Debate

Nuclear Power: A Sustainable Risk?

ISSUE: Despite the fact that nuclear power is a more sustainable energy source than fossil fuels, is it worth the risks it poses to people and the environment?

Nuclear accidents have made people nervous ever since nuclear power first started being seriously investigated as an energy source. The partial nuclear meltdown at Three Mile Island in 1979 and the Soviet Union Chernobyl accident in 1986 made these fears appear warranted, particularly as radiation from the Chernobyl disaster was believed to have contributed to many deaths and environmental damage. However, better control procedures and technology through the years has made nuclear power plants safer and more likely to be seen as an acceptable power source.

However, in 2011 a natural disaster caused many people to reexamine the advantages and disadvantages of nuclear power as an alternative energy source. An 8.9 magnitude earthquake and the following tsunami devastated Japan and the surrounding Pacific regions. The disaster caused serious damage to the Fukushima Daiichi nuclear power plant in Japan. The nuclear plant underwent major explosions and fires, which caused a partial meltdown. This event caused long-term, if not permanent, changes to many people's lives and the surrounding environment. Radioactivity in food, land, and water is an issue that the region has had to deal with since the incident.

Nuclear power is produced by using the radioactive element uranium as the impetus for deriving energy by means of nuclear fission. Nuclear fission occurs when neutrons collide into the nucleus of an element, splitting the atom in half and generating heat. The heat is then used to create steam, which is in turn used to turn the turbines that drive power generators. These generators ultimately create the electrical power that is a useable source of energy. The steam is then condensed back into water, repeating the cycle over and over again.

Nuclear power comes with its own unique set of benefits and risks. For instance, it has been touted as an effective means of generating energy. Nuclear energy emits significantly less emissions into the atmosphere compared to that of fossil fuels. It also has a higher energy output, is a comparatively reliable energy resource, and is also less expensive than other alternative sources of energy. On the other hand, some of the risks of nuclear power include the possibility that radioactive materials could be released into the environment, the potential hazards of mining and exploration that occur when obtaining uranium, and the potential health effects of being exposed to radioactive materials through accidents, natural disasters, or terrorist attacks. While proponents of nuclear power claim that these risks can be mitigated with proper safety and control procedures, they still represent a major concern. Nuclear waste also requires proper waste disposal and transportation.

In response to concerns over the safety of nuclear power, proponents can point to France's successful use of nuclear power as an energy source. The country exemplifies some of the benefits that can come from investing in nuclear energy as the French government has been investing in nuclear energy since the

1970s. Some reasons for this include a desire for energy independence; a lack of natural resources; and creation of jobs, economic prosperity, and modernization. Because of France's technological research, the country has been able to build over 56 nuclear reactors, derive over 75 percent of the country's power from these plants, and is able to export electricity to other European countries. This has not only contributed to the French economy but has dramatically improved French citizens' way of life. France also has some of the safest policies and practices in the industry. It is noted, however, that nuclear waste will always pose as a trade-off to all of the benefits that nuclear power provides.

In spite of the advantages and disadvantages of nuclear power, the safety aspects of nuclear power are still without a satisfactory solution. Because it is a nonrenewable energy, nuclear power is not a permanent non-exhaustible solution to the energy problem. However, its efficiency and the fact that not a lot is needed to generate energy means that nuclear power would be a long-lasting energy source.

There are two sides to every issue:

1. The efficiency of nuclear power combined with proper safety protocols makes nuclear power a viable source of alternative energy.

2. There are too many potential risks in developing and investing in nuclear energy to make it a feasible alternative energy source.

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