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Future of an Ocean Planet Activity Worksheet

Instructions: Use the following activity worksheet to guide your research and PSA design. Review the rubric before you submit your final product.

(30 points possible)

Introduction

Around the world, innovation and technology are leading to new forms of renewable energy. Select one type of renewable energy to research and create a document to explain how technology is being used to develop renewable energy.

Procedure

1. 1. Select one of the following renewable power technologies to research:
    - The Norwegian Hammerfest Strom tidal turbine in Orkney, Scotland
    - The Gorlov helical turbine in South Korea or Maine, USA
    - Verdant Power's RITE project in New York, USA
    - Floating solar arrays in Japan
    - Offshore wind farm in the UK or Germany

- 2. Write a three-paragraph summary of the technology. Be sure to include the following:
    - A description of what the technology is, how it works, and why its location is important.
    - An explanation of how the technology produces energy, including pros and cons of its function.
    - A discussion of the impacts (both positive and negative) on the environment and ecosystems, including a concluding statement.
    - Citations of sources and a note of why each one was a valid and reliable source..

(please view next page for summary)

The Roosevelt Island Tidal Energy (RITE) Project is a renewable energy project that converts the energy in the East River (in New York) into usable electricity. "The turbine blades move at a constant speed of 40rpm, being boosted by a speed accelerator. An induction generator enclosed in a waterproof nacelle is connected to the accelerator. The nacelle is mounted on a pylon and also contains the gearbox. The entire turbine and other systems are made of stainless steel and reinforced plastic, with high performance anti-corrosion coatings."[1] New York is an excellent location for this because there is so much connected water available.

Tidal energy has a lot of benefits. First of all, it is renewable. This means it does not go away as it is used to make electricity. It also does not emit carbon and can output a lot of electricity (due to the high density of the water). Even if the water conditions are not where they should be, a lot of electricity can still be produced.[2] As like anything, it also has its negatives. There are a limited amount of available places, it is very expensive, and has a very high energy demand.

There are a lot of environmental effects that are brought to the table with tidal energy, both positive and negative. The big positive is that tidal energy does have carbon emissions, the big thing everybody talks about. These plants also can be built in such a way that it is nearly invisible from above. However, there are some negative effects as well. Just because humans can't see the turbines, it doesn't mean that marine life can't see them. They may accidentally swim into the blades, which can result in injury or even death. The vibrations/noises that can be heard underwater can also disrupt animals such as seals.[3] In conclusion, this is a good way of harnessing energy, if it is done the right way.

- 3. Design a Public Service Announcement (PSA) to accompany the summary. The goal of the PSA is to raise awareness of the technology and encourage public support and use of it. You have probably heard PSAs on the radio or TV or seen billboards with a message such as to quit smoking, not to text and drive, or not to litter.

  You can choose from the following types of Public Service Announcements:

  - A 30-second TV commercial or radio spot (submit a script and actual recording).
  - An advertisement that would run in a newspaper or magazine.
  - An infographic.
  - A web page or blog.

  network.bradykondek.ga/documents/marine-science/module-6/future-ocean (PSA Link)

  Be creative and be sure to include an original design or multiple images to help illustrate the technology and how it works.

[1] Power Technology (energy news site)
[2] SolarReviews (energy information site)
[3] SolarReviews Tocardo (energy information site) (energy company)