



How Long will it Take for the Planet to Transition from Fossil Fuels to Solar Energy: Is the Media Effectively Covering this Topic in New York State?

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ABSTRACT

This research was about transition and understanding replacing fossil fuels with solar energy that mitigate acid rain in Adirondack Mountain in New York, The main goal was to explore media core to which extent solar energy can replace fossil fuels, was a complex answer that requires consideration of the global economies, human policies and implementation, scientific approach, and educative research perspective. In the summary of my project, I explored this question to understand that a) impact of the causes of human and economic disasters in Adirondack acid rainfalls; b) the spillover process of acid rain that has locally and globally affected abiotic and biotic environments; c) prevention and awareness of concerns about fossil fuels that cause issues in the Adirondack Mountains as a pilot study for the planet, and d) conclusion of substituting fossil fuel with solar energy in school households and industry for next-generation wellness.

Keywords: environmental policy, climate change, acid rain, abiotic and biotics.

Climate change has been a hot topic in the last decade, especially between developed and developing countries. The easiest and most traditional energy potential method was a fossil fuel that took many decades to prove that its emissions target global populations and nature. In the Climate Summit (COP28), Bowen in 2023, for Guardian, explained the consequences and repercussions of it: “Global emission by 2025, and the world escalating emission targets to make 43% cut in pollution compared with 2019 level by 2023, and 60% cut by 2035.”

The first point was focused on the Adirondack Mountains and literature reviews reveal how damage acid rain causes to the environment and humans. That alternative factor is solar energy, which can prevent, and humanity will further benefit but is still a significant stigma among the population. According to the Adirondack Council in 2019, preserving water, air, and wildness above upstate New York, recently the sample of the mountains Adirondack generated electric caused acid rain and pollution multiple times from fossil fuels that have affected the direct health of the humans around New York broaden area, and local environment like abiotic and biotics that been shaped in different formations.

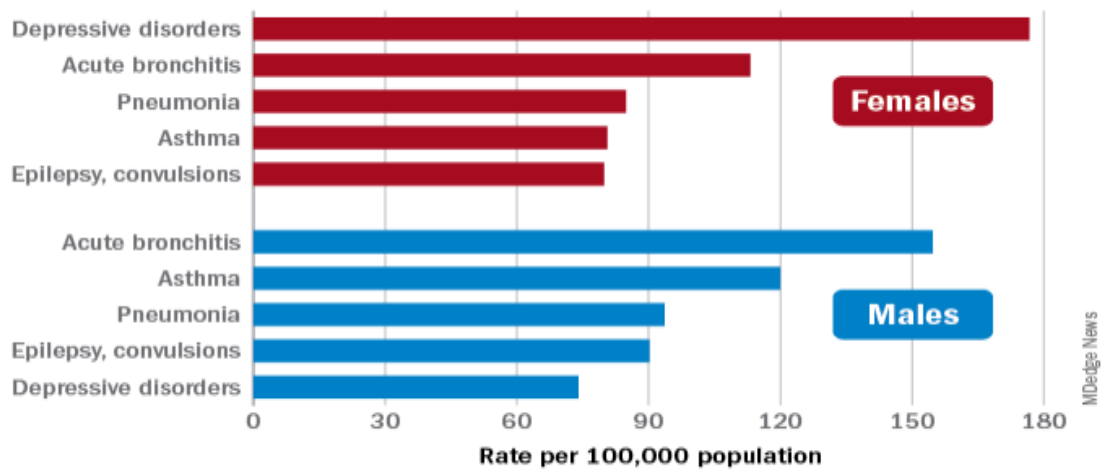
Human to Human Issue

Many local and global studies have examined New York State, showing that the local public, residents, plants, and animals have been affected by Adirondack acid rains in the park and in the cities. For example, the biggest Cleveland State University Hospitals are working on diseases from acid rains, which cause human-to-human issues like asthma, pneumonia, and allergies and lead to new innovations in pharmacy, as a result of human deficient knowledge of how to protect their environment (Haradhan, 2019).

On the chart, acute pulmonary diseases were shown to increase by population for males and females, reported the Agency of Healthcare in the New York region in 2018. Researcher's Olesky in 2018 and Rafferty in 2017 are among the researchers who investigated acid rains and published articles about how industrial zones, statues, lakes, and rivers in the Adirondack region have been affected.

Chart 1

Top five principal diagnoses for inpatient stays, ages 0-17 years



Note: Based on 2018 National Inpatient Sample data for nonneonatal, nonmaternal admissions.

Source: Agency for Healthcare Research and Quality

Their findings are related to economic factors and industrialization that released sulphur dioxides and stopped acid rains in the sky, which circulated in the local and global nature, soil, and water. The impact of replacing fossil fuels with solar energy mitigates acid rain in the Adirondack Mountains, and the potential benefits and challenges from the solution. into the atmosphere, affects the Adirondack mountains by changing the soil and water pH, disturbing nutrient levels. The other impact of acid rain on the Adirondack Mountains in Northeast New York State affects human health, infrastructure, and ecosystems, causing respiratory diseases and damage to buildings and vehicles. Transitioning from fossil fuels to solar energy offers a sustainable solution to mitigate the acid rain on the Adirondack Mountains, with advantages like water quality, health, and historical monuments, and challenges like initial costs and dependence on sunlight. Solar energy can help reduce the acid rain in the Adirondack Mountains by replacing fossil fuels, but more actions are needed to be taken.

The second point was how it forms by burning fossil fuels like coal and oil, which releases sulphur dioxide (SO₂) and nitrogen oxides (NO_x) into the atmosphere, and it leads to these pollutants to combine with the atmospheric moisture form sulfuric acid and nitric acid, which then falls back to the earth's surface as acid rain (Bowen, 2020). In terms of ecosystem components, both abiotic and biotic factors are affected. Abiotic factors such as soil, lakes, and air are directly impacted by the sulfuric and nitric acids in the form of rain (Bowen, 2020). The acidity of rainwater changes the pH balance of soil and water. Acidity and alkalinity are measured using a pH scale for which 7.0 is neutral. The lower a substance's pH the more acidic it is, the higher a substance's pH the more alkaline it is. Acid rain usually has a pH between 4.2 and 4.4. These changes in pH affect the nutrient availability and disrupt the chemical balance necessary for the survival of various organisms (EPA, 2023). Acid rain affects soil pH, making it more acidic. This affects nutrient availability, slowing the absorption of important minerals and harming soil microorganisms vital for decomposition and nutrient cycling. Lakes are also affected by acid rain in the forest ecosystem. Acid rain can lead to the acidification of the lakes. Increased acidity levels can harm fish populations, disrupt food webs, and reduce biodiversity within the lake ecosystem. Acidification can affect the nutrient cycling and lead to changes in the composition of phytoplankton and other aquatic organisms. Lakes are an important element affected by acid rain in the forest ecosystem, particularly in regions like New York where acid rain is a significant environmental concern. For example, in 1980, and 1990 the accumulation of nitric acid in rain and snow negatively impacted lakes and wilderness, many species disappeared, and some plants and food became contagious. This led to the death of many fish species, such as the trout in the Adirondack lakes. Those biotic factors including bacteria, fungi, plants, and animals were influenced by the acid rain and snow that damaged many plants that contained potassium, vitamins, and proteins in that region. Bowen's concern in the article was spreading the consequences of the pathogenetic parasites and fungus to the other two mountains, Gothic and Marcy, just like what happened in Adirondack with trees and deterioration of the needles (Bowen, 2020). Additionally, Hinton in "A model-based estimate of winter distribution and abundance of white-tailed deer in the Adirondack Park" stated the latest consequences in the Adirondack Park, where a rare and vulnerable small population of deer, along with moose (*Alces alces*) and elk (*Cervus canadensis*), have been affected by fossil fuels that mitigate from the acid rain (Hinton, 2022).

The impact of acid rain extends beyond individual ecosystems to the biosphere level. It contributes to environmental issues such as climate change, as sulphur dioxide emissions also contribute to the formation of aerosols and particulate matter, affecting global climate patterns (Long & Bauer, 2019). The transportation of pollutants over long distances can lead to the spread of acid deposition beyond local ecosystems, making it a global concern. Initiatives such as the local green agenda in New York City promote the adoption of solar panels and electric vehicles to reduce emissions and combat climate change effects like acid rain.

a) Local system of the hazard chemicals in the land and air, concerned the global climate activists

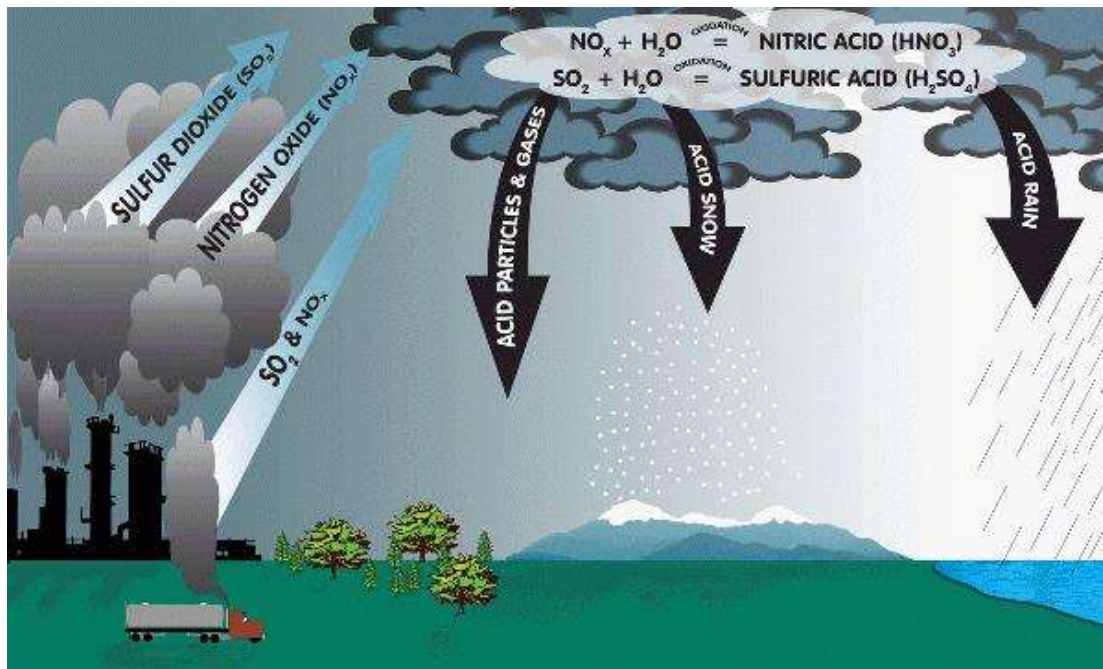


Fig. 1 – (a) first picture; illustrated circulation in the global environment with complex phenomena in the ecosystem like Adirondack Mountains.

Haradhan's research findings reveal acid rain emissions causing acidification, with pH levels as low as 4.34 in the Adirondack Mountains region in New York and affecting lakes in New England and Connecticut. These findings are concerning and show that action is needed. The solution to mitigate the acid rain on the Adirondack mountains involves replacing fossil fuels with solar energy.

By transitioning to solar energy as the primary source of energy in industrial facilities and power plants, the emission of pollutants that contribute to acid rain formation can significantly reduce. In the recent local green agenda in New York City, the focus on solar panels aimed to strengthen renewable energy efforts, reflecting efforts like Apple Inc.'s support for renewable energy suppliers worldwide. This includes efforts across the United States, as well as efforts to promote electric cars within New York City, resulting in positive outcomes. The global climate change agenda compiles data on weather, temperature, precipitation, and wind patterns to shift in the environmental conditions.

Social Media v Human Activists Methods

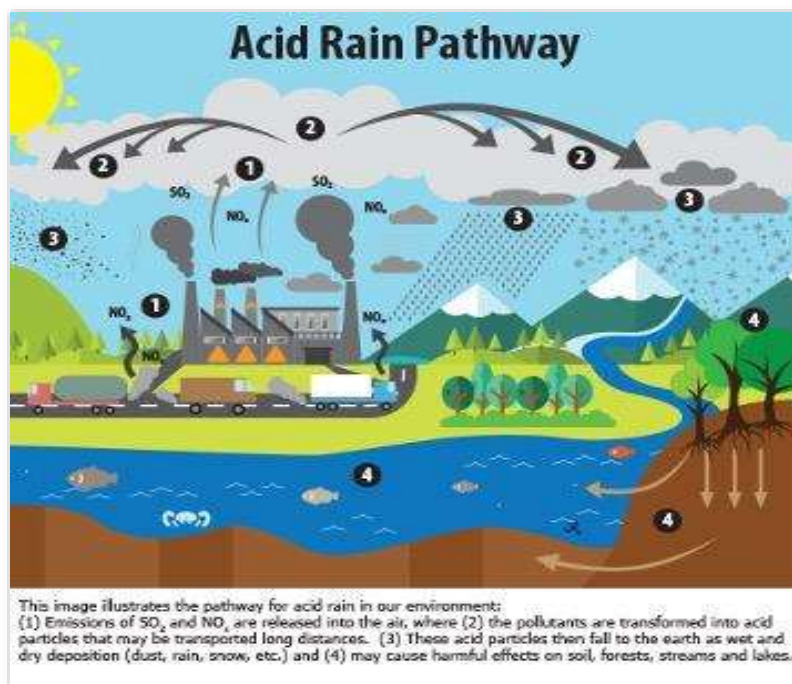
Greenhouse gasses exacerbate these changes, trapping heat from the sun and contributing to rising temperatures on land and in oceans, impacting ecosystems globally. The Green Agenda in 2020 led to a plan that governments must combat issues with acid rain, particularly in regions like the Adirondack Mountains, related to climate change, and simultaneously push alternative and renewable energy like solar to prevent other human damages. Changes must be considered for local and global environmental agencies to protect our planet, where we should all take aware parts. The Swedish environmental activist Greta Thunberg, born in 2003, is a voice against the carbon industry.

At the United Nations Climate Change Conference 2018, Greta said: "*Do we have human care for the planet?*". Greta was talking that need a long way and integrated effort for changes. This showcases the environmental concerns and ethical considerations surrounding human actions and their impact on the planet, which connects directly to adopting sustainable solutions like solar energy.

Advantages of replacing fossil fuels with solar energy are: improved water quality, health benefits and preservation of historical monuments. By replacing fossil fuels with solar energy and addressing the acid rain, the quality of the water impacted by the acid rain is going to improve. This improvement benefits the aquatic ecosystems, ensuring healthier habitats for the fishes living in the Adirondack lakes. Reducing acid rain also leads to better air quality. With better air quality both human health and wildlife will benefit from the changes. Better air quality lowers the chances of respiratory illnesses and enhances general health. Implementing solutions helps preserve historical buildings and monuments that are susceptible to damage from acid rain. It also promotes sustainable tourism and economic development in historical areas (Back, 2020). Disadvantages from replacing fossil fuels with solar energy are initial costs, and dependence on sunlight. Implementing solutions to combat acid rain may involve high costs for industries and governments. The installation of solar energy infrastructure includes purchasing and installing solar panels and other equipment.

To have solar energy, it is important to have solar panels, which can only generate electricity when they receive sunlight. Solar energy depends on the time of day and weather conditions. At night, when there is no sunlight, solar panels cannot generate electricity (Back, Kevin, 1).

b) Acid Rain Pathway in the Industrial World



Conclusion

In conclusion, solar energy has the potential to mitigate the acid rain in the Adirondack Mountains by replacing fossil fuels, considering factors such as regional environmental conditions and technological advancements. Solar energy, influenced by local environments and technological advancements, can reduce harmful emissions and address the effects of acid rain. However, while solar energy offers some benefits in reducing the environmental problem, additional actions are necessary to fully address the issue. By combining the adoption of solar energy and strategies like raising public awareness and implementing more regulations on emissions, it is possible to achieve a better and more effective way to minimize the environmental impact of acid rain in the Adirondack Mountains.

References:

- “Acid Rain Experts Plan Next Steps to Reduce Air Pollution, Aid the Recovery of Adirondack Park.” Oct 17, 2014. Environmental Defense Fund, <https://www.edf.org/media/acid-rain-experts-plan-next-steps-reduce-air-pollution-aid-recovery-adirondack-park>.
- Adam Morton, “Chris Bowen backs ‘a big step forward’ on phasing out fossil fuels at Cop28,” The Guardian. Dec, 8th, 2023. <https://www.theguardian.com/environment/2023/dec/08/chris-bowen-backs-a-big-step-forward-on-phasing-out-fossil-fuels-at-cop28>.
- Bowen, Jackie. “Acid Rain & Climate Change Are Connected, Here is How.” Www.adirondack council.org, 6 Dec. 2019, www.adirondackcouncil.org/page/blog-139/news/acid-rain--climate-change-are-Connected-heres-how-1267.html.
- Hinton, Joseph W., et al. “A Model-Based Estimate of Winter Distribution and Abundance of White-Tailed Deer in the Adirondack Park.” PloS One, vol. 17, no. 8, 2022, p. e0273707, pubmed.ncbi.nlm.nih.gov/36040913/, <https://doi.org/10.1371/journal.pone.0273707>.
- Mohajan, Haradhan. “Acid Rain Is a Local Environment Pollution but Global Concern.” Open Science Journal of Analytical Chemistry, vol. 3, no. 5, 2018, pp. 47–55, <https://mpr.ub.uni-muenchen.de/91622/>.
- Rafferty, John P. “What Happened to Acid Rain?”. Encyclopedia Britannica, 10 May. 2017, <https://www.britannica.com/story/what-happened-to-acid-rain>.
- “You Have Stolen My Education” Greta Thunberg’s Powerful Speech at the UN Climate Summit - Climate Action.” Www.climateaction.org, www.climateaction.org/news/you-have-stolen-my-education-greta-thunbergs-powerful-speech-at-the-un-clim.