

# The Nuclear Energy Dilemma

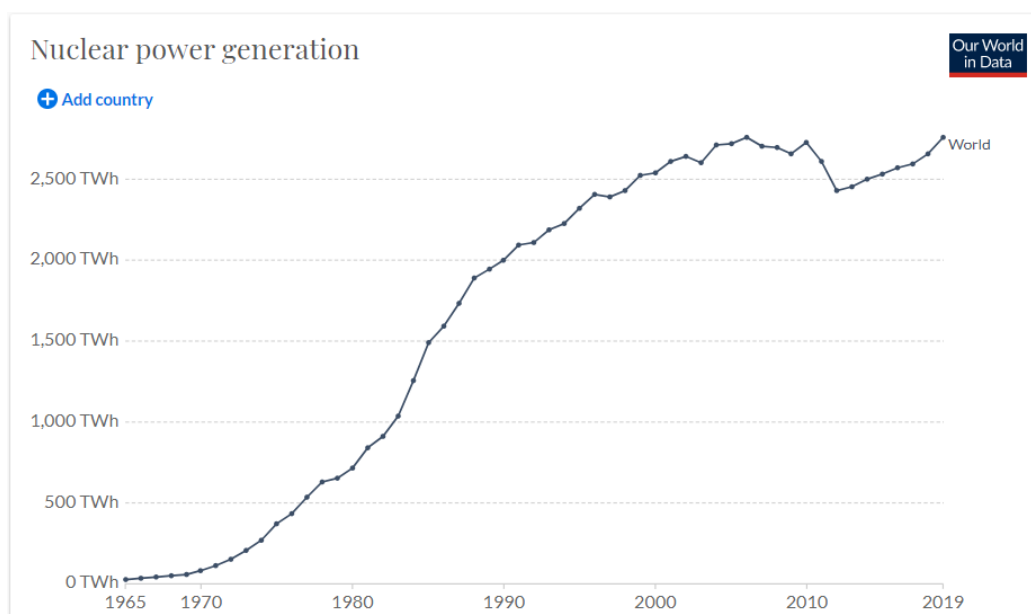
Viranch Patel - 180010021

The rate at which population is increasing, and due to industrial revolution worldwide, we need more and more energy, electricity, and other similar resources. So we need one reliable and less harmful energy source which can produce more power with less pollution, fewer wastes than conventional sources. Nuclear energy is a sustainable energy source that reduces greenhouse gas emissions and produces far less waste. However, on the other hand, nuclear fuel and wastes are exceptionally radioactive, posing numerous threats to public health and the climate. Nuclear accidents are catastrophic and have an extensive impact on global health. Should we use nuclear power to solve the environmental problems caused by global warming and leave the problems to future generations? Or should we leave them the problems of atmospheric pollution caused by fossil fuels? Neither seems ideal. Moreover, we will see in detail why both choices, either we use Nuclear energy or not, are unwelcome for the environment.

Nuclear power was first invented in the 1930s. Moreover, after world war two, the whole world came to know about this energy. And in 1951, the first electricity was produced from atomic energy. Furthermore, as time went by, we realized that we could not rely only on conventional energy sources as they were causing many environmental issues. In 2015 there was an increase of 1.3 percent in global nuclear power generation. By that time, the US produced over 189.9 million tonnes of oil equivalent energy in nuclear energy in power plants located all over the United States. So we started using nuclear energy more and more. There are six nuclear power plants in India, and it is assumed that by 2050 there will be 25% of electricity from nuclear power. However, in 2011 the nuclear disaster at Fukushima Daiichi Nuclear power plant in Japan has resulted in severe cascading crises that impact public health, the environment, food safety, and psychosocial effects on a global scale. So the nuclear emergency has prompted

intense debate on the ethical issues of nuclear energy and its impact on the global environment and health.

If we do not use nuclear energy, then what? As we know that with the increased demand for energy and diminishing fossil fuel supplies, a sustainable alternative compared to wind and solar energies is needed. Nuclear energy is sustainable, does not emit greenhouse gas, and generates far fewer wastes than conventional energy. Despite producing massive amounts of carbon-free power, nuclear energy produces more electricity on less land than any other clean-air source. A typical 1,000-megawatt nuclear facility in the United States needs a little more than 1 square mile to operate. NEI says wind farms require 360 times more land area to produce the same amount of electricity and solar photovoltaic plants require 75 times more space. Some facts about nuclear power plants are that one nuclear power plant produces power equals 3.125 million PV panels (considering one silicon panel size of 320 watts), 431 wind turbines, 100 million LED bulbs. The given graph displays the worldwide production of nuclear power along with time.



Moreover, on the other hand, it involves mining and refining of radioactive raw materials and disposal of radioactive wastes, which damages the environment and brings health risks to

nearby residents. Nuclear radiation is harmful to humans, animals, insects, plants, and all living beings. For example, in the 1986 Chernobyl disaster, large amounts of radioactive particles and gas were released into the air and spread worldwide. With deaths and mutations in humans, animals, and plants, the long-term impact included prolonged low-dose radiation (Cs-134, I-131, and Cs-137, etc.) over huge populations in Europe increased risks for many diseases like cancer many other.

There is a heavy impact of nuclear power plants on local residents. Nuclear power requires mining, enrichment, transport, disposal of radioactive materials, and many nuclear power plants located in densely populated areas. Residents near these activities increased the risk for cancer and other health problems due to long-term exposure to low-level radioactivity. Moreover, on the other hand, we can see that these plants create tons of jobs for the people and increases the economy. For example, The nuclear industry supports nearly half a million jobs in the United States and contributes an estimated \$60 billion to the US gross domestic product each year.

Let us talk about land-ethics relating to the nuclear energy dilemma. The boundaries of the community should be enlarged to include the land. However, nuclear waste causes land pollution, which is against land-ethics. As with environmental benefits, environmental damage is also there. Also, there is a relation of this dilemma to Deep Ecology as well. In 1986, some reports say that some shooters shot all the animals dead around the explosion area during the Chernobyl disaster while they saved the people as many as they can, and people were not shot dead like animals. Sometimes, the waste of nuclear power plants is disposed of in the forests and some places far from the population, but it harms many plants, animals, insects, etc., but no one is paying attention to that. So in many ways, we are not treating the environment as same as humans. After the nuclear disaster at Fukushima, some women were repeatedly refused to marry due to the rumor that they were irradiated. This kind of abject, unreasonable

discrimination still occurs today, but it concerns women, which clearly shows the women's position in contemporary Japan.

Nuclear energy is regarded as sustainable energy that reduces air pollution, provides more energy, generates highly toxic radioactive waste, and irreversibly damages the environment and public health. Any nuclear accident has an extensive impact on global health. So there have been many debates on having more nuclear power plants or not around the globe. In conclusion, we can say that this will be the most effective and sustainable energy source for around the upcoming 100 years. However, it is a risky source to operate with. So we have to find more ways to securely operate the power plants and dispose of the nuclear waste with maximum safety to avoid the radiations' harsh effects.

#### References:

INFOGRAPHIC: How Much Power Does A Nuclear Reactor Produce? (2018). Energy.Gov.  
<https://www.energy.gov/ne/articles/infographic-how-much-power-does-nuclear-reactor-produce>

Nuclear power generation. (2019). Our World in Data.  
[https://ourworldindata.org/grapher/nuclear-energy-generation?tab=chart&stackMode=absolute&time=earliest..latest&country=%7EOWID\\_WRL@ion=World](https://ourworldindata.org/grapher/nuclear-energy-generation?tab=chart&stackMode=absolute&time=earliest..latest&country=%7EOWID_WRL@ion=World)

Advantages and Challenges of Nuclear Energy. (2021). Energy.Gov.  
<https://www.energy.gov/ne/articles/advantages-and-challenges-nuclear-energy>