

Research Proposal:

Can nuclear power be made environmentally friendly while remaining efficient and economical?

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The key objective of my research is to evaluate the environmental, societal and economic impacts of different longstanding and novel nuclear power production methods. This is with an eye towards identifying if nuclear power can be used in tandem with renewable energy to drastically lower the CO₂ output of global energy production, whilst also remaining practical and economical, allowing for it to be more easily sold to politicians.

Nuclear power is widespread in its use with over 10% of the energy produced worldwide coming from nuclear fission reactors. It is a low CO₂, cost effective way of producing power. It however does have some significant draw backs such as the production of nuclear waste and a long start up time. Much of the nuclear waste produced by fission reactors has been improperly stored and disposed of over time leading to severe ecological ramifications.

My research will focus on whether new fuels, reactors or nuclear power production methods warrant continued research based on their potential advantages, with a heavy focus on the environmental implications of each. These will include Thorium fission reactors and nuclear fusion reactors, both of which have been suggested as less ecologically damaging and more efficient than current reactors. I will then compare these as well as current nuclear fission reactors to fossil fuels and renewable energy production methods, such as wind and solar, to identify the problems and benefits of each. The final aim is to see if a more environmentally friendly version of nuclear power can be used alongside renewable energy to replace highly polluting fossil fuel power stations, reducing the health and environmental impacts of energy production.