

Nuclear Power: Should it be used as an alternative power source?

For: Mr. Morrison

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Summary

Nuclear power is a renewable energy source that is still being developed and improved today. Despite its work-in-progress state, it is being used in many cities, provinces, and countries for alternative energy. There are many positive benefits to using nuclear power in this way, such as its lack of impact to the environment, ability to compete with coal power plants, and its replacement of fossil fuels. However, there are many negative aspects as well.

Nuclear energy has been used since the 1950's, going through different stages and countries to be used in new ways. While many countries use it only as an alternative energy source, rivaling countries are threatened that the energy will be transferred to a far greater power and used as a weapon. As well, threats to the economy because of its high cost and to society because of its potential dangers have caused much opposition, despite its benefits. Countries such as Cuba, Indonesia, and Kenya have demonstrated both sides of this argument. Canada has been using nuclear power for decades without problems, and one cause for this may be because North America is one major role of control, along with China and the United Kingdom. The purpose of this report is to expand on this issue and provide focus on possible solutions to the issue. Through data collected from internet websites, online reports, and newspaper articles, examples and actualities will be proven which support the facts given. Despite the fact that nuclear energy has been used for half a century as an alternative power source, it is still fought against and considered an issue in today's

society.

Background Information on the Issue/Contributions of an Expert

Nuclear power as an alternative power source is an idea that has been considered and reconsidered time and time again since shortly after it was in part created by Enrico Fermi in 1934⁶. Roman-born Enrico Fermi was exceedingly talented in the areas of neutrons and statistic laws, and it was in 1934 that Fermi evolved the β -decay theory, building on previous work on radiation theory. Following the discovery by Curie and Joliot of artificial radioactivity, also in 1934, Fermi proved that nuclear transformation occurs to virtually all elements when subjected to nuclear bombardment. Because of this and the discovery of slow neutrons, scientists Hans and Strassmann were able to discover nuclear fission in 1939⁷. Bouncing the idea back to Fermi, he immediately saw the possibility of a chain reaction, and proceeded to work enthusiastically to develop the idea. Through a series of standard experiments and the collaboration with Leo Szilard, his findings eventually resulted in the first controlled nuclear chain reaction.

From this basic start, the first atomic bombs were created, and used, on the cities of Hiroshima and Nagasaki, August 6 and 9, 1945. In 1947, the Atomic Energy Commission (authorized by the Atomic Energy Act which also headed the Manhattan

⁶ "Who Invented Nuclear Energy?" Alternative Energy Secret. JB Chaparal Corp., March 5/10
< <http://www.alternativeenergysecret.com/who-invented-nuclear-energy.html/>>

⁷ Nobel Lectures, Physics 1922-1941
[Amsterdam: Elsevier Publishing Country, 1965]

Project) looked into possibly using atomic energy for more peaceful uses.⁸ By 1951, an experimental reactor first produced energy from a nuclear reaction that was enough to light four light bulbs, and by early 1955, the AEC began funding for nuclear power plants between government and industry. By the next year, the first nuclear power plant was built on the coast of Cumberland, Britain, named Calder Hall Power Station. This plant was greatly supported by Her Majesty the Queen, as she commented on how, “this new power, which has proved itself to be such a terrifying weapon of destruction, is harnessed for the first time for the common good of our community.”⁹ Since then, nuclear plants have been appearing all over the United Kingdom (in 2009 there were 19 functioning), and well over 100 in Canada and the United States.

While the success of this new-found energy source is blossoming, the extremely serious dangers it poses have affected history more than once. In 1979, at the Three Mile Island plant near Harrisburg, Pennsylvania, an accident occurred that led to a meltdown of half of the metal control rods in the core of the building. Fortunately at this site, the radiation was quite minor and had virtually no effect on the people or surrounding environment. However, later in April of 1986 at the Chernobyl Nuclear Plant in Ukraine, an incident occurred that was considerably more severe. Two steam explosions and fires released at least 5% of the radioactive by-product being stored in the core of the building. Two workers were killed on-site, followed by 28 in the next few weeks due to the radiation. Also, according to one source, millions of people were also affected by radioactive isotopes, in many cases leading to cancer. Since these two

⁸ “Atomic Energy Commission” [United States History](http://www.u-s-history.com/pages/h1813.html) . Online Highways LLC., 12 May 2010
<<http://www.u-s-history.com/pages/h1813.html>

⁹ Elizabeth II, “1956: Queen Switches On Nuclear Power.” [BBC News](http://news.bbc.co.uk/onthisday/hi/dates/stories/october/17/newsid_3147000/3147145.stm). 1956. 4 March 2010
<http://news.bbc.co.uk/onthisday/hi/dates/stories/october/17/newsid_3147000/3147145.stm>

accidents, many crucial improvements have been made on the structures of the plants; however the memory of the horrible scenes leaves an imprint on the minds of society.

Role of Control

Since February 1, 2010, there are about 124 power plants in North America alone, leaving 312 scattered throughout the rest of the world. This does not include countries such as Thailand, Turkey, Vietnam, and Poland, as they do not yet have any nuclear power reactors.

While most of the developed countries are not using nuclear power as a primary energy source, there are still many more developing countries who struggle with using any source of energy. Disagreements in their governments may be causes of their lack of nuclear power reactors; however the main issue is money. The actual production when compared to that of fossil fuels is considerably cheaper (about a third of a coal plant-see chart in back), however the cost is made up for with employment funds, construction costs, decommissioning costs, and the disposal of the radioactive waste.¹⁰ As is in many cases, the nations with the most successful economy and wealth, such as the United Kingdom, China, and Canada, are able to afford the high costs of building power plants (each one costs about 1-8 billion dollars American, depending on the amount of KW it is able to produce)⁴. Obviously, in developing countries the money that would

¹⁰"Cost of Nuclear Power". [Nuclearinfo.net](http://nuclearinfo.net), 6 March 2010
<<http://nuclearinfo.net/Nuclearpower/WebHomeCostOfNuclearPower>>

cover these costs simply does not exist, however the demand for electricity is not nearly as great.

In China, there are 11 operable plants, with 20 under construction. In France, there are 58 nuclear plants in operation, with 2 more on the way. In the USA, there are 104 plants with 11 more planned to follow. These are the leading countries in nuclear power reactor production, and so these nations are at the highest risk of the dangers of radiation and potential explosions or meltdowns, should any accident occur. While the amount of energy being produced is rated in the hundred billions for most of these countries, the amount of energy spent by the government and industries is also great.

Also, like with any other aspect of an economy, the power reactors in use can crash any time, causing mass radiation to millions of people, or worse. This is why citizens living in the radius of a radioactive explosion should be concerned, which in North America counts for most urban dwellers. If any accident were to occur, a substantial amount of radioactive particles can be released into the air or water, and those drinking the water or breathing the air can be affected.

Religious Views on the issue

There are several organizations and groups of people who are strongly against the idea of using nuclear power as an energy source. For example, author J. George Butler describes several reasons that a Christian might consider his point of view. He claims that many, if not most, official reports are false in their reassurances that nuclear production is 100 percent safe. He also

argues that until the problem of radioactive waste has been completely and permanently solved, all plants and reactors must be shut down. The views of Butler seem very sensible, however when he connects them to a Christian perspective, they seem half-baked. He says that the stopping of nuclear energy production, “parallels the Christian concern not to waste resources”¹¹. Once again, his arguments may make sense to any person opposing nuclear power reactors, but if all Christians took action on his perspective, there would not be nearly enough support in Canada to the usage of nuclear power as an alternative energy solution.

While there are many arguments both regarding moral beliefs and the demands of the economy, the question should really be a matter of how it affects society. Many people fight against this energy source for fear of wasting money, collapses, or accidents, but they deny the fact that a solution must be found for the future regarding energy sources. Nuclear power plants have many risks and problems that can still be worked out, but in order to keep the planet functioning in the state it is, the problems of pollution and energy must be solved. Action must be taken as soon as possible, and at present, nuclear power is the only answer available.

Case Studies: Cuba, Indonesia, Kenya

The issue of whether or not to use nuclear power plants to generate a source of energy has been both fought against and accepted in many developing countries,

¹¹ J. Butler, “Christian Ethnics and Nuclear Power.” Religion-online. 5 March 2010, <http://www.religion-online.org/showarticle.asp?title=1225>

including Indonesia, Cuba, and Kenya. In Indonesia, the culture and general progress is slow and unstable, causing question as to whether the country is ready for nuclear power. In Kenya, a power plant is being constructed, but the progress is slow and the cost is high. While all three of these countries are in need of an energy source, there is an obstacle blocking each one of them, and steps are being taken to resolve the problems facing each country.

Case Study - Indonesia

Indonesia has been making slow progress towards establishing any nuclear power plants, focussing specifically on how nuclear power can be beneficial and relative research, however a decision has finally been reached by the Indonesian government to build a plant in both Java and Madura.¹² Several different research centres were built in the past, and these eventually lead to the creations of the national organizations BATAN, (Badan Tenaga Nuklir Nasional) , and BAPETEN ([Badan Pengawas Tenaga Nuklir](#)), Indonesia's agencies on the executional and regulatory functions of nuclear energy.

BATAN and BAPETEN are the results of progress made since 1954, after the State Committee for the Investigation of Radioactive Activity was established. The SCIRA was established to investigate any potential and harmful radiation due to the nuclear testing in the Pacific Ocean. The roles of the two programs are to maintain the welfare of the people while researching, developing, and beneficially using nuclear

¹² "Nuclear Power Plants", [Indonesia Matters](#), Patung, Nov 19th, 2006.

<<http://www.indonesiamatters.com/828/nuclear-power-plants/>>

¹³"History of Batan", [BATAN Badan Tenaga Atom Nasional](#), 28 April, 2010

energy.¹³ Research agencies such as the Kartini research reactor(1979) and the 30 MW Multipurpose Research Reactor(1987) were built for the same purposes, as well as many other similar facilities.

Nuclear plants were given permission to begin construction and production by the government in late January this year, while Jakarta received permission to build its first plant in 2007(to be completed in 2017). In West Java, approximately 4 power plants are planned to be constructed and ready to go by 2014, with 57% of the energy produced going to the Java and Bali areas, and the rest divided amongst the rest of the archipelago islands. This energy is expected to replace part of the energy used by citizens in Indonesia, as well as promote a cleaner environment; however coal-fired power plants will still be significant contributors.

While no power plants have actually been completed yet, there has been conflict with the citizens in Java and other parts of Indonesia. Because of the Three Mile incident in Pennsylvania and the Cherboyl accident in the previous Soviet Union (these are incidents caused by and at the sights of nuclear power plants), there have been several opposing groups formed in Indonesia to fight the building of power plants within the nation. Of these groups is one very vocal one entitled WALHI (Wahana Lingkungan Hidup Indonesia, or the Indonesian Forum for Environment). The group argues that by installing even just one power plant, if there is a radiation leak, millions of people could be affected. WAHLI also argues that the planned nuclear plant's operations could end in radioactive waste being pumped into nearby waterways. While it has been questioned about whether or not Java is even considered safe enough to build a plant on account of its earthquakes, the idea was soon discarded. During a quake rated at level 5.9 in

<<http://.batan.go.id/en2008/profil.php>>

West Java in 2006, one of the research facilities already established was able to withstand, even serving as a shelter to refugees.¹⁴

Although there are those who are against the idea of establishing nuclear power plants in Indonesia, the benefits are extremely drastic. The island of Java is one of the most populated in the world, hosting millions of families and citizens. BATAN is adamant that the first nuclear plant be built at the foot of the dormant volcano Mount Muria, in northern Java. According to a source, BATAN has claimed that eventually this one plant alone will be able to generate a full 2% of the nation's energy¹⁵. If this claim proves true, then by the year 2017 the nation of Indonesia will have made a massive step of improvement in its energy production.

Indonesian culture plays a small but impactful influence in regards to the control of nuclear energy within the nation. It is part of the Asian section of the world; however the rate of energy consumption is not as fast-paced as its neighbouring countries. The Asian countries have for a long time been investing in shopping malls, mass consumption, and economic growth, causing the necessary amount of energy needed to skyrocket. While the developed Asian countries can generate ways to provide this energy, Indonesia is behind the times, having just completed the research stage of installing nuclear power. Nuclear power plants are an example of modernization, and Indonesia must change in order to accommodate the needs of working nuclear power plants. The culture of the country is slower than that of the fast-paced Western and

¹⁴ "Indonesia looks to a nuclear future", [AsiaTimesonline](http://www.atimes.com/atimes/Southeast_Asia/IE15Ae01.html), Tom McCawley, May 15 2007.
<http://www.atimes.com/atimes/Southeast_Asia/IE15Ae01.html>

¹⁵ http://www.atimes.com/atimes/Southeast_Asia/IE15Ae01.html (see previous footnote)

¹⁶ "Cuba and Nuclear Energy: The Juragua Nuclear Power Plant in Cienfuegos", [TED Case Studies](http://www1.american.edu/TED/cubanuke.htm), 1 May 2010
<<http://www1.american.edu/TED/cubanuke.htm>>

Asian countries, and so it will struggle with its vision of running multiple plants¹⁶.

Case Study - Cuba

The developing country of Cuba has an interesting story as to its construction of nuclear power plants. Since around the year 1976, according to one source¹⁷, Cuba has been attempting a joint project with Russia (originally the agreement was with the Soviet Union) to complete a set of twin reactors in Juragua. Since the fall of the Soviet Union, there were rumours that Russia meant to abandon the Juragua project and that President Castro would attempt to exchange the agreement for free oil, however it is unlikely that this is the case. While the plants are still under construction, they are (according to another source¹⁸) currently the only commercial nuclear plants in the Caribbean and the only Soviet-designed units in the western hemisphere. Should the Juragua project be abandoned, it would not go unnoticed. While the agreement with Russia has gone through many rough stages, many of them leaving Cuba to take care of the majority of the finances, in June 1997, an agreement was finally met and Russia decided to fund for the project of having both of Juragua's power plants finished.

The cultural impact is obviously great on the Juragua issue, as it is because of Cuba's multi-cultural relationship with Soviet Union that the start of the construction of the nuclear power plants was possible. Since Russia took over the agreement it has agreed

¹⁷ See Source 16

^{18, 19} "Will the Juragua Nuclear Power Station be Completed?", 30 April 2010
<<http://www.fas.org/nuke/guide/cuba/future.html#FN1>>

to only pay for commercial funds, leaving Cuba with the trouble of paying for the rest of the funds, causing the economy to rapidly decline. Castro has not halted the project permanently, as there is more than half of it completed, but he has paused it for a time.

Also, while relations between Russia and Cuba are making a turn for the worse since the fall of the Soviet Union, the existence of the nearly-finished power plants has only worsened the relationship between Cuba and the USA. America views the plants to be threats to its national security, should either of the plants suffer a radioactive fall-out. In fact, the USA has been putting pressure on Russia in attempts to dissuade it from completing the project. As well, Congress has an even stronger impact against Cuba in 1996 by passing the Helms-Burton Act. This Act's first law states that a nuclear reactor in Cuba should and is to be an act of aggression. This legislation also puts U.S. sanctions against any country that tries to assist in the completion of the Juragua nuclear power plants. Finally, Congress also put pressure on the IAEA (International Atomic Energy Association), which helped fund the Juragua project, to end its funding in Cuba. The IAEA had no choice but to do so, as America funded 30% of the Association's budget and otherwise would reduce its funding for every dollar the IAEA gave to Cuba¹⁹.

With all the financial trouble centering around the Juragua project, Cuba's economy collapsed. From 1990 – 1994, its Gross National Product had gone down

¹⁹ See Source 18.

34.5%, and despite efforts of a newfound oil industry in 1997, it has had trouble pulling it back up again.

Among the effects on society brought on by the mess of the Juragua project were mass black-outs in the cities. The black-outs were purposely performed by the government to save energy, as it was sparse, and lasted a few hours at a time. Cubans learned to carry flashlights, and electricity workers were paid very well.

Cuba has had trouble getting on its feet and paying for the building of the Caribbean's first power plants, and it will continue to have trouble if the pattern continues. Once the planned power plants are completed, more energy can be supplied to the citizens, and this country's declining economy may be saved.

Case Study – Kenya

The African country Kenya established plans to build its first power plant in 2009, but unlike South Africa, which already has a power plant, Kenya is to complete an environmental test on the area before beginning construction²⁰. Kenya's energy minister, Kiraitu Murungi, reported to a website (SciDev.Net) that in 2009, there was a shortage of 3,000 megawatts of electricity in all of Africa. This gives Kenya a very large necessity for a source of energy production. It is also rated 22nd for energy production in the country. This will mean that by establishing a power plant, the energy produced will be possibly 4 times the amount of energy that is currently being produced, according to Murungi. Also, it is believed that construction of the plant could act as a model for other African countries to solve their own electricity problems.

²⁰ "Kenyan nuclear power plans forge ahead", [SciDev.Net](http://www.scidev.net/en/news/kenyan-nuclear-power-plans-forge-ahead-1.html), Gitonga Njeru, 7 August 2009
<<http://www.scidev.net/en/news/kenyan-nuclear-power-plans-forge-ahead-1.html>>

On the other side of the matter, the project will take about 5-7 years to complete, and it has yet to begin construction. According to David Maina, director of nuclear science and technology at the University of Nairobi, the project will cost an estimated 80 billion Kenyan shillings (US\$1 billion). This is very difficult to fund, as the country is still developing.

Kenya's Ministry of Energy and Ministry of Finance have begun discussions to fund the project, placing confidence in the rise of its economy by the end of 2010. In 2003, the country's economy was below one percent, raising no higher than 7 percent before dipping low again post-election in 2007. Signs of recovery have been shown, and as a result of improved performance in agriculture, manufacturing, construction, and communication, the economy is expected to grow by 4.4 percent by the end of this year. This expected growth will create more money to fund the project of building a nuclear power plant.²¹

The prospect of possessing nuclear arms may have created resistance in the construction of the power plant, and so a treaty was signed to ensure that the nuclear power would be used solely for Kenya's energy usage. The African Nuclear Weapon Free Zone Treaty was signed, proving that the government of Kenya would only use the nuclear power generated from the plant to provide energy for the country, and not to convert into a nuclear weapon²². This has helped eliminate one source of opposition

²¹ "Kenya: nuclear energy within 7 years", The nuclear N-FORMER, April 27 2010
<<http://www.nuclearcounterfeit.com/?tag=kenya>>

²² "Kenya Ratifies African Nuclear Weapon Free Zone Treaty", African Business, Xinhua News Agency, 12 May 2010
< <http://www.encyclopedia.com/doc/1G1-210057052.html>> OR <<http://www.encyclopedia.com/doc/1P2-18351138.html>>

within the country.

Although Kenya has its problems to face and overcome, its progress in establishing a nuclear power plant is well underway. The actual construction may take a few years, but the country will benefit from its efforts.

Affects on Canada

Canada has been active in its use of nuclear energy for a number of years. While there are some groups that argue against the country's use of nuclear plants, it cannot be doubted that it is much less of an issue in this country than in those previously mentioned. Canada trades with other countries, exporting from the production of the nuclear plants and trading it for money which benefits Canadians. Also, citizens from all over southern Canada are benefitting from the energy created from the plants. Despite the upsides of nuclear energy's uses, and despite the fact that it has yet to occur, potentially every Canadian could also be affected should an accident occur. Canada has efficiently used nuclear power to the best of its ability; however it is important to be aware of the dangers behind the issue as well.

Since 1962, when the first nuclear power reactor was completed in Ontario, the province has been the leading province in Canada as far as nuclear power reactors go. Ontario is controlled by the OPG (Ontario Power Generation), and its 73 generating

stations all help to provide for 50% of Ontario's electricity.²³ Throughout Canada in total, there are seven actual power plants, the closest to Barrie being the Darlington Power Plant.²⁴

Anti-nuclear activist groups exist within Canada, but they do not make themselves as opposed as it would seem. The Nuclear Awareness Project,²⁵ for example, is simply an organization that makes citizens aware of the dangers of being near a nuclear power plant (such as the Darlington Plant, as seen in article). Unlike many open protests that may be found both between countries or within a specific area of a country, Canada does not represent a large issue. It has, for the most part, accepted nuclear energy as an alternative source of power.

Every citizen that lives in Canada is involved in the business of using nuclear power for energy, whether they are aware of it or not. A person may be using electricity that was generated from one of the stations or plants with the province. They may be receiving money that was gained through trading uranium, or they may be doing both. As an individual and citizen of Canada, all that can be done is to be aware of the dangers of Nuclear Power Plants, and to be happy with the energy supplied, rather than to protest.

International Organizations

World Nuclear Association: The role of WNA is to support the nuclear energy industry in a number of ways. It provides "Expert Working Groups", nuclear experts

²³ "Nuclear Power", Ontario Power Generation, 7 April 2010

<<http://www.opg.com/power/nuclear/>>

²⁴ <http://www.cnsccsn.gc.ca/eng/about/regulated/powerplants/>

²⁵ <http://www.greenpeace.org/canada/en/press/press-releases/darlington-nuclear-monument>

coming together to discuss and improve on long-established topics such as Nuclear Fuel WG and Trade Issues WG. The WNA also represents the industry in key policy forums, such as the International Atomic Energy Association, International Commission on Radiological Protection, and keeps updates on UN climate changes. It communicates information with the public the WNA Public Information Service, which is the world's leading resource on nuclear energy-related facts. The World Nuclear News is a news service that also aids in distributing valuable information on nuclear energy.

The WNA is also able to compete with the economy, providing Biennial Market Reports and a Nuclear Energy Index of globally-traded nuclear stocks. The World Nuclear Transport Institute, branching off of the WNA, keeps control of all trade of nuclear material between countries. There is no inequality between the sexes, as this Association also balances the views of society by providing full support of Women in Nuclear, a global organization that was made to support and encourage women to take part in nuclear development. Not only are women able to study at the World Nuclear University, a prestigious school supported and created by the WNA that trains technicians and constructors of nuclear plants, but women are also just as eligible as men in the work field. The WNA is the role of control of international nuclear groups, as it guides and unites the major associations together to support and cover all aspects of the nuclear energy production and industry.²⁶

Solutions

²⁶ World Nuclear Association, 12 May 2010
<<http://www.world-nuclear.org/>>

There are many solutions to solve the issue the world faces in regards to the usage of nuclear power plants. Updating the plants, installing more plants to replace coal plants, shutting down existing plants, or simply leaving the problem as it is are all possibilities, and both their pros and cons can be explored to find a final solution that meets the world's energy needs.

As time moves on, new improvements in the structures and efficiencies of nuclear power plants are created and applied, however not all the existing power plants are updated to fulfill these improvements. The positive aspects to updating **all** existing power plants internationally are as follows: radioactive exposure will be minimized, possibility of accidents will be reduced, competition between countries will eliminate, and anti-nuclear activists will diminish due to a general trust in society.

Radioactive waste is stored in special decay tanks until it breaks down enough to filter into the air. The waste is always considerably weaker than its original state, so that it is virtually undetectable when it is released. While the tanks seem to work well enough, the possibility of a crack in the tank is always there, as well as leakage. To improve this, some plants now use different types of metal²⁷ that are more porous and will prevent leakage. The downside to this is that by switching metals, more time and money is spent on the construction, and as well there is the business of switching ownership, as often the special metals constructing are belonging name brand companies.

Updates in plants include more formal and complete training of employees, as well as more regular machine checks. By training the employees in how to use any new

²⁷"Radwaste", PALL Corporation, 1 April 2010
<http://www.pall.com/power_38679.asp#jumpradwaste

machinery installed, as well as installing formal leadership roles within the employment pyramid. Also, to further prevent any incidents such as Chernobyl or Three Mile Island to repeat themselves, special rooms can be and have been constructed to mimic each potential accident and what needs to be done should it happen²⁸. Competition between countries over who has more and better nuclear power reactors has existed since they were first created in the 1960's. By updating every plant to be the same model, accidents can be avoided (Chernobyl's occurred only because of its physical model), and the world will have one more thing in common to not fight over.

All of these procedures will ensure that major accidents do not occur, however there are negative aspects as well. Training staff members requires overtime payment, and new machinery is expensive. As each plant already costs several million to run annually, improvements in developing countries would be very difficult to afford.

Replacing coal power plants with nuclear power plants also have their pros and cons. As far as pros go, nuclear power plants can replace the electricity generated if only a few more plants are installed, and can completely eliminate the air pollution created from coal plants. A coal power plant generates considerably more radioactive pollution into the air, as well as the dust and exudes, and so by replacing coal factories, the environment will be improved. Also, the fuel costs of running a single nuclear power plant are much less than that of a coal plant.²⁹

The environment can be improved considerably by replacing coal plants

²⁸ <http://en.allexperts.com/q/Nuclear-Power-2462/power-plant-technology-improvements.htm>

²⁹ "Information Paper Index", [World Nuclear Association](http://www.world-nuclear.org/info/inf02_.html), 12 May 2010
<http://www.world-nuclear.org/info/inf02_.html>

with nuclear. However, with each plant that is replaced, the people living around it are at a huge risk. Despite any improvements made, there is still the danger of an accident occurring. Also, fuel costs may be lower than that of coal plants, but capital costs are much greater. Finally countries that have access to low-priced fossil fuels may find it difficult to compete with the trade prices for uranium, an element necessary to create the nuclear fission needed.

Shutting down existing power plants is another solution when dealing with a country's funds, as it will of course save the country millions of dollars. This is one of the most stressed reasons that the idea is considered, however one must remember that by shutting down plants, the energy lost must be replaced in other ways.

Depending on the situation of the country, switching to an alternative source of energy seems best; however there are many who simply don't have the funds for either energy production source.

Conclusion

The global issue of using nuclear power as an alternative energy source has been questioned, opposed, and supported throughout the world since its first creation in 1956. The debate regarding whether or not making the switch to nuclear power is worth the cost has been won in some countries, and continues in others. The possibilities of a country turning nuclear power into a weapon, and an accident related to radioactivity occurring are both actualities that must be faced. This is a contentious issue, and the best solution is to leave things the way they are. The world is functioning with the resources it has, and while fossil fuels are depleting, nuclear power is currently being used and can soon become a major trade industry in the future, should there be a

necessity. To dismantle the already existing power plants would cause confusion and a lack of energy for the countries that currently depend on it, and to build more would cost too much money and create a greater risk for accidents. While the world can always be improved, the supply of energy is sustaining the world adequately, and is expected to for at least the next few generations. Presently nuclear power is debated against and described as a complex global issue, but in the future, it will be accepted as an alternative energy source worldwide.

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