

THE PROBLEM OF THE INFLUENCE OF ALTERNATIVE ENERGY SOURCES: ECOLOGY AND MAN

A. Khamitsevich, N. Lepskaya

Belarusian State University, ISEI BSU,

Minsk, Republic of Belarus

alexunderson001@gmail.com

In this paper, we consider the impact on the environment and humans of renewable energy sources – hydropower, wind and tidal waves, solar, geothermal, thermal energy of ocean waters and bioenergy.

Keywords: ecology, energy sources, wind energy, solar power, bioenergy, environment.

The development of energy is the most important factor ensuring sustainable social and economic development of the country, on the one hand, and on the other, one of the sources of adverse effects on the environment and humans, in particular on the atmosphere (oxygen consumption, emissions of gases, moisture and particulate matter), the hydrosphere (water consumption, the creation of artificial reservoirs, discharges of polluted and heated waters, liquid waste) and the lithosphere (consumption of fossil fuels, landscape changes, emissions of toxic substances).

Wind energy is one of the cleanest and most sustainable ways of generating electricity, inexhaustible and affordable. However, there are many negative environmental impacts associated with the production and operation of wind turbines, which should be considered: 1) aerodynamic sound produced by wind turbines; 2) mechanical sound generated by the turbine itself; 3) soil erosion; 4) emissions associated with the production of turbines, their transportation, construction, operation, maintenance and dismantling; 5) difficulty in receiving television signals and the formation of powerful sound vibrations, that affect the operation of navigation systems. To prevent an increase in the negative impact on the nature of wind turbines, ecologists recommend [1]:

1. Carefully choose the location of the wind turbines.

2. Avoid bird migration routes, feeding and nesting sites.

3. Use modern wind turbines, whose blades rotate more slowly, which reduces the likelihood of a collision with birds.

Solar power plants require the use of large areas of land, water and hazardous materials in production (hydrochloric acid, sulfuric acid, nitric acid, hydrogen fluoride, 1,1,1-trichloroethane and acetone, lead, copper, gallium and cadmium, synthetic materials and aluminum), as well as the difficult disposal of solar panels, which affects the climate, violates the natural temperature regime, causes shading of the land, which leads to changes in soil and vegetation.

Bioenergy provides for the production of electricity and heat from organic raw materials: manure, agricultural waste and plants grown specifically for fuel. The main advantage is utilization, but the disadvantages are: 1) water use, since water is a limited resource; 2) the area occupied for growing biofuels instead of crops; 3) destruction of the animal habitat and the risk of environmental changes due to the use of fertilizers and pesticides in growing crops; 4) soil depletion, acidification and eutrophication.[2, 3].

As a result of the use of geothermal power plants, arsenic, mercury, compounds of sulfur, boron, silicates, ammonia and other substances dissolved in groundwater are released into the atmosphere, and the balance of groundwater is disturbed, the geology of the reservoirs is disturbed, the soil is polluted and eroded.

Thus, in spite of the fact that alternative energy sources can soon replace traditional ones, it is necessary to prevent their negative impact on the environment, since the main principles of environmental and energy safety are global, rationality and complexity.

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