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The Role of Renewable Energy in Shaping the Global Green Economy

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Abstract

This growing threat due to climate change, resource depletion, and environmental degradation has driven the global transition toward sustainable development as characterized by giving critical importance to green energy. The authors discuss these connected concepts, along with insightful discussions on how they can contribute to long-term sustainability within the environment, economics, and society.

That is green energy, sourced from renewables such as solar, wind, and hydropower, with a crucial role in the battle against carbon emissions and climate change. This paper will report on those trends and challenges in adopting renewable energy technologies in light of some global innovations in storage and distribution that somewhat alleviate intermittency and associated cost problems. The green economy is therefore characterized by aligning growth with environmental sustainability through focus on resource efficiency, waste minimization, and low carbon development.

The paper discussed about how world is shifting to use of renewable energy as well as what are the major countries that are work on the development of renewable energy resources and the growth of green economy

What are the environmental and health challenges that encompasses due to the use of fossil fuel and how it affected to the world also this article talks about how the international organisations work on the improvement of renewable energy resources

The paper adopts a qualitative methodology that encompasses literature review, case study, and policy analysis. Indeed, the synthesis of insights from global initiatives, industry practice, and technological advancements allows this paper to represent one way of conceptualizing the contribution of these areas toward a sustainable future.

In this direction, it would be discussed how green energy technology advancement can promote renewable energy production while still enabling responsible consumption.

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Innovation, smart technology, and sustainable practice reduce adverse impacts on the environment and lead to efficient use of energy.

Attention would be placed on the overall efficiency of the usage of energy and the way that incorporation of such environment-friendly strategies into companies will promote a cleaner, greener future that also guards natural resources

Keywords = Renewable Energy, Green Economy, Greenhouse gas emission and Fossil fuels, climate challenges and health challenges, Sustainable Development,

Introduction

The world is changing into the new era of using renewable energy, and the global green economy is rapidly shifting toward sustainable growth due to the power of renewable energy. Natural resources such as sunlight, wind, and water can be used to generate renewable energy, which lowers reliance on fossil fuels by reducing greenhouse gas emissions, as well as slows down the process of climate change. Moving away from fossil fuel resources provides economic benefits including increased technological innovation, the creation of green jobs, and increased energy security. Also, shifting to renewable energy will reduce the challenges that arise to the health problems and reduce climate change, which has become the most common problem in the world today. Ongoing investments in renewable energy infrastructure are driving the growth of the global green economy, but this is not coming at the expense of environmental conservation; rather, it is laying the groundwork for an even more strong and sustainable future. This is the basis that a green economy will be built upon

Understanding the green economy

A green economy is concentrated on the growth that promotes good to people and the planet. It decreases pollution, energy efficiency, and fairness. In the green economy, fossil fuel usage is less and many opportunities arise, like in the sectors of jobs- for example, bioenergy Wind energy Solar jobs relate to the production of energy, leading to the growth of sustainable development goals for many entrepreneurs, enabling them to expand their businesses and eventually improve their economic situations. All these will be supported by investment in renewable energy, cleaner transportation, and new technologies that use less energy. Economic growth will have been achieved through protection of the environment.

Understanding the renewable energy

Renewable energy is energy produced from natural resources that are capable of being reused and will, therefore, not get depleted. Such renewable energies include sunlight, wind, and even water. As compared to fossil fuels, which may eventually run dry and even pollute the environment, renewable energy is much cleaner and does not get depleted. Using more renewable energy will reduce pollution, health challenges so it is another important aspect in the fight against climate change. This makes energy cheaper and easier to get, mainly those areas where electricity is not sufficient. And will lead in to a sustainable future and a green economy.

Study Objectives

This study aims to investigate the role that renewable energy plays in forming the global green economy by examining the social, environmental, and economic effects of moving away from fossil fuels. It seeks to shed light on the advantages of renewable energy as well as what are the challenges

we are facing due to the use of fossil fuels and how the world is shifting from fossil fuels and making a green economy together. The research will additionally elucidate pivotal instances of nations that are spearheading investments in renewable energy and technology that foster sustainable growth.

Literature Review

The shift toward a green economy also known as a low-carbon economy that talks about environmental preservation and sustainable growth is mostly done by renewable energy. through shifting from fossil fuels to renewable energy sources like hydropower, wind, and solar power, greenhouse gas emissions have decreased and the effects of climate change and more areas. According to the International Renewable Energy Agency, increasing the use of renewable energy globally is reducing carbon emissions, fostering economic expansion, and enhancing energy security. On the other hand, the world has been experiencing an increasing demand for energy, posing a huge environmental threat. This concern has been realized in the efforts towards more renewable energy infrastructure construction as well as embracing clean energy.

In the literature, renewable energy was very much heralded as a cornerstone of the global green economy that would "offer solutions for sustainable development, economic growth, and social equity

Methodology

This study primarily relies on secondary data to explore the role of renewable energy in shaping the global green economy. The following methods will be used to gather and analyse this information

The present study used a secondary data analysis methodology, drawing material from pre-existing studies, publications, and databases accessible on multiple reputable websites that cover advancements in the renewable energy and green economy sectors.

The primary sources of data for the data collection procedure included scholarly publications, industry reports, and websites run by governments, intergovernmental organizations, and non-governmental organizations.

Reports and articles from official publications by International Renewable Energy Agency (IRENA) and the World Bank will be of great use in understanding effects of renewable energy on CO2 emissions and economic growth.

There will be case studies on secondary sources, documented case studies of countries such as China, Germany, or India. Such examples will show the successful implementation of renewable energy projects and their economic effects

Discussion And Analysis

Renewable Energy in Shaping the Global Green Economy

“It’s time to stop burning our planet and start investing in the abundant renewable energy all around us “

Antonio Guterres, United Nations Secretary-

Understanding Energy

The Role of Renewable Energy in a Sustainable Future

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Energy is the power that makes the world to be more active in various ways, like humans need food and water to survive; we need energy sources to make our lives easier and more comfortable.

World became increasingly dependent on fossil fuels like coal, oil, and gas to supply its energy needs as a result of industrialization and the growth of modern society. But fossil fuels are not renewable; once they are depleted, there is no way to replenish them. This has led the world to search for new, sustainable energy sources to ensure that the world has enough power for the future.

The gift of renewable resources that nature offers is endless and never ends. Why? The renewal of themselves through natural processes like the sun's warmth, wind movement, rivers, and Earth heat are all sources of energy. Wind turbines use wind power to keep things running, solar panels absorb sunlight, and water from dams generates energy for our homes. Even the production of plants and organic waste can be transformed into bioenergy. While fossil fuels take millions of years to develop. Renewable resources can be considered a present that this earth has gifted to us. By providing energy to keep the planet clean, they contribute to a more sustainable future.

In the new era, renewable energy has been applied in all facets of society, and in some regard, it is being used to power technology, facilitate economic growth, and provide sustainable development. When the world begins looking for alternative resources like solar power, they become ever more significant. Solar energy is directly harvested through the use of solar panels from the sun itself. The rays of the sun are absorbed by these panels and then converted into electricity, which is then used to create power.

"In today's world, innovative technologies are being discovered through solar energy." For instance, some companies are now testing phones to recharge in direct sunlight. Some of these will enable portable and ecological use of energy. Additionally, solar-powered vehicles are becoming more common, finding a shift towards cleaner and more sustainable ways of living. As technology continues to advance, it is shaping a new era in power and technological development.

Residential and commercial complexes all realize the utility of solar energy and the efficiency that goes with it. The new developments feature building-integrated photovoltaics for energy-efficient buildings. Wind energy drives large-scale projects such as offshore wind farms, and, with capacity expansion planned for several installations around the world, including Europe and the U.S., the growth in electricity demand is higher. Green hydrogen is a new option for sustainable alternative fuel, manufactured using renewable energy sources like wind and solar with the intention of producing clean hydrogen to be used in industrial and transport sectors A variety of uses for renewable energy would represent a sustainable future. Additionally, geothermal energy provides greenhouse warmth for sustainable agriculture in nations like Iceland. These illustrations demonstrate how renewable energy is now essential to modern progress rather than being a choice.

Renewable energy sources, such as hydropower, bioenergy, and ocean energy, have emerged as another crucial source for the modern world. Hydropower is a highly favoured method of producing electricity, as dams such as China's Three Gorges Dam provide a significant amount of power to the system. Through the use of organic material as fuel, bioenergy avoids the rising use of fossil fuels in industry and transportation for vehicles and machinery, respectively.

Tidal and wave power are examples of ocean energy, which uses the kinetic energy of moving water to generate electricity. South Korea and Britain are currently investigating this source to increase their renewable energy resources. These substitutes more demonstrate the adaptability of renewable energy sources in the context of sustainable development.

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The Green Economy

What It Is and Why It Matters for Our Future

We look toward a world that is steadily developing a green economy. An economy that thrives by taking care of nature and the people who reside in it could be described as a green economy. It attempts to grow, not harming the environment but protecting it from destruction through growth. Businesses and industries in a green economy will find ways to use less energy, reduce waste, and prevent pollution. Job creation and opportunities shall be environment friendly. This may include projects in renewable energy, sustainable farming, and eco-friendly products.

Imagine it as a way of doing things that keeps the Earth healthy while allowing all of us to continue to work and enjoy a decent lifestyle. Balancing economic progress with the need to preserve the environment so that all of us enjoy clean air, fresh water, and a safe climate now and as much as in the long term.

In fact, a green economy speaks of creating a world that values nature, of course, and gives everybody a better life. It seeks the achievement of economic growth but without harming the environment. Therefore, we do not harm our planet. In a green economy, industries try to reduce pollution, save energy, and use natural resources responsibly. Clean air, water, and a stable climate shall be preserved.

The heart of this vision is a better quality of life for people today and for generations to come. Everyone will be able to live life free of environmental and health challenges, which is only possible when choosing now to protect our planet. Focusing on green initiatives will make it possible for us to build an economy that enables us to live well while guarding the earth for generations after us. A green economy isn't just about profit. It has a lot to do with taking care of the planet and ensuring it remains a safe, healthy place for all of us. But how can we do it? only by shifting to use renewable energy to protect the world from many threats. And of course, there are many advantages we can get by using renewable energy.

The need for renewables and why it matters

Today, in many parts of the world, renewable energy is indeed the cheapest power source—as prices for technologies such as solar and wind. Solar power costs decreased by 85% between 2010 and 2020; those for onshore and offshore wind decreased by 56% and 48%, respectively. These declining costs are especially advantageous for low- and middle-income countries, where future electricity demand is highest, thus providing an opportunity to meet new power needs with low-carbon energy sources.

Some 99% of the global population breathes air above safety limits, resulting in more than 13 million deaths annually due to preventable environmental conditions, with ranking heavily on-air pollution. The pollution is traceable to fossil fuel combustion, which had estimated health and economic impacts in 2018 at $2.9 trillion. Transitioning to renewable, clean energy sources such as wind and solar power would significantly reduce air pollution, improving public health while mitigating climate change.

Investing in renewable energy creates three times as many jobs as investing in fossil fuels. According to the International Energy Agency, by 2030, the net gain would be 9 million; since 5 million jobs could be lost in fossil fuel sectors, 14 million would be created in clean energy sectors. On top of these, energy-related industries will need an additional 16 million in manufacturing such things as electric vehicles, efficient appliances, and innovative technologies like hydrogen. Total potential jobs added by

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clean energy and low-emissions technology over the next decade eclipse 30 million jobs by 2030. A just transition must be assured in support of workers and communities under these change processes

For sure, renewable energy is the centrepiece for 2024 in the world. The year was marked by increasing renewable energy capacity and a step forward in reaching a more sustainable energy system. Some of the key targets the world has should be to add significant new capacities. As the world is supposed to add over 5,500 gigawatts of renewable power between 2024 and 2030, solar energy is positioned to serve as the biggest player, accounting for nearly 80% of the growth in the next seven years thanks to a massive boom in large-scale solar plants and rooftop installations.

Because of the detrimental effects of our growing reliance on fossil fuels, we require renewable energy. The need for energy has increased as the world has developed, which has increased the use of fossil fuels. As a result, a significant amount of carbon dioxide is released into the atmosphere, adding to both air pollution and global warming. Global GHG emissions have increased, not decreased, in recent years, reaching approximately 54,000 million metric tons (mmt) of CO2 equivalent. However, energy-related activities also rank highest, accounting for between 75 and 80 percent of all emissions that result from burning fossil fuels.

In addition to making the air less healthy to breathe, the increased carbon dioxide levels raise Earth's temperature. As a result, we face many difficulties, including several environmental problems and health issues related to poor air quality. Climate change is one of the main issues, and it is a result of the continuous usage of non-renewable energy sources. A greener, more sustainable option is provided by renewable energy, which can help lessen these negative consequences and save the environment. The sources of non-renewable energy are rooted in millions of years-old natural processes.

Fossil fuels and challenges

Fossil fuels, which consist of coal, oil, and natural gas, are derived from fossilized remains of prehistoric plants and animals. Millions of years ago, dead plants, algae, and tiny sea creatures settled in swamps or seabeds. They were exposed to intense pressure and heat because of the layers of mud, sand, and sediment that formed over time. These resources are limited and non-renewable for human use since they were generated over geological timeframes and take millions of years to replenish.

The traditional use of fossil fuels has changed the climate drastically and presented a lot of significant challenges in today's world. We, every time we burn coal, oil, and natural gas, release greenhouse gases into the atmosphere, including carbon dioxide. This warms the planet because the gases trap heat there, increasing global temperatures—an effect called global warming. This thawing melt polar ice caps and ice masses globally, raising sea levels and flooding coastal areas often. It causes changes in weather patterns, with storms becoming fiercer, the same manner heat waves become very frequent, and drought lingers longer. Oceans also absorb more carbon dioxide, become acidic, and threaten marine life like coral reefs. All these bring pressure on wildlife and ecosystems, forcing some of the species to adapt, move, or even go towards extinction while straining our communities, agriculture, and ways of life as well.

An unexpected change is occurring in Antarctica, as areas of the ice continent are swiftly turning "green" due to rising global temperatures, according to recent research. Over the past 40 years, the area of the northern Antarctic Peninsula covered with vegetation, primarily moss, has expanded by 1000%. The sharp rise highlights how the earth's warming climate is changing even the most isolated

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and frigid regions, bringing completely unanticipated ecological shifts to regions where ice and snow have long predominated.

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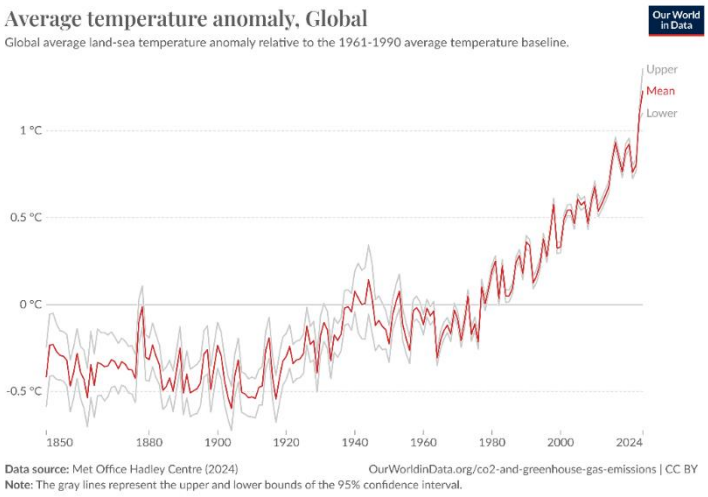

Region	***Mean degrees °C***		***Absolute Changes***	***Relative changes***
	1850	2024		-
Global	0.42 °C	1.23 °C	+1.65°C	+395%
Northern hemisphere	-0.44 °C	1.62 °C	+2.06°C	+472%
Southern Hemisphere	-0.40 °C	0.84 °C	+1.24 °C	+310%

Figure 1 website ourworldindata

[Table 1] The data shows significant temperature increases from 1850 to 2024: data collected through ourworldindata website

Global: Average temperature rose from -0.42 °C to 1.23 °C (+1.65 °C, +395%).

Northern Hemisphere: Increased from -0.44 °C to 1.62 °C (+2.06 °C, +472%).

Southern Hemisphere: Went from -0.40 °C to 0.84 °C (+1.24 °C, +310%).

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Region	Upper degrees °C		Absolute Changes	Relative Changes
	1850	2024		
Global	-0.25°C	1.36°C	+1.61°C	+652%
Northern Hemisphere	-0.24°C	1.86°C	+2.10 °C	+890%
Southern Hemisphere	-0.16°C	0.96°C	+1.12°C	+682%

[Table 2]The data shows temperature changes for the upper range from 1850 to 2024:

Global: Increased from -0.25 °C to 1.36 °C (+1.61 °C, +652%).

Northern Hemisphere: Rose from -0.24 °C to 1.86 °C (+2.10 °C, +890%).

Southern Hemisphere: Went from -0.16 °C to 0.96 °C (+1.12 °C, +682%).

Table 3 Global: Increased from -0.59 °C to 1.10 °C (+1.69 °C, +287%).

Region	***Lower degrees °C***		***Absolute Changes***	***Relative Changes***
	1850	2024		
Global	-0.59°C	1.10°C	+1.69°C	+287%
Northern Hemisphere	-0.64°C	1.38°C	+2.02°C	+317%
Southern Hemisphere	-o.63°C	0.72°C	+1.36°C	+214%

 Northern Hemisphere: Rose from -0.64 °C to 1.38 °C (+2.02 °C, +317%).

 Southern Hemisphere: Went from -0.63 °C to 0.72 °C (+1.36 °C, +214%).

Human activity was the main producer of greenhouse gasses, particularly after the Industrial Revolution at the end of the 18th century. Large amounts of carbon dioxide (CO2) were emitted into the atmosphere as a result of burning fossil fuels for industrial, transportation, and energy purposes.

Deforestation contributes to the growth of greenhouse gases because it decreases trees, which act to absorb CO2. Agriculture and waste management also produces methane, or CH4, and nitrous oxide, or N2O. These also increase greenhouse gases drastically, hence augmenting the greenhouse effect and increasing global warming and climate change.

These greenhouse gases contain carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). These are major contributors to global warming and climate change because they trap heat in the earth's atmosphere. This process begins with the sun's rays when it reaches the earth's surface and warms it up. Naturally, some of that heat just escapes into space, but greenhouse gases absorb and trap part of

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it so that the heat cannot just leave on its own. This "greenhouse effect" is what makes the planet warm enough to support life; when there is an overabundance of these gases due to human activity, then it has a stronger greenhouse effect that leads to global warming.

However, burning fossil fuels, deforestation, industrial processes, and agriculture release a large amount of gases like carbon dioxide and methane that human activity uses for life-enriching purposes. This increases the amount of greenhouse gases in the atmosphere, which raises Earth's temperatures.

This warming results in many adverse effects like the elevated count of extremely severe heat waves, melting ice from glaciers and polar ice caps, changing the rules of precipitation, which causes dry conditions and floods, and strengthening hurricane and storms.

To prevent climate change, the strict targets set forth by the IPCC and agreements like the Paris Agreement aim to reduce emissions in such a way that maximum reduction is achieved. For instance, this would be done by bringing down the level of emissions by 45 percent by the year 2030 with respect to the year 2010 levels and reaching net-zero emissions by 2050 to limit global warming to 1.5°C.

Many worldwide organizations and authorities are actively working to control the growth of greenhouse gases and their effects. The United Nations Framework Convention on Climate Change (UNFCCC) is the world leader in the fight against climate change. The Paris Agreement is one of these agreements, enacting policies meant to keep global warming from increasing by more than 2 degrees Celsius over pre-industrial levels. The Intergovernmental Panel on Climate Change's (IPCC) scientific assessments on climate change have an impact on national policy decisions.

Non-governmental groups that support renewable energy sources and, consequently, environmental conservation, including Greenpeace and the World Wildlife Fund (WWF), also contribute to the cause's campaigning.

Non-governmental organizations, such as Greenpeace and the World Wildlife Fund (WWF), also make their contributions to advocacy for the cause, promoting renewable energy solutions, and therefore environmental protection. The national governments of many countries have shaped policies and started initiatives to reduce emissions and head towards a low-carbon economy.

Many associations have announced their planning and action to reduce greenhouse gases and fight global warming. For example, at COP29, a meeting that will take place in Azerbaijan in November 2024, countries will engage for the first time to advance and strengthen their Nationally Determined Contributions [NDCs]. Efforts will be intensified to cut down emissions significantly as the objective is to reduce emissions by 43% by 2030, but it is very important to see a 1.5°C global warming limit.

The increased use of fossil fuels in 2023 and 2024 has led to a number of serious health issues Several serious health issues have been linked to the utilization of non-renewable sources of energy in 2024.

Air pollution that results from fossil fuel combustion exacerbates respiratory conditions like asthma and bronchitis. Additionally, it increases the risk of cardiovascular diseases arising from cardiovascular attacks and stroke through exposure to particulate matter, and nitrogen oxides.

Generally, there has been a trend towards increased rates of cancers attributed to long-term exposure of the body to pollutants from fossil fuel extraction; documented conditions include lung and throat cancers. These toxic substances can also have negative effects on brain health and result in cognitive degeneration and neurodegenerative diseases.

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Also, the use of non-renewable sources of energy is leading to more frequent heat waves that increase cases of heat illnesses like heat exhaustion and heatstroke apart from exacerbating long-term health conditions. The psychological stress and anxiety arising from extreme weather conditions have also been found to rise mental illness cases. Furthermore, the range of disease-transmitting vectors is altered by climate change, which increases vulnerability to infectious diseases, particularly dengue fever and malaria.

Fossil fuel extraction leads to water pollution that creates gastrointestinal diseases and other health hazards. This complex package of problems creates an open need for a transition toward cleaner energy sources in order to avoid public health hazards.

Death tolls from heat-related illnesses increased due to high temperatures worldwide. Several reports indicate that more than 60,000 people have died from heat-related causes in India, Pakistan, theUnited States, and a number of European countries. In 2024, intense heat waves will be the main cause of a significant death toll in North America.

The most affected countries are the United States and Mexico. For example, in Phoenix, nearly 664 deaths were reportedly related to heat, and in Las Vegas, around 342 people were recorded to die because of staying in high temperature for long periods of time. According to reports, heat waves in Mexico claimed the lives of over 155 individuals. This is concerning because July 2024 was one of the warmest months ever, illustrating the growing effects of climate change. There is an urgent need to transition to greener energy sources as climate change intensifies high heat events and increases the health concerns associated with utilizing non-renewable energy sources.

How countries working on Renewable Energy

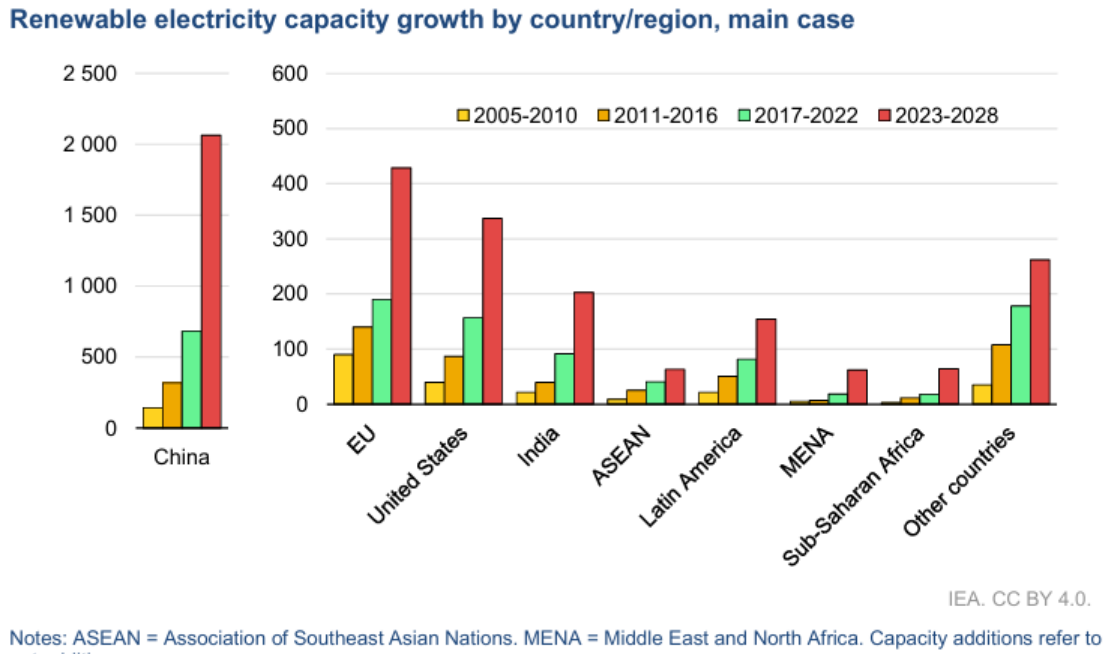

Figure 2 = website www.iea.org

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With an emphasis on hydroelectric, wind, and solar energy, China leads the world in the generation of renewable energy. China is the world leader in the production of solar electricity and is adding wind energy at a rapid rate to reach 1,200 GW from renewable sources by 2030.

Its investments contain the Tengger Desert Solar Park, which has a capacity of over 1,500 MW, as well as Gobi Desert wind farms. The resolve of China towards achieving carbon neutrality by 2060 is what gives the impetus to the development of these large projects to wean itself off the use of coal.

The U.S. has made giant strides in its efforts to increase the share of renewable power in its portfolio. Some of the states are thus front-runners in leading renewable energy production. Some of these states have been California and Texas. California's Ivanpah Solar Electric Generating System: Located in the Mojave Desert as one of the world's largest concentrated solar power projects, generating as much as 392 MW, it forms a central pillar of California's strategies toward ensuring 100% clean energy will be achieved by 2045.

Texas Wind Farms (Roscoe Wind Farm): Texas Wind Farms, particularly the Roscoe Wind Farm, is one of the largest operational wind farms in the country, with a capacity of over 780 MW. Texas ranks first in the country for wind power, with an important portion of its electricity supply from the state's wind energy.

Germany has been leading the way in renewable energy, pushing further and moving away from fossil fuels. Germany's "Energiewende" policy focuses on increasing the share of renewable energy sources, particularly solar and wind power, in order to reduce the amount of fossil fuels used in the country's energy mix.

Bard Offshore 1 Wind Farm Located off the northwest coast of Germany, this 400 MW is one of several sites that will form part of Germany's extensive plan to build offshore wind to a total capacity of 30 GW by 2030.

Hydroelectric power constitutes the highest share of electricity in Brazil, accounting for the majority of electricity in the country. Brazil is investing in wind and biomass and other renewable sources to gradually diversify its energy. Itaipu Dam: This massive hydroelectric power plant is shared with Paraguay and provides over 14,000 MW of electricity.

The projects are in line with the renewable energy goals set by the EU to achieve carbon neutrality by 2050. Increased use of renewable energy sources promotes energy independence throughout the continent and sustainable economic growth.

Denmark's Middelgrunden Offshore Wind Farm: This is one of the first large scale commercial offshore wind farms and, at 40 MW, marks a significant point in the country's hegemony over wind power. The country commits to ensuring that by 2030, 50% of the energy supply is covered by wind.

India's Progress and Future Goals for Renewable Energy

“Solar energy is going to be a major source of energy needs not only today but in the 21st century, because solar energy is Sure, Pure and Secure.”

-Prime Minister Narendra Modi-

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Under Prime Minister Narendra Modi India is reaching its goals for renewable energy sources. and the Prime minister Narendra Modi his vision for new era of energy sources has led to the development of many areas of renewable energy resources and the future goal is to achieve to solar power sectors and as well as 280 GW of installed solar capacity by 2030 under the theme of India pushes for One Sun, One World, One Grid (OSOWOG)

India is making big progress in renewable energy, putting in ₹19,500 crore to improve infrastructure and build strong power networks. The goals of the National Electricity Plan are to reduce pollution by growing solar and wind energy, use a variety of energy sources, and stabilize the electrical grid. This lessens the requirement for coal. In an effort to lessen air pollution, particularly in urban areas, India is also building additional charging stations and utilizing clean energy to power electric vehicles.

India has made remarkable steps in renewable energy, particularly in solar and wind power, to meet its growing energy needs while remaining committed to climate action. The 2,200 MW-plus output of Bhadla Solar Park in Rajasthan-the largest solar farm in the world-helps India towards its ambitious 100 GW of solar capacities. Wind energy has also developed significantly with large installations in states such as Gujarat and Tamil Nadu, which have good wind speeds. The National Solar Mission, for example, is one such policy that has sparked rapid growth and put the renewables on the energy map as a major part of India's energy mix. This growth aligns with India's vision of achieving 450 GW of renewable power by 2030-that would reflect a greater reduction in fossil fuels as well as improvement in overall energy security.

India remains on increasing renewable energy capacity in 2024 .The country has already crossed 200 GW of installed renewable energy capacity across sources, which include solar 90.76 GW, wind 47.36 GW, and hydroelectric power 46.92 GW. Non-fossil fuel capacity will reach 500 GW by 2030 mainly through investments in solar parks, wind farms, and bioenergy.

Around the world, new ideas are changing how we make clean energy. Floating solar farms in China and India, like a 600 MW project on the Yangtze River, improve efficiency and reduce water loss. Solar panels are getting better with new technology like perovskite cells, which are cheaper and over 25% efficient, and bifacial panels that catch sunlight from both sides. Green hydrogen is also on the rise as a clean fuel, with new production methods being developed in Europe and Australia. These efforts are helping the world move towards a green and sustainable future.

Global Vision for a Green Economy: The Role of International Organizations

A new wave of renewable energy sources has been noticed in the world recently, Governments, international organizations, and various institutions are slowly realizing the role of renewable energy in sustainable living.

International organizations play a significant role in the growth of renewable energy. The United Nations supports this through, for instance, the implementation of the Sustainable Development Goals, which recommends affordable and clean energy sources. Projects supported by the UN allow developing countries to transition from fossil fuels to renewable sources while integrating economic development. Furthermore, bodies like International Renewable Energy Agency (IRENA) avails resources, expertise, and a platform for countries to collaborate and share best practices.

. The United Nations will stress access to such energy in Sustainable Development Goals.It also hosts the forums for these discussions at the UN Climate Change Conferences (COP). One of the most significant outcomes of these has been the Paris Agreement, to be implemented through country

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targeted, ambitious plans to reduce emissions, and limit global warming to well below 2 degrees Celsius.

The International Renewable Energy Agency (IRENA) provides country-specific roadmaps to implement renewable technologies, while the World Bank funds numerous projects in developing nations under its Energy Sector Management Assistance Program (ESMAP). It also issues grants for reduced greenhouse gas emissions and sustainable development purposes through the Global Environment Facility (GEF).

The EU Green Deal, which is a green plan of action towards making Europe climate-neutral by 2050, was launched by the European Union (EU), and was funded by Horizon Europe for research into renewable energy.

These efforts truly lie in a broader commitment to accelerating the transition to renewable sources of energy and paving the road for a greener economy and a safe planet for future generations.

Because it lessens reliance on fossil fuels and greenhouse gas emissions, renewable energy is essential to promoting a green economy. In industries like solar, wind, and bioenergy, it fosters sustainable growth in employment and improves energy security. Investments in renewable technology address climate change and encourage economic growth as countries switch to cleaner energy sources. This change improves public health by reducing air pollution and fosters innovation in addition to the environment. All things considered, creating resilient, sustainable communities and attaining long-term economic stability require incorporating renewable energy into economic planning.

Conclusion

Renewable energy is a key building block toward the green economy. It minimizes dependency on fossil fuels and cuts down harmful emissions into the atmosphere. The number of countries investing in renewable energy shows a step toward a healthy planet and a sustainable future. This shift will power future generations to enjoy prosperous futures and help combat climate change. Green energy will generate a sturdier, more resilient global economy.

In conclusion, the transition to renewable energy is necessary to build a sustainable future. We can safeguard a better future for future generations by protecting the environment, enhancing public health, and promoting economic growth through investments in clean energy solutions. Adopting renewable energy will eventually result in a more strong and sustainable world economy.

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