FUNH 5000 - Essay 2

What are the solutions to climate change?

Introduction

Climate change has been a longstanding vital problem. Its consequences include an increasing number of extreme weather events, a reduction of biodiversity, an increasing number of natural hazards, and so on. Some solutions to climate change may consist of transitioning to the use of clean energy, sustainable transportation, sustainable agriculture, carbon sink restoration, and so on.
This essay will review two solutions to climate change, including clean energy and sustainable transportation. The significance of the solutions, how the methods affect climate change, and the drawbacks they bring will be covered.

Clean Energy

Energy production serves as a vital part of human civilization. Although there was a lot of effort spent in exploring clean energy production, over 75 percent of the energy consumed was still produced by unsustainable resources like coal, oil, and natural gas in 2023 [1]. Some clean energy production methods include solar power, wind power, hydropower, and so on [2]. Solar power generates electricity with solar panels to preserve the energy from the sun. Wind power utilizes wind turbines to transmit the kinetic energy of wind to the kinetic energy of wind turbines for electricity generation. Hydropower, similar to wind power, transmits the kinetic energy of water into the kinetic energy of turbines in hydropower stations for generating electricity.

Although the abovementioned clean energy production methods do not generate greenhouse gases like carbon dioxide when operating, they can also harm the environment. For example, utilizing solar power requires land use for placing solar panels, which may lead to the devastation of natural habitats [3]. For wind power, birds and other wild animals can get killed when colliding with the wind turbine [4]. Furthermore, the use of hydropower can cause a reduction in fish population size. The built hydropower station may disrupt the migration and breeding activities of migratory fishes such as Acipenser sinensis and result in the degradation of the population.

Sustainable Transportation

Nearly twenty percent of global carbon dioxide was emitted by transportation in the recent past [5], so having sustainable transportation is essential for alleviating climate change. Some examples of sustainable transportation are electric vehicles, hydrogen vehicles, electric motorcycles, etc.. Electric vehicles and motorcycles use electricity to move the cars with electric motors. Hydrogen vehicles burn hydrogen in hydrogen internal combustion engines or use hydrogen fuel cells to generate electricity to push the cars; both hydrogen internal combustion engines and hydrogen fuel

cells produce water only when pushing the cars.

Although the abovementioned sustainable transportation does not generate greenhouse gases when running, greenhouse gases emission and other environmental impacts happens in the production stage and energy generation stage of the transportation methods. For example, the electricity for powering electric vehicles and motorcycles may be generated from thermal power stations that emit greenhouse gases when producing electricity. Thus, whether sustainable transportation truly has a positive impact on the environment should be further thoroughly examined.

Conclusion

In conclusion, this essay reviews two solutions to climate change: clean energy and sustainable transportation. The solutions are able to emit zero greenhouse gases when operating. Nevertheless, more efforts need to be made to promote the implementation of clean energy since the portion of clean energy consumption over total consumption is still lower than 25 percent in 2023. Moreover, the solutions still have negative environmental impacts like causing death to animals or greenhouse gas emissions during production, which can be addressed in the future.

Word count: 552

References

[1] H. Ritchie, P. Rosado, and M. Roser, “Energy production and consumption,” Our World in Data, 2020. https://ourworldindata.org/energy-production-consumption.
[2] K. K. Jaiswal, C. R. Chowdhury, D. Yadav, R. Verma, S. Dutta, K. S. Jaiswal, K. S. K. Karuppasamy, et al., “Renewable and sustainable clean energy development and impact on social, economic, and environmental health,” Energy nexus, vol. 7, p. 100118, 2022.
[3] T. Tsoutsos, N. Frantzeskaki, and V. Gekas, “Environmental impacts from the solar energy technologies,” Energy policy, vol. 33, no. 3, pp. 289–296, 2005.
[4] R. Saidur, N. A. Rahim, M. R. Islam, and K. H. Solangi, “Environmental impact of wind energy,” Renewable and sustainable energy reviews, vol. 15, no. 5, pp. 2423–2430, 2011.
[5] H. Ritchie, “Cars, planes, trains: where do co emissions from transport come from?,” Our World in Data, 2020. https://ourworldindata.org/co2-emissions-from-transport.

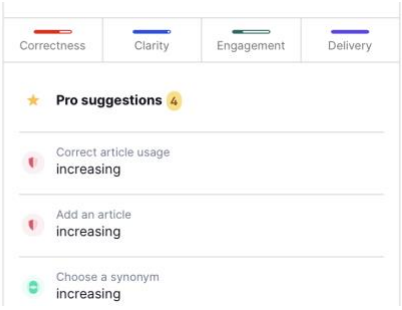
Statement on AI use

This essay uses Grammarly for writing polishing and grammar checking. I may also edit the work myself according to the areas that Grammarly thinks to be unclear or have grammar mistakes since completely getting the suggestions from Grammarly requires a pro version. Detailed information is as follows:

Before checking

Climate change has been a long-standing vital problem. The consequences of climate change include increasing number of extreme weathers, reduction of biodiversity, increasing number of natural hazards, and so on. Some solutions to climate change may include transition to use of clean energy, sustainable transportation, sustainable agriculture, carbon sink restoration, and so on.

This essay will have a review some solutions to climate change, including clean energy and sustainable transportation. The significance of the solutions, how the methods affect climate change, their current technical progress, and the drawbacks they bring will be covered.



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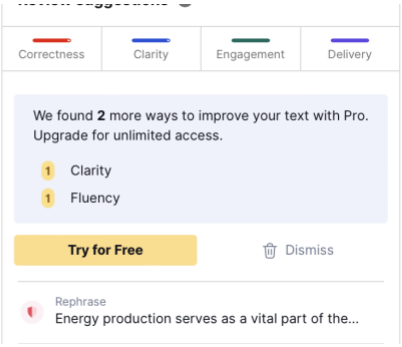
Energy production serves as a vital part of the human civilization. Although many efforts have been spent in exploring clean energy production, over 75 percent of energy consumed are still mainly produced by unsustainable resources like coal, oil, and natural gas in 2023 [1]. Some clean energy production methods include solar power, wind power, hydropower, and so on [2]. Solar power generates electricity with solar panels to preserve the energy from the sun. Wind power utilizes wind turbines to transmit the kinetic energy of wind to the kinetic energy of wind turbines for electricity generation. Hydropower, similar to wind power, transmits the kinetic energy of water into the kinetic energy of turbines in hydropower stations for generating electricity.



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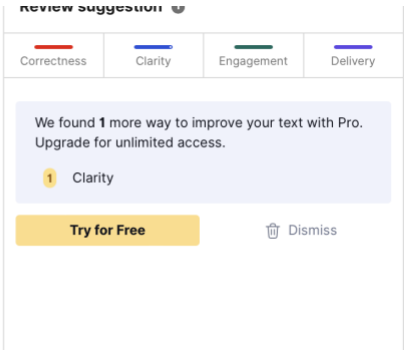

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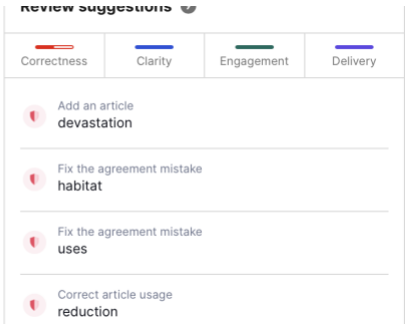
Although the abovementioned clean energy production methods do not generate greenhouse gases like carbon dioxide when operating, they can also harm the environment. For example, utilizing solar power requires land use for placing solar panels, which may lead to devastation of natural habitat [3]. For wind power, birds and other wild animals can get killed when colliding with the wind turbine [4]. Furthermore, the uses of hydropower can cause reduction of fish population size. The built hydropower station may disrupt the migration and breeding activities of migratory fishes such as acipenser sinensis and results in degradation of population.



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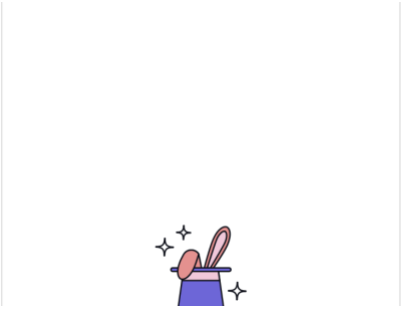

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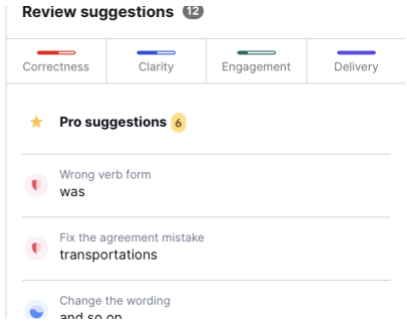

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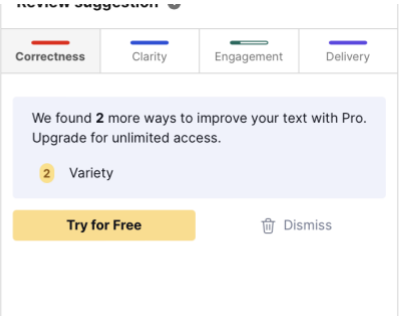

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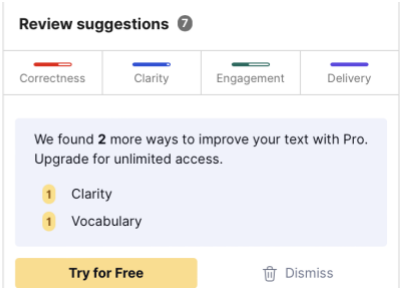

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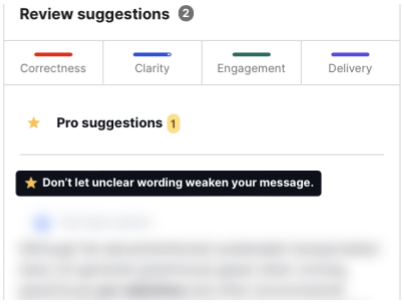

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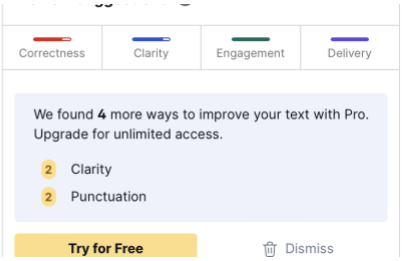

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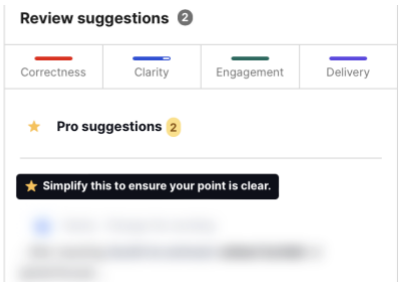

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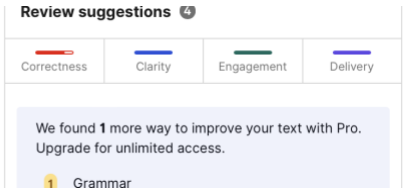

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