

CBA 2 Science in Society Investigation



There are two types of energy we can get from the ocean - tidal and wave.

Tidal energy uses the gravitational pull of the Earth and Moon to generate energy. The tides at shorelines of oceans will rise and fall about twice a day.

Wave energy uses the kinetic force of waves to produce energy.

1. Chooses an interesting topic and research question.

2. Presents the information in a structured way using relevant scientific terminology.

CBA 2 Science in Society Investigation

For this research I will focus on wave energy.

An object inside buoys, booms, or other floating devices will shake as each wave passes and so generate energy.



There are a number of different types of Wave Energy Technologies, including:

Floats or Pitching Devices: In this, a floating object is mounted on a device placed on the ocean surface or on a floating raft. The pitching action of the object drives the generation of electricity by these devices.

Oscillating Water Columns: These devices generate electricity using the rise and fall of water inside a cylindrical shaft. The column drives air in and out of the shaft top to power an air-driven turbine.

CBA 2 Science in Society Investigation

Wave energy is a source of power that comes from the endless march of the waves as they roll into the shore then back out again. Humans harness this power along the coastal regions of the United States, Canada, Scotland, and Australia. Energy that comes from the waves in the ocean sounds like an endless, harmless supply. But is it without its drawbacks? Let's take a look....

What are the positives of the wave power station?

1. Renewable: The best thing about wave energy is that it will never run out. There will always be waves crashing upon the shores of countries, near the populated coastal regions. The waves flow back from the shore, but they always return. Fossil fuels, on the other hand, are running out. Waves are not limited by a season - it doesn't matter what time of year it is, there are always waves. They require no input from man to make their power.



3. Explains different sides of the argument.

CBA 2 Science in Society Investigation

2. Environment Friendly: Also unlike fossil fuels, creating power from waves creates no harmful byproducts such as greenhouse gas, waste, and pollution. The energy from waves can be taken directly into electricity-producing machinery and used to power generators and power plants nearby.

3. Abundant and Widely Available: Another benefit to using this energy is its nearness to places that can use it. Lots of big cities and harbours are next to the sea and can harness the power of the waves for their use.



4. Explains different sides of the argument.

But wait, there's— more to it than just a source of clean energy. It has its drawbacks as well.

1. Suitable to Certain Locations : The biggest disadvantage to getting your energy from the waves is location. Only power stations and towns near the ocean will benefit directly from it. Because of its source, wave energy is not a viable power source for everyone. Landlocked countries and cities far from the sea have to find alternative sources of power, so wave energy is not the clean energy solution for everyone. In Ireland there are only a few big towns on the west coast for example.



5. Explains different sides of the argument.

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2. Effect on Marine Ecosystem: As clean as wave energy is, it still creates hazards for some of the creatures near it. Large machines have to be put near and in the water to gather energy from the waves. These machines disturb the seafloor, change the habitat of near-shore creatures (like crabs and starfish) and create noise that disturbs the sea life around them. There is also a danger of toxic chemicals that are used on wave energy platforms spilling and polluting the water near them.



6. Explains different sides of the argument.

7. Mentions the impact of society/ environment.

My Opinion

In my opinion, Ireland should invest in wave energy because Ireland has access to the Atlantic Ocean where there are great winds and waves. So Ireland has the potential to produce a lot of energy from the waves. One such wave power station can produce energy for 4,000 houses. But we can not build too many wave power stations and we must be careful where we put them, because we must protect fish and marine mammals like dolphins, as well as the other animals that live on the seashores of Ireland.

8. Gives a personal opinion with some explanation.

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Links

<https://www.youtube.com/watch?v=7ZN5CthZhvg>

<http://iweda.ie/>

https://www.conserve-energy-future.com/advantages_disadvantages_waveenergy.php

<https://www.azocleantech.com/article.aspx?ArticleID=331>

9. Finds some useful sources of information about the topic and gives some references.



OVERALL JUDGEMENT



IN LINE WITH EXPECTATIONS