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HNP Newsletter

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The Lake Mead Drought: Drying up

Rivers and Water Supplies Alike

Figure 1. The Drought
(The Guardian)



Introduction

Lake Mead, a Colorado River reservoir, is at its lowest levels since the 1930s. This poses a significant problem for the western states in the USA because of the importance of the Colorado River in supplying the region's freshwater needs. The river (and Lake Mead) is facing a drought because of a "persistent upper weather pattern that hangs over the West" which is causing lower levels of precipitation. The lower precipitation is also affecting the amount of snow accumulating on the Colorado Rocky Mountains, which are a major source for the Colorado River and Lake Mead (90%).

Vast Implications

The implications of the Lake mead drought are hefty and holistically targeted—populations, infrastructure and the environment will be strained. The possibility of a formal water delivery shortage increases exponentially if drought-like conditions continue. For instance, up to one fifth of the state of Arizona's water supply will be cut off from usage (McGovern, 2022). Local small-scale farmers and municipal water users will be amongst the first to face the consequences. Fallowing land—a term meaning that a quadrant of usually arable farmland cannot be used—will be implemented. While the current water management covers up to 1,025 feet of shortages, the Lake Mead drought supersedes this with 1,065 feet; if levels continue to decline, the possibility of reaching so-called "dead pool" conditions in the hydro site providing electricity to nearby states, Hoover Dam, increases exponentially (McGovern, 2022). If this were to occur, the 1.3 million populating Arizona, Nevada, and California who rely on the dam would be out of power.

The Lake Mead Drought: Drying up

Rivers and Water Supplies Alike

Future Outlook

In implementing efficient and novel water systems, mitigating the implications of the drought is possible. Officials are now looking to more sustainable solutions such as seasonal water restriction, amongst other techniques. “By upgrading unused grass to water-smart landscaping, we can save more than 9.5 billion gallons of water annually, which represents about 10 percent of our total annual water supply from the Colorado River at Lake Mead,” stated John Entsminger, the General Manager of the Southern Nevada Water Authority.

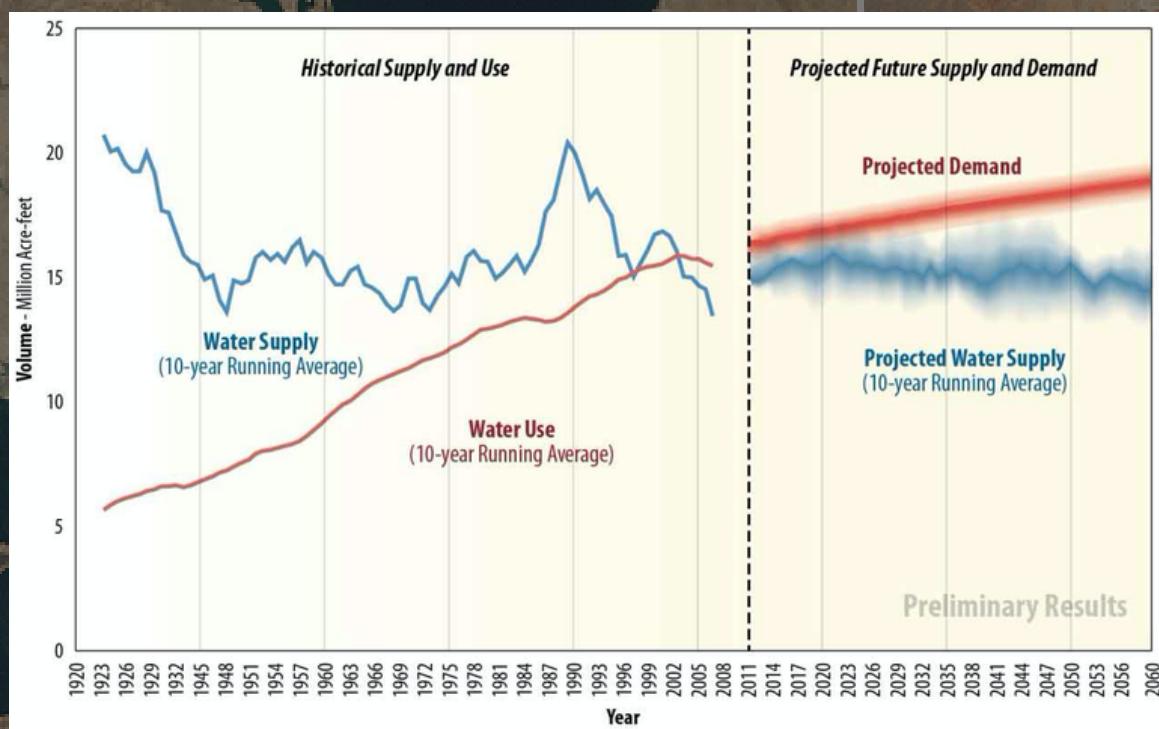


Figure 2. Water Supply vs. Demand of the Water supplied from Lake Mead (National Park Services)

Climate Change puts Antarctica's

Emperor Penguins at Risk of Extinction



INTRODUCTION

The emperor penguins, world's tallest, bulkiest and one of the only two native penguin species to Antarctica, are at severe risk of extinction in the next 30 to 40 years due to climate change (Sigal, 2022).

Emperor penguins are 4 ft tall and are known for their excellent parenting abilities. Both male and female emperor penguins take turns to shelter their eggs in extremely cold temperatures and when foraging for food (Milman, 2022). Emperor penguins hunt for fish and crustaceans making them skilled swimmers in the Antarctica waters.



Figure 3. Emperor penguins diving in the sea (Mongabay)

Climate change on Antarctica and its Emperor Penguins

The Antarctic waters are essential for these penguins to survive. They provide shelter during their annual molt (annual vacation from egg laying), a place for animals to rest, and to escape from predators. However, as the temperature is rising due to greenhouse gas and carbon dioxide emissions, the ice is melting away putting the emperor penguins' habitat at risk and in turn their lives as well (Strickland, 2022). The waters melting prematurely will also put the emperor family reproductive cycle at risk as it will be unable to complete it. Antarctic winters are the season during which the penguins give birth and they require solid sea ice from April through December to provide a safe shelter for fledgling chicks (Sigal, 2022). Ocean acidification is also depleting the penguins main sources of food supply such as krill.

Climate Change puts Antarctica's



Emperor Penguins at Risk of Extinction

Protecting the penguins

Ignoring the depletion of Emperor Penguins could lead to a 99% overall population reduction within one hundred years. Luckily, there is still an opportunity for environmental salvation. Protecting Emperor Penguins starts with recognizing the global problem at hand. Governments and politicians should be expected to acknowledge species such as the Emperor Penguin as “threatened” and/or “endangered.” Physical change can occur by labeling the Emperor Penguin as a “threatened” species. For example, The Endangered Species Act is “the world’s strongest environmental law focused on preventing extinction and facilitating recovery of imperiled species,” according to the Woods Hole Oceanographic Institution.

Although our Emperor penguins don’t live near human territory, countries like the US should still focus on and implement acts that benefit endangered species. Solutions such as reducing greenhouse gasses and industrial fishing can help the Emperor Penguin multiply in numbers again (Strickland, 2022). Decreasing food sources and rapid ice melting contribute to the overall depletion of the Emperor Penguin population, hence the urge for the US and other developed nations to cut back on their excessive lifestyles (Milman, 2022). Recognition and action remain crucial to the survival of this incredibly advanced species.



Figure 4. The Endangered Species Act (History of Information)

Executive of the Month



~~congratulations~~



Aurelia Lai
Finance Associate

Hi! My name is Aurelia and I am currently finishing up Grade 11 at Dr. G.W. Williams Secondary School! I initially joined HNP to take more action in protecting the environment and spreading awareness about environmental issues, but my interest in this organization was strengthened by the incredibly friendly HNP community! I am so excited to be working with everyone and to have the opportunity to be a part of something so great!

The Effects of Harmful Agriculture

Practices - Phosphorus and Soil Pollution

What is it?

Growing crops, raising animals, and transporting and processing food products all fall under the essential aspect of agriculture, key to supporting the global population of eight billion (Worldometer, 2022). In order to keep up with the growing number of mouths needed to feed, as well as to improve efficiency, farmers use fertilizers and pesticides on their crops. Meanwhile, livestock create tremendous amounts of emissions. Altogether, if overused, these agricultural practices are harmful to the environment since they emit high amounts of pollutants. Unlike the typical types of pollution one may usually imagine, such as air pollution, agricultural pollution is created from an excess of nutrients in soil and water, and nutrients are not often considered as detrimental. Nevertheless, too much nitrogen and phosphorus concentrated in certain locations can have destructive consequences, yet not enough individuals realize to take sufficient action.

Why is it happening?

Agricultural pollution derives from a range of different sources, prominently through the application of nutrients onto farmers' fields in the form of chemical fertilizers and animal manure. To begin, the widespread use of nitrogen and phosphorus-based fertilizers has allowed farmers to overcome the issues caused by monocropping and to consistently produce enormous yields of crops, but is considered to be one of the most significant sources of soil and water pollution. Nitrogen and phosphorus themselves are essential elements to all living organisms because they are a major part of amino acids, which form the proteins and genetic material that make up life. Replenishing the naturally occurring nutrients in farmland after the depletion of them due to planting the same crop year after year, which is known as monocropping, is an artificial process that damages the natural balance of nutrients in soil.

The Effects of Harmful Agriculture

Practices - Phosphorus and Soil Pollution

As the excess nitrogen makes its way into the atmosphere and reacts with bacteria to form nitrous oxide (N_2O), one of the greenhouse gasses responsible for global warming, it can create smog that is harmful to other organisms, including human beings. Moreover, when plants do not fully absorb the abundance of nitrogen and phosphorus, these minerals are washed away from farm fields into water sources, including rivers, lakes and oceans, by precipitation, and can also leach through the soil and into groundwater over time. This continues setting a domino effect, as the process of eutrophication is achieved, and algae blooms thrive from the high concentrations of nutrients. Since the overgrowth of algae consumes most of the oxygen in water, as well as blocks the sunlight from reaching the underwater ecosystem that relies on it for energy, fish and other aquatic wildlife die off.

Figure 1. After a rainfall, muddy water containing fertilizers and pesticides flows into waterways.

Tim McCabe/USDA

Furthermore, as the world's consumption of meat grew from an average of 44 pounds per person each year in 1961 to 225 pounds of red meat and poultry per person annually in 2022, raising livestock has continued growing (Lindwall, 2022). The amount of animal manure in many farms attains the point where there is too much to fully use on fertilizing crops, nearly 1.4 billion tons of manure annually in the United States (Lindwall, 2022). Nevertheless, there is nowhere else to leave that accumulation, so an excess of animal waste is often applied beyond the ground's natural absorption rate, contributing further to nutrient runoff into water sources.



The Effects of Harmful Agriculture Practices - Phosphorus and Soil Pollution

In spite of all the disastrous effects of overusing fertilizers, farmers tend to continue employing the same processes since the low price of fertilizers results in massive yields and more income for them, and there still exists a lack of access to alternative solutions in developing countries. There is also an overall lack of awareness on this global issue because most of the population now lives in urban cities, where no one worries about agriculture. As always with complex environmental issues, individuals tend to stay with their current practices, until the day comes when the harmful effects of their actions are revealed and often it is too late to make a change.

Who is affected?

Although we are the ones creating this pollution, we aren't the only ones feeling the effects of it. Animals are taking a significant blow compared to us. They are digesting these fluids from polluted waterways, which harm or kill them. Agricultural runoff can also cause algal blooms which deplete oxygen levels and kill aquatic animals. However, aquatic habitats aren't the only area being effected, but land too. In fact, researchers have discovered that out of 41 grassland communities, the presence of fertilizer greatly weakened the biodiversity.



Figure 2. A crop duster sprays fertilizer over a large field. 123RF.

The Effects of Harmful Agriculture

Practices - Phosphorus and Soil Pollution

Solutions

There are multiple alternatives to fertilizers that are being developed. Some natural alternatives include tree leaves, lomi dirt, weeds, egg shells, coffee grounds, manure, fish and more. Tree leaves can be tilled mixed, and then used as mulch. Lomi dirt is dirt created from food waste, which can be created through an electric composter known as Lomi. Weeds have large amounts of nitrogen within them, which support plant growth and can balance moisture within. However, they can become a nuisance if new weeds begin to grow. Egg shells contain lots of calcium , which can nourish plants and ensure a neutral soil acidity. Coffee grounds are used for the opposite, they increase the acidity of soil, but this can be useful for some crops. Manure is also a well-known alternative as it's high in nitrogen and other nutrients. Fish scraps have actually been used to aid in plant growth for years. They're packed with nitrogen and certain beneficial minerals. Finally, researchers have been using artificial intelligence, machine learning, and quantum computing to detect better fertilizer alternatives. If we wish to save the planet, fertilizers will need to evolve.



Figure 3. A vendor's sign in a farmers' market with more environmentally friendly and healthier food options. Soné K, NRDC.

Liberal Arts Competition Winners

This past November, HNP launched a liberal arts competition to celebrate the creative abilities of youth whilst promoting environmental advocacy. Winners for each category –visual art, poetry, and essay – will be displayed alongside the honourable creativity mention and top ten shortlist entries.

Visual Art Grand Award Winner

Lies of Death by Anonymous



I called my art piece “Lies of Death” since corporate industries are lying to get profit, but through all the lies they are affecting our environment, and wildlife is dying because of it.

My art piece is seen as two hands shaking, with greenwashing products crossing them. The grey hand represents the companies who are deceiving the consumers. They make the consumer believe they are helping our Earth, but they are not. Which brings us to the other hand, which represents our environment, and how corporate industries are destroying it with their greenwashing products. The products walking on the hands, it shows how after the products are used, it enters our environment. Every “step” the products make into our environment the leaves turn yellow, implicating the death of each plant. This relates to the competition theme since it shows how the greenwashing in corporate industry is affecting the area we live in, by contaminating the wildlife.

Liberal Arts Competition Winners

Poem Grand Award Winner

The Touch of a Green Leader by Molly Liu

The Touch of a Green Leader: A Reverse Poem

We need a green leader.
The trees have lost their colour,
the sun has lost its light.
Symbols of a better world are gone.
There is no Planet B.
This is our only chance,
to make a better world for ourselves.

Our trees and grass are dying
and yet you still say
this planet is okay.

So, who cares that there is no Planet B?
It does not affect me.
I will not be here
when the world ends.
The sun shines brighter than ever,
the trees are still healthy.
Do we need a green leader?

-now read it backwards!

I chose the theme: "the influence of a green leader." Through the usage of the reverse poem, I wanted to show what happens when you have a green leader and when you don't. When you read it the first time(top to bottom), it's when there isn't a green leader. You start with caring extremely about the planet, however, the leader convinces you that Earth is okay so your thought process changes into believing that the world was going to be all right. However, when you read it in reverse, it would be the opposite. The stanza(three lines) in the middle, showed the green leader in this case. The audience would think the world was okay in the beginning and then start to care about fighting for the world in the end.

Liberal Arts Competition Winners

Essay Grand Award Winner

Electric Cars: Reliable in the Future? by Michelle Vaiz

There are many opinions regarding electric cars; Some argue that they are beneficial to the environment while others believe that they do more harm than good. Electric cars have been around for 100 years, according to The History of Electric Car, but have been recently popularized amid climate change and global warming cautions. In fact, the government provides a benefit to those who purchase electric cars. For example “The State of California provides a rebate of \$1,000 to \$4,500 through the California Clean Vehicle Rebate Project (CVRP) for the purchase or lease of qualified vehicles” (Benefits of Buying an Electric Car, 2022). Although, many people seem to hesitate to make this change, as they doubt the effectiveness of electric vehicles. Sources show that electric cars benefit the environment positively and, despite speculations, they can replace gas cars for a greener future.

Electrical cars are a definite solution to reducing the carbon emissions of the world. It is proven that electric cars have a positive effect on the environment and prevent the growth of global warming. “In over a year, just one electric car on the roads can save an average of 1.5 million grams of CO₂” (EDF Energy, n.d). Saving 1.5 million grams of CO₂ per car will significantly help reduce carbon emissions, and with a majority of the population using gasoline-powered vehicles as their main method of transportation, by switching to electric cars, we will be able to prevent global warming from worsening. Many companies, such as Tesla and Hyundai, offer hybrid or electric cars and there are electric car charging stations available at gas stations.

Although many people refrain from purchasing electric cars because of their belief that electric cars are not as reliable as traditional gasoline or diesel-powered vehicles. Many news articles highlight instances where electric cars have been harmful or defective, but they fail to mention the positive effects of electric cars as well. In fact, most electric car manufacturing errors do not pertain to the main infrastructure of the vehicle itself. Rather, they affect the technological aspects and gadgets in the car itself. In the article, Are Electric Cars More Reliable, it is written, “Does that mean that electric drivetrains are less reliable than their more complex gasoline counterparts? Absolutely not.



Digging deeper into the numbers, the vast majority of issues that arose in electric cars had nothing to do with the drivetrains. Most issues, in fact, were with technology features like infotainment screens, reversing cameras, and other gadgets” (Yap, 2022). One other major concern with electric cars is their ability to explode in comparison with gasoline cars. Although, if we practically analyze this situation, gas cars are also prone to catching fire as well, and gas-related ignitions are more common than those in battery-powered cars.

Statistics shown by AutoInsuranceEZ state “that for every 100,000 EVs (Electric Vehicles), there are about 25 fires each year. That compares to 1,530 car fires in the same number of gas-powered vehicles annually. Gas-powered cars typically catch fire due to fuel leaks or crashes” (Weise, 2022).

Electric cars have the ability to reduce greenhouse gas emissions greatly and are reliable even though they are doubted. If a majority of the car-owning population switched to electric vehicles rather than their gasoline-powered counterparts, carbon emissions and fossil fuel usage (in the form of gas) can be highly reduced. Many people turn down electric cars because of their fear of flaws. Although, the risks of owning electric cars are the same as if not less than, gasoline cars as well. In the future, we can continue using electric cars as a way to greenwash our daily lives. As technology advances, there will be more improvements and fixes to come. With many companies also working on electrical vehicles, we can expect more reliable and even more efficient cars in the near future. So yes, electric cars can be relied on, and with more technological advancements as they upgrade, they will become the car of the future.

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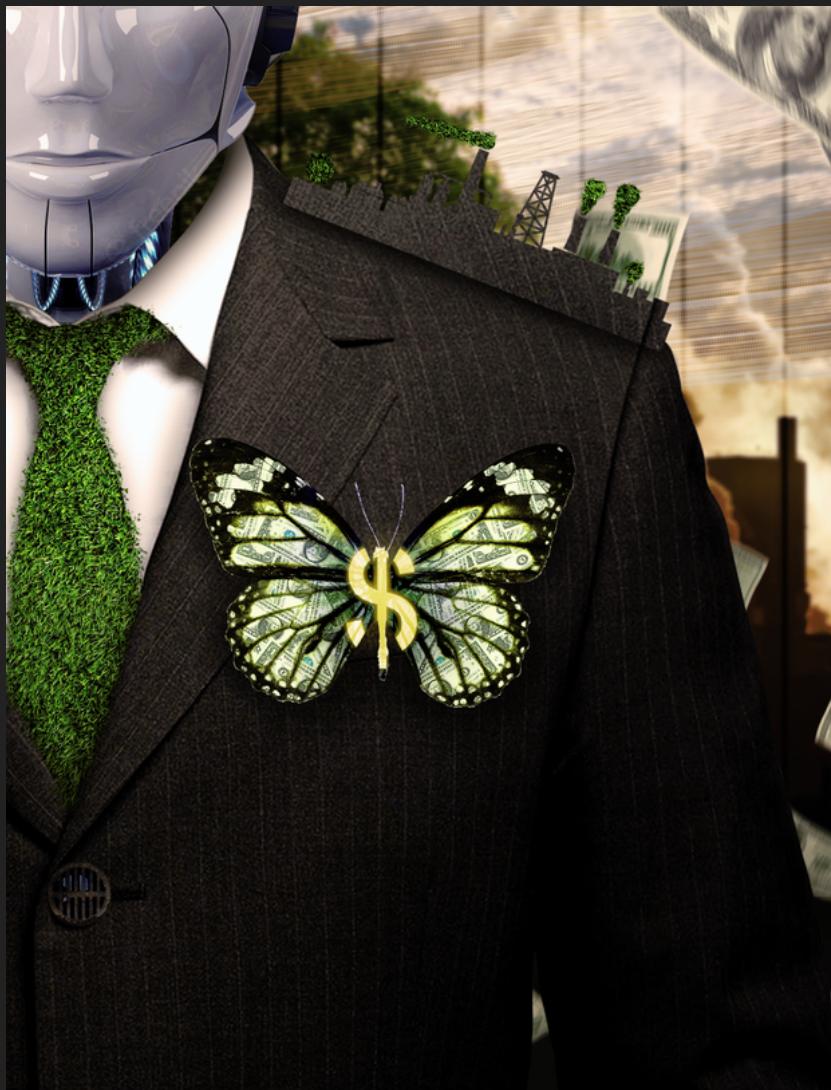
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Liberal Arts Competition Winners

Honourable Creative Mention

Greenwashing by Oliver Lai Wai



This composite created in Photoshop depicts the meaning of greenwashing: when companies provide misleading information to consumers by claiming to be environmentally friendly. The money on the butterfly, the grass on the tie, and the factories on the shoulder illustrate the investors' use of nature for their benefit. In the background, nature is painted over the reality of carbon emissions to show that greenwashing alienates customers' perception of pollution from companies' fake sustainability goals. This false hope causes delusive contentment, which is used as an advantage to increase incomes. Furthermore, the robot's head represents the rise of technology and how it is often perceived as the cure for environmental unsustainability. This further adds to the point that companies use positive factors related to nature as an advantage to make more profit by showing clients their false goals for the future. Last but not least, the flying money shows the financial exploits from greenwashing, and the sewer located on the blazer's button adds to pollution.

Liberal Arts Competition Winners

Top Ten Shortlist

(In no particular order)

The following nominees will receive certificates!



- We should not rely on electric vehicles by Rehan Nagabandi
- How To Actually Make The Energy Grid Green by Tarun Ampavathina
- Greenwashing: A step forward or a blatant lie? by Fritha Lalit
- Corporate Greenwashing by Rhian Liwag
- Why Electric Vehicles are the Future by Evan He
- the crime of thrifting by Anonymous
- Consequences of hiding the truth by Khushi Kolte
- untitled by Ananya Thakur
- The Wishing Tree by Dharshwana Muralidharan
- Influence of the Green Leader by Anonymous



If you're interested in reading any of the Top Ten Shortlisters in full, please [click here](#).



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