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 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.

Hydroelectric Power

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As we strip raw materials from our planet and release carbon dioxide into the atmosphere, the earth is slowly but surely deteriorating. Many parts of the world have been searching for ways to include renewable energy in our daily lives. Although it's not a common technique, hydroelectric power is actually a fantastic way to renew energy.

Hydroelectric power is a renewable energy source that uses the kinetic energy of a constant and consistent river flow to generate electricity. It mostly depends on a river's natural flow. In other words, the flow pattern must be consistent and endless to ensure that the electricity isn't eliminated in the process.

Hydroelectric power is used through a diversion structure such as a dam. Inside the structure, there is a turbine or generator that converts the kinetic energy of the river's flow into usable electricity. Then, the electricity is transferred into an electrical grid which can be used to power businesses, industries, or homes. Globally, hydroelectricity accounts for around 16% of all electricity that is used.

Hydroelectric power is captured through a diversion structure, which most of the time is a dam. There is a pipe linking the outside of the structure to the inside. On the interior of the diversion structure, there is a turbine that is connected to a metal shaft. The shaft is then attached to a power grid.

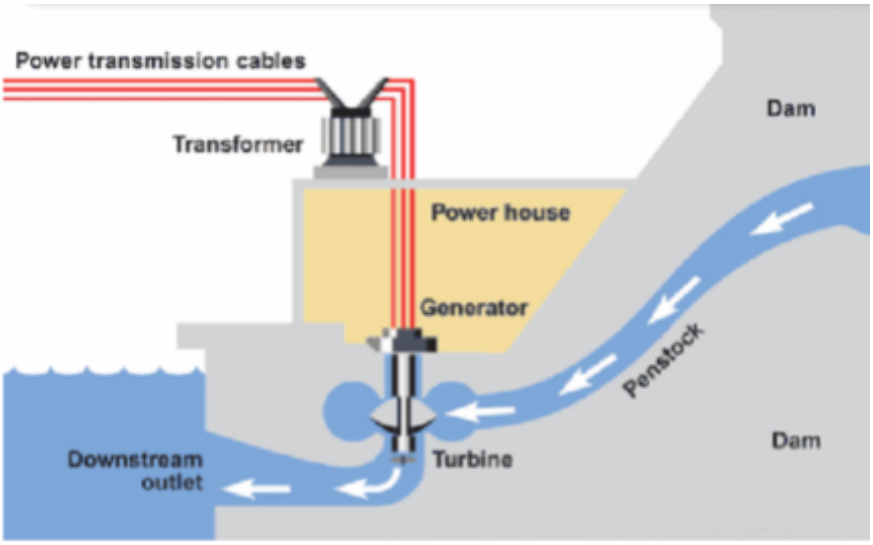

Figure 1. The structure of a hydroelectric diversion structure (Source: www.researchgate.net)

The dam is built in a river or stream with a constant flow of water, preferably somewhere elevated. This requirement must be ensured since the diversion structure will alter the water's natural flow. As the water from the river is pushed through the pipe and into the structure, the liquid propels itself against the turbine, causing it to turn. As the turbine turns faster and faster, the metal shaft turns into a conductor, transferring the flow of water into kinetic energy. Lastly, the kinetic energy is transported to the power grid, allowing it to power homes and industries. The power produced can change depending on the size of the diversion structure, the location, and the design.

Hydroelectric power is a great energy source for many reasons. First of all, it is completely renewable, meaning that the source will never run out unless the river water stops flowing. At the same time, hydroelectric power doesn't release emissions, given that it is a renewable energy source. Another advantage of hydropower is that it is by far the most reliable renewable energy source. Unlike the wind or sun, river water is consistent and flows 24/7.

Even though hydroelectric power may sound like an awesome renewable energy source, there are a few downsides. For example, the diversion structure alters the river's natural flow, which may lead to flooding that could destroy farmland and natural habitats. Also, fish and other small aquatic animals can get stuck inside the diversion structure.

Despite these complications, hydropower is a great renewable energy source, accounting for 16% of electricity produced. Although hydroelectric power isn't a common renewable energy source, it comes with less complication and is far more reliable than other renewable energy sources.

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Deforestation and Its Effects

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As the human population expands, natural forests are slowly disappearing due to deforestation, leading to a loss of ecosystems and species. Deforestation is the large-scale removal of trees from forested areas for agriculture, urbanization, or industrial uses. The most common reason for deforestation is wood extraction, which is cutting down trees for commercial uses. Other factors for commercial use include mining and road building. Forests can be cut through to make shortcuts from different points, which makes them vulnerable to being affected. Deforestation is seen as one of the most controversial environmental issues of our time.

Wildlife has suffered greatly as a result of the loss of forests. More than half of all species on Earth are found in tropical rainforests, many of which are unique to that specific area. When forests are removed, these species lose their homes and are almost driven to extinction. One example is the orangutan (Pongo pygmaeus), whose population has largely decreased as a result of deforestation in the Borneo and Sumatra islands. Previously, this species was widespread across Southeast Asia. There are currently less than 70,000 orangutans living in the wild, according to the Orangutan Conservancy, which lists them as severely endangered. Deforestation not only endangers large mammals but also smaller species including insects, amphibians, and birds. These creatures provide important contributions to their environments such as managing insect populations and pollinating plants. Ecosystems could be greatly affected by the extinction of just one insect.

Figure 1. Picture Of Orangutan (Source: worldwildlife.org)

Besides deforestation's effect on biodiversity, it also has significant environmental consequences. Since trees take up carbon dioxide from the atmosphere and store it as biomass, they are essential to the carbon cycle. This carbon is released back into the atmosphere during deforestation, which worsens global warming. Roughly 20% of greenhouse gas emissions worldwide are said to be caused by deforestation. According to estimates from the Environmental Defense Fund, Trees and rainforests produce roughly 28% of the world's oxygen, and a single tree can create enough oxygen for the lifespans of 10 people each season. Deforestation reduces oxygen production by cutting down trees, but more importantly, it also increases levels of carbon dioxide. Deforestation also messes with the water cycle. Through a process called transpiration, trees help local and regional climates by releasing water vapor into the atmosphere. Reduced rainfall, higher temperatures, and more frequent and severe droughts can result from the loss of trees. Losing trees would make every day feel like an all-time high temperature.

The effects of deforestation on the economy are complicated and different. The selling of timber and the conversion of land to farming can result in financial gains from forest removal, but the long-term effects outweigh the short-term effects. A few negative effects of deforestation include soil erosion, loss of ecosystems, and declines in tourism and fisheries. For instance, considerable soil damage has resulted from the removal of forests for cattle ranching in the Brazilian Amazon. The lack of tree cover increases soil erosion potential, lowering soil fertility and reducing agricultural viability. This effect on land can prevent farmers from producing crops in that area and forces them to find other places.

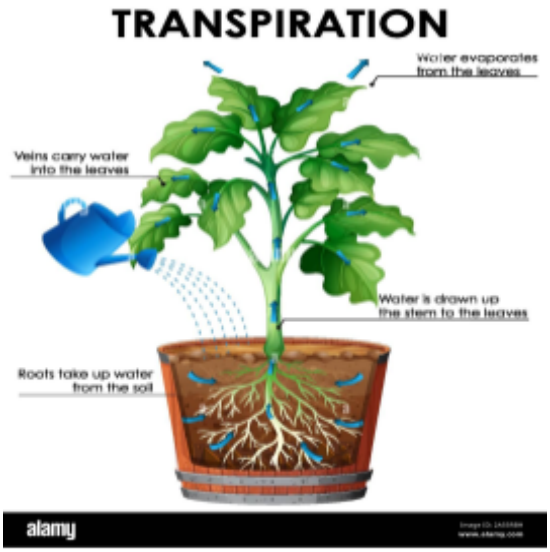

Figure 2. Process Of Transpiration (Source: issuu.com)

In conclusion, deforestation is one of the biggest environmental problems in our current society. The loss of biodiversity, the release of greenhouse gasses, and the disruption of climates are only a few of the many consequences. To lessen this deterioration of our environment, we should stop cutting down forests for fuel and instead use other substitutes such as coal.

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Environmentalists in Action

In this issue, we would like to thank the following PLAY Foundation Environmentalists.

October 13, 2024: Calvin Kuang, Gavin He, Alex Tong, Sophie Tong, Ethan Tran and Henry Yao cleaned up Emerald Glen Park in Dublin.

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.