# The Environment Magazine

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The Environment Club

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# Message from Editor in Chief

My name is Henry Yao. I am Founder and Editor-in-Chief of the Environment Magazine.

The purpose of this magazine is to provide a platform for students of all backgrounds to express their views on current environmental issues to a broad audience. I believe that every student has the ability to make a positive difference in the world, and through this magazine, we aspire to unleash their potential. The project is open to everyone, and there are unlimited spots available for participation. We welcome all students who want to be a part of this effort.

To contribute articles to The Environment Magazine, please contact playfndn.environment@gmail.com. A sample article can be found here. Volunteer hours will be recognized.

# Plastic Pollution: A Growing Threat to Our Planet

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The convenience, practicality, and affordability of plastic have made it an almost indispensable material that has found its way into nearly every aspect of modern daily life. It is a main component in food packaging, beverages, and other consumer products; the manufacturing of countless consumer goods such as electronics, toys, and furniture; the production of essential household items like containers, utensils, and cleaning supplies; and even the development of industrial materials used in construction, automotive industries, and medical equipment. This has made it increasingly difficult to go through even a single day without seeing or using some form of plastic in the items we purchase, the tools we use, and the services we depend on, demonstrating just how ingrained it has become in modern society.

Figure 1. Plastic Bottles
(Source: delano.lu)

Marine ecosystems are among the most significantly impacted environments by the growing issue of plastic pollution, suffering from its devastating consequences that impact wildlife and biodiversity. For example, sea turtles often mistake plastic bags floating in the water for jellyfish, their natural prey, and when they consume these bags, it can lead to fatal blockages in their digestive systems which can cause internal injuries or even death. According to the Center for Biological Diversity, every year, thousands of seabirds, sea turtles, seals, and other marine mammals die after consuming plastic or becoming entangled in it. Among the nearly 700 species affected by plastic pollution are endangered animals like Hawaiian monk seals and Pacific loggerhead sea turtles, which frequently ingest or get trapped in plastic waste.

Figure 2. Sea Turtle and Plastic Bag
(Source: wikipedia.org)

The harm even affects birds and other marine creatures, many of which become trapped or entangled in discarded fishing nets, plastic packaging, or other types of debris, often leaving them unable to swim, fly, or feed properly, which results in injury, starvation, or drowning.

The issue is not limited to visible pieces of waste; microplastics, which are tiny particles formed by the breakdown of larger plastic items over time, have spread so extensively that they

are now found in nearly every part of our planet, from the depths of the ocean to the Arctic ice. These microplastics are eaten by fish, shellfish, and other marine organisms, becoming part of the food chain and eventually reaching humans who eat seafood. This is being constantly seen in fish markets around the world,  many fish in the North Pacific ingest 12,000 to 24,000 tons of plastic each year, which can cause intestinal injury and death and transfers plastic up the food chain to bigger fish, marine mammals and human seafood eaters. A recent study found that a quarter of fish at markets in California contained plastic in their guts, mostly in the form of plastic microfibers"(Center for Biological Diversity). This raises serious concerns about the effects on human health and well-being. The presence of plastic pollution in marine ecosystems threatens the balance of these environments, endangering countless species and creating a chain reaction of harm that extends beyond the water.

Figure 3.  Fish Fillet
(Source: rawpixel.com)

Figure 4.  Fishing Ship
(Source: news.uscg.mil)

Additionally, plastic pollution has a significant economic impact affecting industries like tourism, fisheries, and shipping. When beaches and waterways become littered with plastic waste, they lose their appeal to visitors, causing a drop in tourism and reducing the profit that local communities and businesses rely on. In fisheries, the effects of plastic pollution on marine life lead to the decline of fish stocks, which threatens the well-being of those who depend on fishing for their income. Moreover, cleaning up plastic waste is an expensive process that places a heavy financial burden on governments and local communities. This problem is especially challenging in developing countries, where waste management systems are often limited or poorly equipped to handle the issue. The economic costs of plastic pollution emphasize the need for countries to work together and come up with creative solutions to address this growing crisis and protect both the environment and the global economy.


Figure 5.  Sustainable Packaging
(Source: surfrider.org)

Addressing plastic pollution requires numerous approaches involving governments, industries, and people. Policies such as bans on single-use plastics, incentives for recycling, and the development of biodegradable

alternatives are important steps forward. Public awareness campaigns can also play a crucial role in changing people's behavior, encouraging people to reduce plastic use and properly dispose of waste. Ultimately, solving the plastic pollution crisis demands a shift toward a circular economy, where resources are reused and recycled, minimizing waste and preserving the environment for future generations.

## References


Charles Moore. "Plastic Pollution", Britannica, https://www.britannica.com/science/plastic-pollution.

United States Environmental Protection Agency. "Impacts of Plastic Pollution", April 23, 2024, https://www.epa.gov/plastics/impacts-plastic-pollution.

Laura Parker. "The World's Plastic Pollution Crisis Explained", National Geographic, https://www.nationalgeographic.com/environment/article/plastic-pollution

# Wind Power

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Although things may seem fine now, the earth won't be the same today as it will be in the prospective future. As obvious as it can be, our planet is being stripped of its valuable resources, resulting in a degenerating planet. Renewable energy sources are sought from many parts of the world. Wind power, an extremely common technique used all around the world, is a fantastic way to renew energy.

Wind power is a renewable energy source that uses the kinetic energy of wind. It depends on the amount of wind and the speed. Naturally, the more wind, the more energy produced. In other words, in order to use wind power successfully, you must find a place with a consistent and endless wind flow.

Wind power is used through a diversion structure. The most common structure is a windmill. Inside the windmill is a generator that converts the kinetic energy of the wind into usable electricity. The electricity is then transferred to an electrical grid, where the electricity is

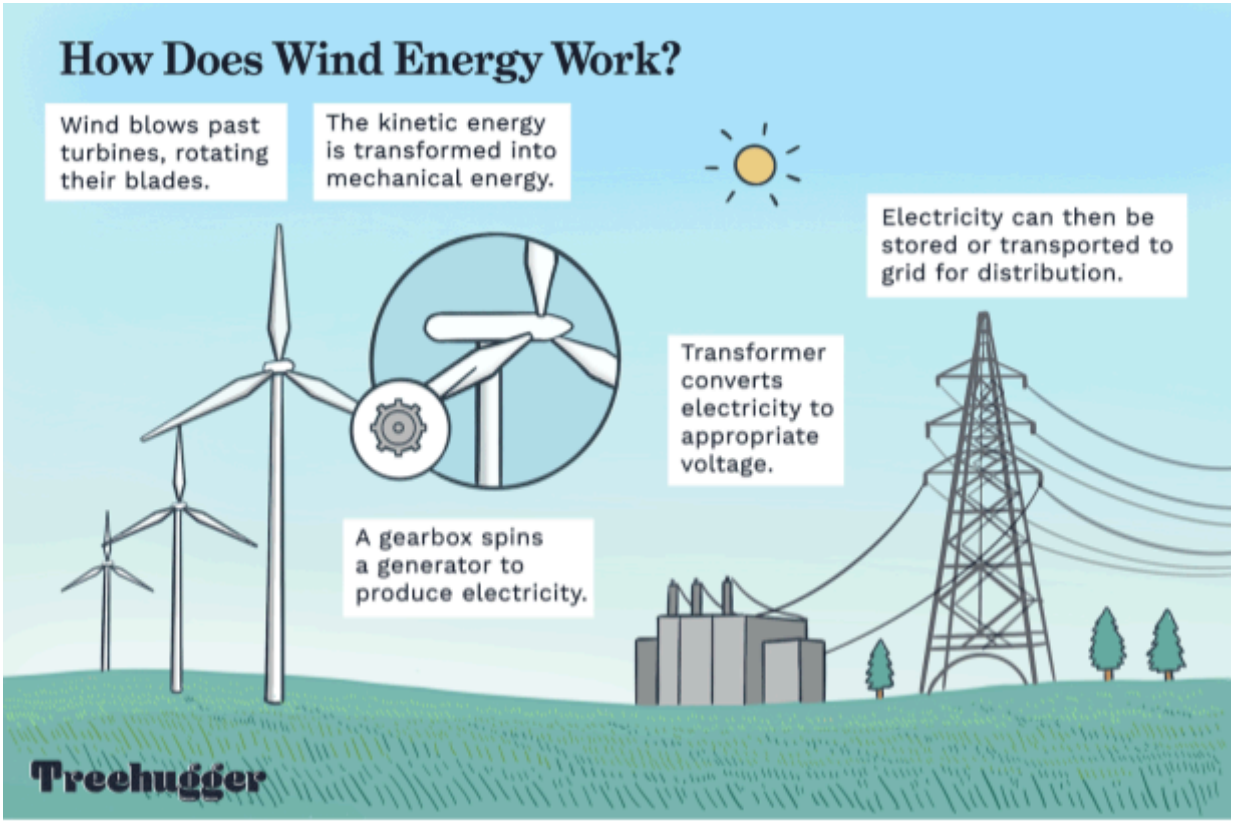


Figure 1. The structure of wind energy (source: www.treehugger.com)

spread to power businesses, industries, and homes. Roughly 10% of the electricity used around the world comes from wind power.

Windmills are often found on the tops of hills, open plains, and water, preferably in mountain gaps that funnel and intensify the wind. Wind speeds are generally faster in places with higher elevation. How the windmill operates is simple. As wind blows past the structure, the three blades at the top spin, transforming the kinetic energy into mechanical energy. A gearbox then spins the generator creating electricity. Most often, power lines are near the windmills, which store and transport the electricity onto an electrical grid to be distributed.

Even though wind power is a great renewable energy source, there are a few downsides. For example, wind is intermittent, meaning that it's inconsistent and unpredictable. Unlike hydroelectricity and sun energy, wind energy isn't constant 24/7. Another downside is the impact on wildlife. Windmills are typically massive, built on open plains and coastal areas where they could be used to capture the highest wind speeds. This, however, negatively impacts wildlife, specifically bird species. Direct collisions with the turbine blades cause fatalities, especially during migration periods. Also, the cost of windmills is sky-high, worth around 2 to 4 million dollars each.

Despite these complications, wind power is an excellent source of energy, accounting for 10% of all electricity used. It is also a renewable energy source, releasing no greenhouse emissions. Being clean and common, wind power is known to be the most efficient energy-producing method.

## References

"Advantages and Challenges of Wind Energy." US Department of Energy, www.energy.gov/eere/wind/advantages-and-challenges-wind-energy.

"Wind Energy Basics." US Department of Energy, www.energy.gov/eere/wind/wind-energy-basics.

"Wind Energy." IRENA, www.irena.org/Energy-Transition/Technology/Wind-energy.

"Wind Energy's Potential Effects on Wildlife and the Environment." WINDExchange, windexchange.energy.gov/projects/wildlife.

"Wind Power." Wikipedia, 29 Dec. 2024, en.wikipedia.org/wiki/Wind_power.

# The Effects of Overfishing on Ocean EcoSystems

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Overfishing, which is defined as catching fish faster than they can reproduce, is one of the biggest threats ocean ecosystems face. Fish populations are declining at incredibly fast rates all around the world as a result of the demand for seafood. According to an article written by TheWorldCounts, the world will run out of seafood by the year 2048. This goes to show how big of a threat overfishing is in our current society and how big of an impact it could have on ocean life. The effects of overfishing aren't limited to the extinction of fish species. They also affect entire marine ecosystems, food chains, and habitats, and endanger the lives of millions of people who rely on the ocean for their daily needs.

One of the biggest consequences of overfishing is targeted fish populations. Species such as sharks, bluefin tuna, cod, and Atlantic halibut are critically endangered due to overfishing. The reason these certain fish species are endangered is because they all live to a very long age. sharks live up to 30 years, bluefin tunas live up to 20 years, cod live up to 20 years, and Atlantic halibut live up to 50 years. To put it into perspective, small and medium-sized fishes live shorter than 10 years, which causes them to reproduce early on in their lives. On the other hand, longer-living fish either take longer to mature or have low breeding success.

Figure 1. The Bluefin Tuna (Source: https://www.npr.org/sections/thesalt/2015/01/07/375366742/why-some-chefs-just-cant-quit-serving-bluefin-tuna)

A single species going extinct as a result of overfishing could potentially damage the entire ecosystem permanently. For example, if sharks were to go extinct, there would be a huge increase in smaller fish due to an apex predator being eliminated. The overpopulated fish would then heavily populate, feeding on plants and smaller insects below them in the food chain. This would cause these plants and smaller insects to slowly die out until they are extinct, meaning there would be no more food for the medium-sized fish. The medium-sized fish would then also start to decline in population and become extinct, destroying the entire ecosystem.

Public awareness and consumer choices play one of the biggest roles in overfishing. If everyone knew more about the consequences of overfishing and the fish they were eating, the number of endangered fish would reduce. Since most endangered fish are delicacies, such as the bluefin tuna, instead of charging higher prices, luxury restaurants should just stop serving these fish completely. Instead, restaurants should use other fish that taste alike and are not endangered, such as the yellowfish tuna. In my opinion, we should have a cycle of what fish to catch for a certain amount of time. For example, from January to March, you can only catch a specific type of fish, while from April to June, you can't catch that previous type of fish, only a different type.

Figure 2. The Bluefin Tuna (Source: https://pelagicgear.com/blogs/news/new-pending-california-state-record-yellowfin-tuna-caught)

In conclusion, overfishing is a serious problem that has an impact on both humans and ocean ecosystems. There is a need for sustainable fishing management and conservation actions due to the losses in certain fish populations and marine environments, and overfishing's negative effects on coastal communities. If overfishing continues, the ocean will run out of food by the year 2048, meaning we will lose trillions of fish, and our future generations will not experience the amazing seafood that our generation has to enjoy.

## References


Environmental Defense Fund. "Overfishing: The Most Serious Threat to Our Oceans." Www.edf.org, Environmental Defense Fund, 18 Sep. 2023, www.edf.org/sustainable-fishing/overfishing-most-serious-threat-our-oceans.

SeaQuest. "Overfishing: A Serious Threat to Our Planet - SeaQuest." April 11, 2022, visitseaquest.com/blog/overfishing-a-serious-threat-to-our-planet/#:~:text=Overfishing%20and%20Protecting%20the%20Environment&text=Remember%2C%20when%20one%20species%20of.

Igini, Martina. "7 Solutions to Overfishing We Need Right Now." Earth.org, February 22. 2023, earth.org/solutions-to-overfishing/.

The World Counts. “The World Counts.” Www.theworldcounts.com, 2023, www.theworldcounts.com/challenges/planet-earth/oceans/overfishing-statistics.

World Wildlife Fund. “Bluefin Tuna | Species | WWF.” World Wildlife Fund, 2000, www.worldwildlife.org/species/bluefin-tuna.

# About

**The Environment Magazine** is published by the Environment Club. It collects introductory articles on environmental protection written by youth volunteers, with the goal of educating students and parents on how to protect the environment. It aims to provide a platform for all students to express their opinions and inspire change through activism. It also empowers students to become environmentalists and make a positive impact on the world.

**The Environment Club** is a group of passionate middle and high school students dedicated to environmental protection. We started by organizing youth volunteers to clean up the trails and streets in our local community, and now we're taking the next step by promoting awareness and change through our publication, The Environment Magazine. Our goal is to inspire others to take action and make a positive impact on the environment, both locally and globally. The Environment Club is a subdivision of the PLAY Foundation, a 501(c)(3) non-profit organization.