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Solar Roads

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The International Energy Agency projected in 2014 that under its "high renewables" scenario, by 2050, solar power would contribute about 27 percent, of the worldwide electricity consumption, and solar would be the world's largest source of electricity.

Advantages of Solar Energy.

1.Non-polluting: solar energy is an alternative for fossil fuels as it is non-polluting, clean, reliable and renewable source of energy.

2. Renewable source: solar energy is a renewable source of energy as it can be used to produce electricity as long as the sun exists.

3. Low maintenance: solar cells generally don’t require much maintenance and run for a long time.

4. Easy installation: solar panels are easy to install and do not require any wires, cords or power sources.

5. Can be used in remote locations: solar energy can be of great boon in areas which have no access to power cables.

6. Solar cells make no noise at all and there are no moving parts in solar cells which makes them long lasting and require very little maintenance.

Disadvantages of Solar Energy.

1. The disadvantage of solar power is that it obviously cannot be created during the night.

2. Solar energy does not cause pollution. However, solar collectors and other associated equipment are manufactured in factories that in turn cause some pollution.

3. Large areas of land are required to capture the suns energy [1].

Dutch project «SolaRoad».

Wouldn’t it be nice if our roads act like solar panels?

In 2009, this question formed the beginning of a vision for the future: the large-scale generation of renewable energy with the sunlight that falls on road surface.

SolaRoad is a pioneering innovation in the field of energy harvesting. It is a unique concept, which converts sunlight on the road surface into electricity: the road network works as an inexhaustible source of green power.

Nov. 12, 2014, a solar panel bike path, was inaugurated in the Dutch by a good number of enthusiastic bicyclists.

SolaRoad is constructed of cheap, mass-produced solar panels that are protected with multiple layers of glass, silicon rubber and concrete before being covered with a coating that prevents slippage on the smooth upper surface. The current version can support vehicles of up to 12 tonnes (the average car is just under 2 tonnes).

This project is now being hailed as a success because the solar bike path is generating more renewable electricity than anticipated. It produced 3,000kWh of electricity in the space of just six months, or enough to power a single person's home for a year. That doesn't sound like much, but the length is only 70 meters. You'd get a lot more energy from longer, wider roads [2].

French project «Wattway».

In 2014, after 5 years of research, Colas and INES (French National Solar Energy Institute) filed a joint patent for a Solar Road technology based on crystalline silicon, called Wattway. Very thin yet very sturdy, skid-resistant and designed to last, Wattway panels can bear all types of traffic, including trucks. They are applied directly to the existing pavement. The first pilot test sites rolled out in 2015 confirmed that the concept was a valid one.

February 9, 2016 The French Minister of Ecology and Energy, Ségolène Royal, announced that the country planned to cover 1,000 kilometers (621 miles) of roads with solar panels. A 1-kilometer segment of the surface can generate enough power for a town of 5,000 people. This means the energy-generating road surfaces could provide power for as much as 8 percent of the French population, or about 5 million people [3].

Scientists and practitioners from pilot production of solar modules have no doubts that generation of electricity from the sun in the countries of comparable brightness with our republic is quite appropriate.

The potential efficiency of solar plants in our country only due to favorable conditions of insolation is 10% higher than in Poland, the Netherlands, and more than 17% - than in Germany, Belgium, Denmark, Ireland, Great Britain, not to mention of countries in the north. In short, the location of the republic, its latitude, altitude, and meteorological conditions are not limiting factors for the development of solar power.

The development of affordable, inexhaustible and clean solar energy technologies will have huge longer-term benefits. It will increase countries' energy security through reliance on an indigenous, inexhaustible and mostly import-independent resource, enhance sustainability, reduce pollution, lower the costs of mitigating climate change, and keep fossil fuel prices lower than otherwise.

References:

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