GREEN ENERGY IS THE ENERGY OF THE FUTURE

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ABSTRACT: *In this article, the main issue is the energy crisis in the field of energy today, environmental and social problems are thoroughly studied, and in the future, we will focus on the types of energy called green energy that does not pollute the atmosphere by reducing environmental waste. The author focused on the opinions on hydrogen energy, its storage, production and use, which is currently supported by many countries. The article also talks about the expected energy future of the World Energy Organization in the next 30 years.*

Keywords: *green energy, future energy, hydrogen energy, wind energy, solar energy, hydropower, geothermal energy, wave energy, landfill gas, biofuel.*

Solar energy - Uzbekistan is a sun-loving country, and considering its geographical location, the possibilities of using solar energy are huge. Solar energy is the most popular alternative to green energy. At the same time, in most regions of our country, there are about 300 sunny days, from which 3000 hours of sunlight are received, and if this sunlight is converted into electrical energy, it is equal to several thousand trillion kilowatts. Thanks to this, it is possible to solve the growing energy problem in Uzbekistan.

Wind Energy – Wind energy generated by windmills in open areas of the Earth is also a good alternative to green energy. Wind energy has emerged as an unsuccessful alternative to renewable energy in Uzbekistan.

Hydropower – Water is an important natural resource and is also a major source of green energy, including tidal, wave and hydropower. In Uzbekistan, water energy is known as hydropower. In a report, the International Energy Agency (IA) called hydropower the "forgotten god of clean energy" and urged countries to include it as an

energy source to achieve zero emissions. Taking into account the displacement of dams and the damage to the environment, if hydropower is used properly, Uzbekistan can achieve its goal of zero carbon emissions by 2070.

Geothermal energy - Electric energy produced by the heat of the Earth's interior is called geothermal energy. Tidal Energy – Electricity is generated from waves in the oceans. It is infinite because it is free from contamination.

Biofuel - Any hydrocarbon fuel produced from organic matter in a short period of time (days, weeks or months) is a biofuel. For example, ethanol, biodiesel, green diesel and biogas, etc. Compared to traditional fossil fuels, biofuels contain no more sulfur and emit less carbon monoxide and toxic emissions. Uzbekistan has a large amount of agricultural residues, so the country has a strong potential for biofuel production. Biofuels can help rural and agricultural development as new crops and help reduce pollution.

Landfill gas - landfill gas (LFG) is a natural byproduct of the decomposition of organic matter in landfilled waste. Instead of being emitted into the atmosphere from the growing landfill waste in cities, it can be collected and recycled and used as a source of energy. The city helps reduce odors and other hazardous emissions from landfills and prevents methane from escaping into the atmosphere.

Renewable energy resources currently account for 26% of the world's electricity, but the share is expected to reach 30% by 2024, according to the IEA. The recovery followed a global slowdown in 2019 due to lower technology spending and environmental concerns. Future renewables are predicted to increase global solar capacity to 600 gigawatts (GW) by 2024, nearly double Japan's total installed electricity capacity. Overall, renewable electricity generation is projected to grow by 1,200 GW by 2024, equal to the total electricity generation of the United States. Hydrogen is a clean fuel that produces only water when consumed in a fuel cell. Hydrogen can be produced from a variety of local resources, including natural gas, nuclear power, biomass, and renewable energy such as solar and wind. These qualities make it an attractive fuel option for transportation and power generation. It can be used in cars, homes, portable

power and many other applications. Let's take a look at hydrogen energy, the energy of the future that is causing a lot of discussion right now: Hydrogen is an energy carrier that can be used to store, transport, and deliver energy produced from other sources. Today, hydrogen fuel can be produced in several ways. Today, the most common methods are natural gas reforming (thermal process) and electrolysis. Other methods include solar energy and biological processes. Hydrogen energy involves the use of hydrogen or hydrogen-containing compounds to produce energy that can be delivered for any practical purpose.

Advantages of hydrogen energy:

• High energy efficiency,

• Great environmental and social benefits,

•Economic competitiveness.

Currently, all sectors of the world economy are experimenting with hydrogen energy:

• Energy production, storage and distribution;

• Electricity, heating and cooling for buildings and households;

• Industrial networks;

• Transportation;

• Extraction and production of raw materials

Heating Process Thermal processes for hydrogen production typically involve steam reforming, a high-temperature process in which steam reacts with hydrocarbon fuels to produce hydrogen. Many hydrocarbon fuels can be reformed to produce hydrogen, including natural gas, diesel, renewable liquid fuels, gasified coal, or gasified biomass. Today, about 95% of all hydrogen is produced as a result of steam reforming of natural gas. Electrolytic Processes Water can be split into oxygen and hydrogen by a process called electrolysis. In an electrolyzer, which works in the opposite direction, like a fuel cell, electrolytic processes take place - instead of using the energy of a hydrogen molecule, like a fuel cell, the electrolyzer creates hydrogen from water molecules. Solar Process Solar-powered processes use light as a medium to produce hydrogen. There are

several solar energy processes, including photobiological, photoelectrochemical, and solar thermochemistry. Photobiological processes use the natural photosynthetic activity of bacteria and green algae to produce hydrogen. Photoelectrochemical processes use special semiconductors to split water into hydrogen and oxygen. Solar thermochemical hydrogen production often uses concentrated solar energy to drive water splitting reactions with other species such as metal oxides. Biological Processes Biological processes use microbes such as bacteria and microphages and can produce hydrogen through biological reactions. In microbial biomass conversion, microbes break down organic matter such as biomass or wastewater to produce hydrogen, while in photobiological processes, microbes use sunlight as an energy source.

CONCLUSION: Based on the above, we can say that traditional energy resources are non-renewable and limited and are also responsible for climate change. Therefore, Uzbekistan can meet the energy needs of the growing population only through green energy. But green energy technology and its products are very expensive, so people are less interested in them. They can be made accessible to all by investing in technology. With the right combination of geographic diversity and technological prowess, Uzbekistan can increase its green energy potential, thereby reducing its dependence on fossil fuel energy and handing over a greener Uzbekistan to future generations.

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