and a new workforce. India and China are working away



**FRONTE**  
10 Mar 2010, 10:11AM

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In France undercover damning practices are key to nuclear industry. This can be attractive for countries with poor rule of law standards.

For instance, I refused to support the supply of high grade safety equipment (*ASME III class 1*) for nuclear reactors without conforming files and , as part of my job , I reported the design flaws ; the inquiry ordered by the Minister in charge of the French nuclear regulator confirmed that safety breaches were serious and repeatedly enforced internationally . This was fatal to me : I was immediately fired and , as I filed a case , the Criminal section of the French supreme Court issued four rulings , all of them against me and only against me , the reporter of the safety breaches .

In fact , the profit before safety approach benefits many people which wittingly or unwittingly bias the reports of non-conforming events to escape the responsibility in case of incident ; France is to nuclear industry what a tax haven is to financial markets .

Tommaso Fronte  
(more in <http://www.fronte.org>)



**kamster99**  
10 Mar 2010, 10:50AM

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So what would you prefer then? Hydroelectric (has killed caribou, flooded massive lands for reservoirs, James bay project in Canada released mercury from the soil into nearby water, killing fish), Solar (only efficient in areas where solar radiation is consistent year round), Wind (kills birds, has to be turned off if the wind is too heavy to avoid damaging blades and windmills), Geothermal (Doubtful that this could solely provide the power we need), conservation (isn't a practical solution in the US and Canada where per capita energy usage is considerable higher in part due to well established cultural practices), tidal (only practical near ocean water), wave powered (only practical near large lakes or oceans), fusion (after 50+ years no viable method has been created to harness controlled fusion power), Clean coal (dirty like normal coal), natural gas (less dirty than coal, still bad), mind powered (only in the matrix unfortunately).

You see...every power option has environmental costs to it. Spending money on one project like building windmills diverts money that could have been spent elsewhere. Nuclear, despite its many problems is the best solution to fighting both global warming and excessive greenhouse gas emissions.



**hayes4**  
10 Mar 2010, 11:28AM

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Just to reply to Auserman,

I'm actually unemployed but just have an interest in it! Pensions was my last job.

Here in return is a link to the International Atomic Energy Agency website. <http://www.iaea.org>. Its only fair let them fight their case.

In response to your question the my statement is non definitive is because there is no definitive statement. There is a huge range of figures for the LCA of a nuclear power plant and the honest answer is I don't know which one is most realistic.

For example Storm van Leeuwen et al. give 112.47?165.72 CO2eq/KWH, White and Kulcinski give 15 CO2eq/KWH, while a paper compiling them all by Sovacool gives a still impressive 66gCO2eq/KWH although I believe this should have been lower as he used the mean and not the median.

The LCA of a nuclear power plant is like climate change; there is no definitive figures, just a consensus.

Sovacool, B. K. (2008) Valuing the greenhouse gas emissions from nuclear power: A critical survey, Energy Policy 36, 2950-2963



**capitalistsockpuppet**  
10 Mar 2010, 12:47PM

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@kamster99:

Wind (kills birds, has to be turned off if the wind is too heavy to avoid damaging blades and windmills)

Got to correct you on these. Extensive studies have shown that birds in the UK are in far more danger from overhead power lines, cars, house windows and

domestic cats than wind turbines. For instance, domestic cats kill an estimated 27 million birds a year, compared with just one bird by each turbine, per year. Does this mean we should ban domestic cats?

The RSPB supports renewable energy sources, including wind power, provided they do not harm bird populations or their habitats. Furthermore, the charity has noted that: "we have not so far witnessed any major adverse effects on birds associated with wind farms".

Our three turbines at Avonmouth near Bristol, for instance, are directly next to Severn Estuary which is internationally important for over 90,000 wintering waterfowl and 20,000 gulls. In four years of detailed surveys here before, during and after construction, independent experts have found no changes in the number of feeding and nesting birds, and 173 ground searches below the turbines have found no casualties. The large numbers of gulls that fly up and down the estuary everyday simply fly around them.

And the turbines we typically use, made by Enercon, are designed to work in wind speeds from 4m/s (little more than a light breeze) up to near-hurricane speeds of 34m/s, when they are designed to automatically turn themselves off.



**Oggers**

10 Mar 2010, 2:17PM

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But wind couldn't replace nuclear, right? Well, it seems last Nov in Spain, 53% of the country's energy needs were generated entirely from wind, the same as... 11 nuclear power stations. OK, it was a for a few hours with relatively low demand, but makes you think that perhaps nuclear isn't the silver bullet?

To put that in perspective, Spain's massive wind infrastructure, under the most favorable conditions ever, managed for 5 hrs to generate the equivalent of 20% of UK peak time demand. On a bad day it would be zero.



**capitalistsockpuppet**

10 Mar 2010, 2:48PM

[Recommend? \(3\)](#)

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To put that in perspective, Spain's massive wind infrastructure, under the most favorable conditions ever, managed for 5 hrs to generate the equivalent of 20% of UK peak time demand

Britain has 40% of Europe's entire wind resource, what it doesn't seem to have - unlike Spain, Germany, Holland and others - is the positive attitude and foresight to make the most of it.

On a bad day it would be zero.

Hmm, [one of the most extensive studies ever](#) shows that:

- Availability of wind power in the UK is greater at precisely the times that we need it ? during peak daytime periods and during the winter

- The UK wind resource is dependable. The likelihood of low wind speeds affecting 90 per cent of the country would only occur for one hour every five years.

- The chance of wind turbines shutting down due to very high wind speeds is exceedingly rare ? high winds affecting 40 per cent or more of the UK would occur in around one hour every 10 years and never affect the whole country



**Oggers**

10 Mar 2010, 6:00PM

[Recommend? \(4\)](#)

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capitalistsockpuppet,

I'm not against wind I'm just putting the Spanish "53%" experience into perspective. You have chosen some nuggets from 'one' study. They don't actually say much more than Britain is windy. If you have any credible independent reference that shows Britain could actually generate 53% plus of our electrical power from wind, at a price consumers will actually pay, I'd be happy to see it.



**GRLCowan**

10 Mar 2010, 6:18PM

[Recommend? \(4\)](#)

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Britain has 40% of Europe's entire wind resource, what it doesn't seem to have - unlike Spain, Germany, Holland and others - is the positive attitude and foresight to make the most of it.

The foresightful thing to do with wind turbines is to stop subsidizing them.

Nuclear power doesn't get any subsidy, but Britain's taxpayers have a very positive attitude towards wind turbines, an attitude that they express [here](#).

Windpower in the USA was notable, in the first decade of the 21st century, for killing relatively many workers per gigawatt-year. Perhaps that has not been true in Britain.



Ausername

10 Mar 2010, 7:56PM

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"Nuclear power doesn't get any subsidy,

*The government has fixed the planning system and accepted unlimited liability for decommissioning any future reactors, if we are stupid enough to build them. More recently a nuclear tax has been under discussion. The nuclear lobby have called for wind targets to be scaled back. All are subsidies in one form or another.*



Ausername

10 Mar 2010, 8:14PM

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"The greenies constantly hold up wind energy as how to save the planet. Windmills average ~25% utilization (DOE, Spain, CA ISO data). That means backup "airplane motors" run 3/4 of the time."

This claim has been cut and pasted several times and rebutted several times, but still it is cut and pasted. No matter how often it is trotted out it will not become true, it will just continue to prove that those who cut and paste it know nothing about electrical systems.

The figure for nuclear power stations in the UK in 2008 was 49.4% and for coal 56.7%. [DUKES](#) Chapter 5 Table 5.10. Are you claiming that "airplane motors" run for the other 50.6% of the time for nuclear and 43.3% of the time for coal?



Ausername

10 Mar 2010, 8:35PM

[Recommend? \(2\)](#)

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"Friends of the Earth advocate fossil fuel (primarily gas) and biomass to avoid nuclear. That shows where their priorities are."

A deliberate distortion of their paper of 2006. What they said is

This report and the accompanying model demonstrate that Britain's electricity needs can be met and that we can make massive cuts in carbon dioxide without resorting to nuclear power at the same time as reducing our use of fossil fuels, including natural gas.

and

Some argue that we cannot meet our climate and energy policy goals without constructing new nuclear power stations. Some have gone as far as saying that the lights will go out. Friends of the Earth's model has been reviewed by academics and representatives from industry. It illustrates that we can fulfil the need for electricity supply and reduce emissions from the sector in line with Britain's long-term climate change targets without embarking on a new nuclear programme.

and

Under all but one of our scenarios natural gas consumption by the power-generating sector would see only marginal growth with subsequent decline.

and

As a result Friends of the Earth has modelled six future scenarios to identify the range of possibilities in terms of total demand, moves towards gas or coal generation and progress towards actual deployment of alternative energy sources and energy conservation technologies. The scenarios identified the scale of carbon dioxide emission reductions we considered possible and the scale of implementation of various technologies to achieve such emission reductions and achieve secure energy supplies.

Your lie is exposed. Far from advocating a dash for gas, as you claimed, Friends of the Earth England Wales and Northern Ireland modelled several options. The option they highlight is the "good mix" option, where gas consumption is reduced by a third between 2005 and 2030.

Friends of the Earth Scotland have shown how [their electricity system could be decarbonised by 2030](#). They have great potential in Scotland.

ColinG

[Recommend? \(6\)](#)



10 Mar 2010, 8:35PM

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Ausername

More recently a nuclear tax has been under discussion.

No, if you read the detail actually a *carbon tax* was under discussion. It has been characterised as a "nuclear tax" by people with a particular agenda. But it does not give any money to nuclear power. It just takes it from carbon polluters.

It is as beneficial to renewables or any other low-carbon technology, as it is to nuclear.

The nuclear lobby have called for wind targets to be scaled back. All are subsidies in one form or another.

No, read the article: the CBI called for this. I don't see how this can be construed as a subsidy.



**Plutonium**

10 Mar 2010, 8:39PM

[Recommend? \(2\)](#)

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Airplane motors are the only power source that can reasonably jump in when wind quits working. That means every GWe wind needs nearly a GWe airplane motor backup. Coal and nuclear plants run all the time they can because their fuel is nearly free and not running causes worse corrosion problems than running. Result is that adding wind requires adding airplane motors. That means the marginal wind source running 1/4 of the time requires airplane motors running 3/4 of the time. Some of the airplane motors are on the front end of a CCGT, but the steam plant part of the CCGT takes longer to start. The Turbomachinery literature has articles on how fast their systems start. The real problem is when the wind starts blowing. Like when Spain got nearly half its power from wind. This means the fossil plants are forced offline suddenly. Being forced off line is much worse than a quick start. This is because cooling a solid put the surface in tension versus heating a solid puts the surface in compression. Cracks start at the surface. In aviation, for turbocharged piston engines, the event is called "shock cooling." Airplane motors running opposite wind machines should use a lower turbine inlet temperature so that their components are not as far in the yield condition. This reduces the effect of shock cooling if they are forced offline. This also reduces thermal efficiency.

Steam plants that backup windmills, if any, probably need to have a steam drum. This stabilizes boiler temperature and allows maintaining water chemistry during transients. At low power, feedwater flow is kept high by increasing blowdown. A steam drum means a subcritical steam cycle. To get thermal efficiencies above 40%, it is generally require to use a supercritical steam cycle. Supercritical plants, by definition, do not have a phase change and therefore can not have a steam drum.

There is also the problems of grid instability that is made worse by wind energy. San Onofre nuclear plants, Units 1 and 2, had to have generator repairs due to grid instabilities about a decade ago. Apparently not caused by wind energy because there was not much wind energy at that time. Both generators developed vibrations and had to be rewound. This problem can happen to any large power plant.

I stick by my statement that wind + backup airplane motors can use more natural gas than CCGT running 100% of the time.



**ColinG**

10 Mar 2010, 8:58PM

[Recommend? \(12\)](#)

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Ausername

Your lie is exposed.

I think you should temper your attitude.

Far from advocating a dash for gas, as you claimed, Friends of the Earth England Wales and Northern Ireland modelled several options. The option they highlight is the "good mix" option, where gas consumption is reduced by a third between 2005 and 2030.

I said they promote gas ahead of nuclear. Which they clearly do.

If they included more nuclear and less gas it would make CO2 targets more achievable in every scenarion. As it is, even their best scenario only delivers 77% cuts in the electricity sector (which should be the *easiest* sector to make cuts in). It is disastrous policy for tackling climate change, driven off the rails by anti-nuclear bias.

The report relies on a pretty huge expansion of wind capacity, which is plausible though challenging. It assumes a somewhat less plausible expansion of biomass. It assumes we will import significant quantities of biomass - in some cases the *majority of the biomass fuel would be imported, for goodness sake!*

It also makes an extremely optimistic assumption that electricity demand will fall by 50TWh (when the govt estimates predict a *rise* of 50TWh even when efficiencies have been taken into account).





11 Mar 2010, 6:44PM

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tidal power again a 60s invetion !!! we went wrong didnt we ??



**vildy**

11 Mar 2010, 7:00PM

[Recommend? \(0\)](#)

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if you want to unvail some of drive behind the expation of nuclea stations have a look at Veolia water companies board of directors and ownership of british water companies .

you could also have a look at the file I enclose and if your concerned about what you hear then pass it to your contacts.

Ignorance is not bliss and time we wised up.

[http://www.ukcaf.org/files/human\\_rights\\_and\\_fluoridation.pdf](http://www.ukcaf.org/files/human_rights_and_fluoridation.pdf)



**vildy**

11 Mar 2010, 7:08PM

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you will need to type in the details as it is not making contact via this connection !!



**Voltaire21**

11 Mar 2010, 8:00PM

[Recommend? \(0\)](#)

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What sickens me is that I truely believe that nuclear fusion has a big future yet for some reason funding and development is really slow(we are talking a few billion euros spread out over a few years). In the meantime the US is spending nearly a trillion dollar on its military to fight wars for oil all over the world. Its a sick joke and just shows the shortsighted ambitions of a country directed by Wall Street.

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