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Qodirov Baxodir Tursunovich
Department of Socio-Economic Sciences senior teacher
Razzakov Muhammadqodir
student
Andijan Institute of Economics and Construction

RENEWABLE ENERGY SOURCES - ADVANTAGES

Annotation: Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly being replenished. Renewable energy sources are plentiful and all around us.

Key words: renewable, source, ecological, energy, strategies, geographical, efficiency, pollution

INTRODUCTION

Generating renewable energy creates far lower emissions than burning fossil fuels. Transitioning from fossil fuels, which currently account for the lion's share of emissions, to renewable energy is key to addressing the climate crisis. Fossil fuels - coal, oil and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide. Renewables are now cheaper in most countries, and generate three times more jobs than fossil fuels. Energy is fundamental to our civilization and to the prosperity of nations. Its production, distribution and utilization are deeply embedded in the fabric of our economies and central to the relations between states. The energy sources powering our societies have been undergoing a period of rapid change. Renewables have emerged as a technologically feasible, economically attractive and sustainable choice that increasingly can meet the energy needs of many countries, corporations and citizens. As tackling climate change becomes more and more critical and renewables steadily increase their capacity to meet our energy needs, the global transition to sustainable sources of energy will continue to accelerate.

Renewable energy sources, which are abundant around us thanks to the sun, wind, water, waste and heat of the Earth, are replenished naturally and practically do not emit greenhouse gases or pollutants into the atmosphere. Fossil fuels still account for more than 80 percent of global energy production, but cleaner energy sources are gradually gaining ground. Currently, about 29 percent of electricity comes from renewable sources.

MATERIAL AND METHODS

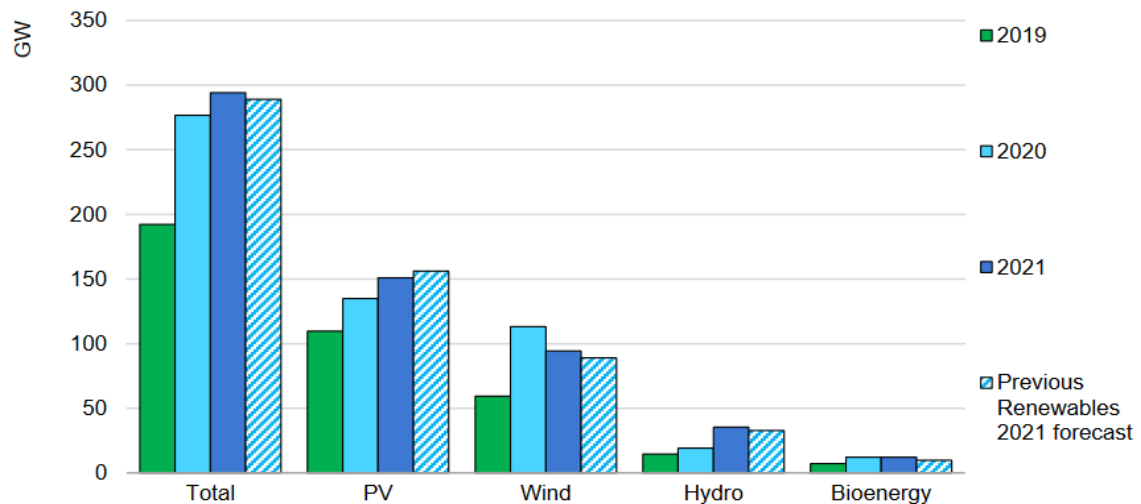
Types of renewable energy sources: Wind energy and Solar, or photovoltaic (PV), cells are made from silicon or other materials that transform sunlight directly into electricity. Floating solar farms—or “floatovoltaics”—can be an effective use of wastewater facilities and bodies of water that aren’t ecologically sensitive. Hydropower is the largest renewable energy source for electricity. Biomass energy - is organic material that comes from plants and animals, and includes crops, waste wood, and trees. When biomass is burned, the chemical energy is released as heat and can generate electricity with a steam turbine.

RESULTS

Renewable energy stands in contrast to fossil fuels, which are being used far more quickly than they are being replenished. Renewable energy resources and significant opportunities for energy efficiency exist over wide geographical areas, in contrast to other energy sources, which are concentrated in a limited number of countries. Rapid deployment of renewable energy and energy efficiency, and technological diversification of energy sources, would result in significant energy security and economic benefits. Solar and wind power have got much cheaper. In some cases it will be cheaper to transition to these sources as opposed to continuing to use the current, inefficient, fossil fuels. In addition, electrification with renewable energy is more efficient and therefore leads to significant reductions in primary energy requirements. [clarification needed] It would also reduce environmental pollution such as air pollution caused by the burning of fossil fuels, and improve

public health, reduce premature mortalities due to pollution and save associated health costs that could amount to trillions of dollars annually.

Figure 1. Renewable net capacity additions, 2019-2021 [4]



Multiple analyses of decarbonization strategies have found that quantified health benefits can significantly offset the costs of implementing these strategies. Renewable energy is cheaper Today, the use of renewable energy is actually the cheapest option for energy supply in most regions of the world. Prices for renewable energy technologies are falling rapidly. In the period from 2010 to 2020, the cost of electricity from solar panels decreased by 85 percent. The cost of onshore and offshore wind energy decreased by 56 and 48 percent, respectively. By 2030, cheap electricity from renewable sources can provide 65 percent of the world's electricity supply. This will decarbonize the energy sector by 90 percent by 2050, significantly reducing carbon emissions and helping to mitigate the effects of climate change. High prices for oil, natural gas and coal also contribute to rising production costs of manufactured materials for renewable electricity technologies since fossil fuels are used in both industrial processes and power generation.

3. Renewable energy is a healthier alternative According to the World Health Organization (WHO), about 99 percent of the world's population breathe air whose quality parameters exceed the maximum permissible values and threaten human health, and more than 13 million annual deaths worldwide are due to preventable environmental causes, including air pollution. Billions of people still breathe

unhealthy air: new WHO data. Over 6000 cities now monitor air quality. Released in the lead-up to World Health Day, which this year celebrates the theme Our planet, our health, the 2022 update of the World Health Organization's air quality database introduces, for the first time, ground measurements of annual mean concentrations of nitrogen dioxide (NO₂), a common urban pollutant and precursor of particulate matter and ozone. It also includes measurements of particulate matter with diameters equal or smaller than 10 μm (PM₁₀) or 2.5 μm (PM_{2.5}). Both groups of pollutants originate mainly from human activities related to fossil fuel combustion.

DISCUSSION

Countries must prepare for the changes ahead and develop strategies to enhance the prospects of a smooth transition. At the same time, the energy transformation will generate new challenges. Fossil fuel-exporting countries may face instability if they do not reinvent themselves for a new energy age; a rapid shift away from fossil fuels could create a financial shock with significant consequences for the global economy; workers and communities who depend on fossil fuels may be hit adversely; and risks may emerge with regard to cybersecurity and new dependencies on certain minerals.

CONCLUSION

The global energy transformation driven by renewables will have significant geopolitical implications. It will reshape relations between states and lead to fundamental structural changes in economics and society. The world that will emerge from the renewable energy transition will be very different from the one that was built on a foundation of fossil fuels. Renewable energy has great potential to reduce prices and dependence on fossil fuels in short and long term. Although costs for new solar PV and wind installations have increased, reversing a decade-long cost reduction trend, natural gas, oil and coal prices have risen much faster, therefore actually further improving the competitiveness of renewable electricity. However, how rapidly renewables can substitute fossil fuels hinges on several uncertainties and will depend on many factors.

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