

# Pros and cons of nuclear power in usa

[Science](#), [Physics](#)



NUCLEAR POWER GEOGRAPHY HOMEWORK 10/27/2012 DAISY SOWAH FORM 5W PROS AND CONS OF NUCLEAR POWER IN THE USA Worldwide, there are 441 nuclear power plants that supply about 16 percent of the world's electricity. There are currently 104 operating U. S. nuclear power plants that produce over 20 percent of U. S. electricity. ADVANTAGES a) Nuclear power generation does emit relatively low amounts of carbon dioxide (CO<sub>2</sub>). The emissions of green house gases and therefore the contribution of nuclear power plants to global warming is therefore relatively little. USA is currently responsible for a quarter of all carbon dioxide emissions - an average of 40,000 pounds of carbon dioxide is released by each US citizen every year - the highest of any country in the world, and more than China, India and Japan combined, the increased use of nuclear power will do well to curb these emissions. b) High Load Factor - Nuclear Power Plants have very high load factors in excess of 80%.

They can generate power almost 24/7 and only require shutdown for periodic maintenance c) Huge Potential - Nuclear Energy Potential is almost infinite compared to the limited and peak features of other forms of energy like Wind, Geothermal, Oil, Gas and others. Only Solar Energy can be said to have more potential. d) Low Electricity Cost - The Electricity produced from Nuclear Power is quite low at around 3-5c/Kwh making it very attractive to construct hydro plants e) Low Fuel Cost - Large amounts of Nuclear Energy can be produced from the fission of radioactive elements like uranium.

The costs of nuclear fuel is relatively very low compared to other energy sources like coal and gas. Also uranium prices currently are quite low making the nuclear electricity price even lower. About \$100 a pound of uranium but a

barrel of Brent crude oil is \$114 a barrel but lasts for a much shorter period of time CHALLENGES 1. Nuclear and Radiation Accidents - This is the biggest con for Nuclear Energy and has been repeated 3 times in the last 30 years in Japan, Russia and USA.

The fear of a repeat is so great that despite all the safety arrangements touted by the nuclear equipment operators and suppliers, Nuclear Energy faces an uncertain future The worst nuclear accident in U. S. history took place on March 28, 1979 at the Three Mile Island plant in Pennsylvania. A cooling system failed, causing a partial meltdown, but a full meltdown was averted and there were no fatalities. However, despite the positive outcome and despite the passage of more than 30 years, the incident remains fresh in the minds of those who are old enough to remember it. 2.

Nuclear Waste Disposal - Again a massive problem as the spent Nuclear Rods of Nuclear Reactors are prohibitively costly and difficult to dispose of. Spent nuclear fuel is initially very highly radioactive and so must be handled with great care and forethought. (10'000 years according to United States Environmental Protection Agency standards). There is no foolproof way to dispose nuclear waste fuel after it is used in the Nuclear Reactors. The area around Nuclear Waste Sites can be dangerous to humans for hundreds of year as complex nuclear elements have half lives running into many years.

The United States had accumulated more than 50, 000 metric tons of spent nuclear fuel from nuclear reactors. Permanent storage underground in U. S. had been proposed at the Yucca but that project has now been effectively cancelled. There is presently no adequate safe long-term storage for radioactive and chemical waste produced from early reactors, such as those  
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in Hanford, Washington, some of which will need to be safely sealed and stored for thousands of years. 3. Regulations - The Regulations for Nuclear Energy Power Plants are many and cumbersome due to the massive risks of a failure of a nuclear reactor.

This greatly increases the costs of generating nuclear power. It also leads to a long time in the actual start to the completion of a Nuclear Plant . 4. Fuel Danger - Uranium which is the main fuel used in Nuclear Fission Power Plants is limited to a few countries and suppliers. Its use and transport is regulated by international treaties and groups. 5. Nuclear power is reliable, but a lot of money has to be spent on safety - if it does go wrong, a nuclear accident can be a major disaster. Despite a generally high security standard, accidents can still happen.

It is technically impossible to build a plant with 100% security. A small probability of failure will always last. The consequences of an accident would be absolutely devastating both for human beings and for the nature. The more nuclear power plants (and nuclear waste storage shelters) are built, the higher is the probability of a disastrous failure somewhere in the world. People are increasingly concerned about this - in the 1990's nuclear power was the fastest-growing source of power in much of the world. In 2005 it was the second slowest-growing. 6. The energy source for nuclear energy is Uranium.

Uranium is a scarce resource, its supply is estimated to last only for the next 30 to 60 years depending on the actual demand. March 11, 2010 nightmare scenario: Terrorism at a nuke power plant. Nuclear meltdown. Level 7 core damage blows through the 6 foot thick reinforced containment structure

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releasing highly radioactive elements into the atmosphere and surrounding environment. 7. Nuclear power plants as well as nuclear waste could be preferred targets for terrorist attacks. No atomic energy plant in the world could withstand an attack similar to 9/11 in New York. Such a terrorist act would have catastrophic effects for the whole world.