

Unleashing Geothermal Energy: A Path to a Sustainable Future

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In an era defined by surging energy demands and escalating environmental concerns, the choices we make in energy production and consumption have never been more consequential. Fossil fuels, once the backbone of global energy, are now confronted by their unsustainability and damaging effects on our environment helping to fuel our current climate crisis. Simultaneously, the untapped potential of resources like geothermal energy shows us there is a future of sustainable, renewable energy. Together, they underscore the urgency of a radical shift needed in our energy landscape. The economic allure of fossil fuels, while historically necessary, is no longer tenable in a world at the brink of ecological crisis. As we face the impending consequences of our past dependence on the fossil fuel industry, it is imperative to prioritize the collective well-being of society over the pursuits of individual wealth. Renewable energies represent the only sustainable path forward in meeting our energy needs while safeguarding our planet's future. In this essay, we will examine the damaging nature of fossil fuels, the potential of geothermal energy, and the financial wisdom of investing in and prioritizing renewable energies over fossil fuels.

Fossil fuels are harmful to our health and the environment.

Fossil fuels, once the cornerstone of our energy infrastructure, now stand at a crossroads. To discuss the damaging nature of fossil fuels, it is crucial to confront the stark reality of their environmental consequences. The extensive body of research available demonstrates the

profound harm inflicted by the fossil fuels industry on our health and environment as discussed by Hassan et al. (2021), “fossil fuels are considered one of the main sources of environmental pollution worldwide.” This is because fossil fuels, and their additives, expel carbons and other pollutants into the environment as a waste byproduct, negatively affecting the health of our collective planet.

While Hassan et al. (2021) notes the specific impacts on our health and environment are hard to define, the effects of the specific pollutants produced using fossil fuels have been researched and it has been revealed these pollutants are compromising the viability of our soil. If it is affecting our soil, then it is affecting our food chain, inadvertently affecting the health of all living things. Some of the pollutants researched are carbon monoxide, sulfur, nitrogen oxides, and hydrocarbons which affect our health in a direct way. Hassan also explains how the medical community has noticed a rise in things such as respiratory disease and cancers in correlation with the rise in demand for fossil fuel energies. It concludes with, “Fossil fuel mostly contains petroleum, coal, oil, and natural gas. These products when released in the environment cause damage to human health, animals, forests and plants, aquatic, ecosystem, climate change, ozone layer, crops, infrastructures, visibility, and many others.” (Hassan et al., 2021). Helping to show our continued reliance on fossil fuels not only jeopardizes our personal health, but the health of our entire planet.

Untapped Potential of Geothermal Energy

The potential of geothermal energy, which is often overlooked in the renewable energy conversation, represents an untapped reservoir of sustainable, renewable power. When we talk about geothermal energy, we are talking about an inexhaustible thermal energy source stored within the earth's crust generated by our core. It is a system reliant on water to convert extreme

temperatures to steam for its utilization. As the “Investigation of the Potentials of Heat Extraction” (Izuwa et al., 2022) study suggests, geothermal energy offers a promising avenue for electricity generation. The study found that we can harness the Earth’s natural heat resources through pre-existing, abandoned oil and gas wells. First, they utilized abandoned wells to offset the costs of exploration and drilling, then they took steps to convert the wells to geothermal wells. Then they experimented with varying temperatures of the water utilized in steam production to decide the optimal temperatures for production and presented their research. This is one-way geologists and engineers are working together to help maximize the output of this abundant resource. This collaborative effort to harness geothermal energy is a key part in our quest for a sustainable future. By tapping into the Earth’s geothermal potential, we gain new tools in our efforts to find solutions to our energy dependence while also reducing the amount of environmental damage we cause.

Renewable resources are a financially sound investment

In a world increasingly concerned about economic stability, the financial wisdom of renewable energy investments cannot be dismissed. Miralles-Quiros & Miralles-Quiros (2019) state in their work, “From the analysis of the out-of-sample performance of different portfolio strategies using the returns and volatility forecasts from a VAR-ADCC-GARCH approach, that it is possible to obtain profits from diversification since most of the strategies outperformed the naïve rule.” They use Exchange Traded Funds (ETF’s) for their analysis to be more inclusive with their potential investment base. Their research was conclusive that alternative energy investments can outperform traditional energy sectors, debunking the myth that renewable energies are financial uncertain. This article’s evidence highlights that transitioning to renewable energy is not just an ethical choice allowing us to prioritize the health of our planet but also a

shrewd financial decision. Then there is the more recent article by McKay (2023) that highlights current investments that are geothermal specific. This article goes into short detail into the goals for each company that is represented. Some of the companies even have their growth ratios listed such as Polaris Renewable Energy Inc who reported “Revenue for the first six months of the year climbed from \$31.3m to \$40.9m, while EPS jumped from \$0.05 to \$0.44.” This drastic increase in returns further demonstrates the financial wisdom of renewable energy investments.

Opposing Views

Some skeptics, such as those who have been investing solely into oil and gas, have argued that investments in geothermal energy are risky due to risks concerning the safety, and costs of extraction, production, and transportation as discussed by Bhatta (2021). Thankfully, researchers have conducted more recent research showing how to circumvent many of these concerns such as utilizing abandoned oil and gas wells and choosing ones closer to pre-existing communities to minimize transportation costs (Izuwa et al., 2022). Overall, they were able to show a positive return on their investment. Other research, such as that shown in Miralles-Quiros & Miralles-Quiros (2019), specifically looked into the future forecasts of investing in renewable energies correlates that there are noticeable gains to had by switching our energy futures from fossil fuels to renewable energies.

Conclusion

In the face of mounting energy demands and the urgent need to combat environmental degradation, the path forward is clear. Fossil fuels, once indispensable, now endanger the very foundation of our existence. As shown by Hassan (2021), fossil fuels are not sustainable, and our continued dependence on them will only lead to further decline of our planet and the very food

chain that sustains us. The effects of climate change are all around us from the rising temperatures to the unpredictable weather patterns they are causing. However, we have the power to shift the direction of our dependence through renewable resources such as geothermal energy. By harnessing the Earth's own heat through geothermal energy extraction, we tap into an endless reservoir of energy potential as demonstrated by Izuwa et al. (2022). As we transition to renewable energy sources, backed by financial prudence discussed by Miralles-Quiros & Miralles-Quiros (2019), we embrace that there is no economic viability without environmental viability. It is time to prioritize the survival of us all over individual profit because wealth means nothing if there is no one here to spend it. The choice before us is clear, geothermal, and other renewable energies present our best hope for a sustainable and prosperous future.

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