



ERÜNAL SOCIAL SCIENCES HIGH SCHOOL
MODEL UNITED NATIONS CONFERENCE 2025

STUDY GUIDE

UNEP

AGENDA ITEM

Reducing the Effects of Energy
Production on Global Warming

UNDER SECRETARY GENERAL
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ERÜNALMUN2025

Table of Contents

- 1) Letter from the Secretary-General,
- 2) Letter from the Under-Secretary-General,
- 3) Introduction to The Committee,
- 4) Introduction to The Agenda Item,
- 5) The Reasons and Results of Global Warming,
- 6) Fossil Fuels,
- 7) Renewable Energy;
 - 7.a) Renewable Energy Sources,
 - 7.b) Green Energy Around the Globe,
 - 7.c) Economics of Green Energy,
- 8) Nuclear Energy,
- 9) Past UN Actions and Constitutional Changes;
 - 9.a) Paris Agreement,
 - 9.b) Kyoto Protocol,
 - 9.c) Barcelona Convention,
- 10) Questions To Be Addressed,
- 11) Further Reading,
- 12) Bibliography,

1) Letter From The Secretary-General

Honourable participants of ERUNALMUN'25; as the secretariat of this glamorous conference, we are highly welcoming you to this journey. And extending appreciation of ours by thanking all of you one by one for choosing The Legacy of Legend.

Our marvelous academic and organization teams worked intensively, spend months to prepair you the best MUN experience that you could ever seen.

Throughout this journey; you will have the chance to debate your ideas by being the part of discussion, improve your negotiation skills, learn new diplomatic terms, enchance your leadership and communication qualifications. And most importantly you will be able to Lead the Light of our future.

We hope you all wonderful committee experience, if you have any issues you are free to contact us

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Kind regards, Selin Esin & Ramazan Rahmi Özcan
Secretariat of ERUNALMUN'25

2)Letter From The Under-Secretary-General

Dear Delegates,

I am Kayra Duran and I will be acting as your Under-Secretary General during this committee. In this Committee, we will be discussing the usage of fossil fuels and their harm to our planet. As we continue with this study guide you will encounter some parts of the guide that reflect my emotions on the topic and I wish for you to implement those ideas to yourself. During the conference, I am confident that we will have fruitful discussions and brilliant ideas. I specifically would like you to read the whole guide and do your further reading, furthermore, I would like you to have a look at the Questions To Be Addressed part as it will highly influence the flow of debate. If you have any further questions, please do not hesitate to contact me at the mail address down below.

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Yours Cruelly,

Kayra DURAN

3) Introduction To The Committee

The United Nations Environment Programme, also known as UNEP, created by Resolution 2997 in 1972, is a UN entity dedicated to addressing climate issues. Since its inception in 1972, the United Nations Environment Programme (UNEP) has been the global authority that sets the environmental agenda, promotes the proper implementation of the environmental dimension of sustainable development within the UN system and serves as an authoritative advocate for the global environment. UNEP works closely with its 193 Member States and representatives from civil society, businesses, and other major groups and stakeholders to address environmental challenges through the UN Environment Assembly, the world's highest-level decision-making body on the environment. To deliver on its programme, UNEP relies on voluntary financial contributions to the programme budget. Ninety-five per cent of this funding is provided voluntarily by funding partners.

4) Introduction To The Agenda Item

As our planet habits our kind, unfortunately, we have not been able to look after it following the industrial revolution. Mankind proceeding with the development of technology, required the usage of fossil fuels early on however, seeing the recent developments in technology and our planet that habited mankind from the beginning of our very existence hurting, we should not be supporting the usage of fossil fuels anymore. Looking at the fact that the usage of fossil fuels causes the release of greenhouse gases into the atmosphere, causing the planet serious harm and severe illness, one might say that it is important for member states to include achieving renewable energy in their development plans. The Gulf Stream collapsing, the ice in the poles melting and causing the sea levels to rise, the global temperature rise to change how certain climates act, leaving the soil unharvestable, lifeforms going extinct and the atmosphere getting thicker and thicker every day, shall be of importance to our attention. As we continue with the Agenda Item, it is reminded that for capitalistic order to benefit more, countries and companies will always make plans to hurt the planet to achieve their goals. As the United Nations Environment Programme, it is for this committee to interfere and make sure that our planet is safe. Under the Agenda Item and Questions To Be Addressed, we will be discussing the topics that were given above to create a resolution paper that will benefit our planet's needs.

5) The Reasons and Results of Global Warming

Global warming is a topic that the world has suffered from since the beginning of the Industrial Revolution. Then the world needed more energy and started burning coal, petroleum and various fossil fuels. Let them know that it will prepare this planet for its end. Looking at the insides of global warming we might see that it is caused mainly by the usage of fossil fuels releasing carbon, steam and methane into the atmosphere. Also looking at its results, one might see a bigger, more concerning picture. Looking into it, the Atlantic Meridional Overturning Circulation (will be referred to as AMOC from now on) collapsing, icebergs melting, the earth's temperature rising, the ozone layers collapsing and the climate is changing.

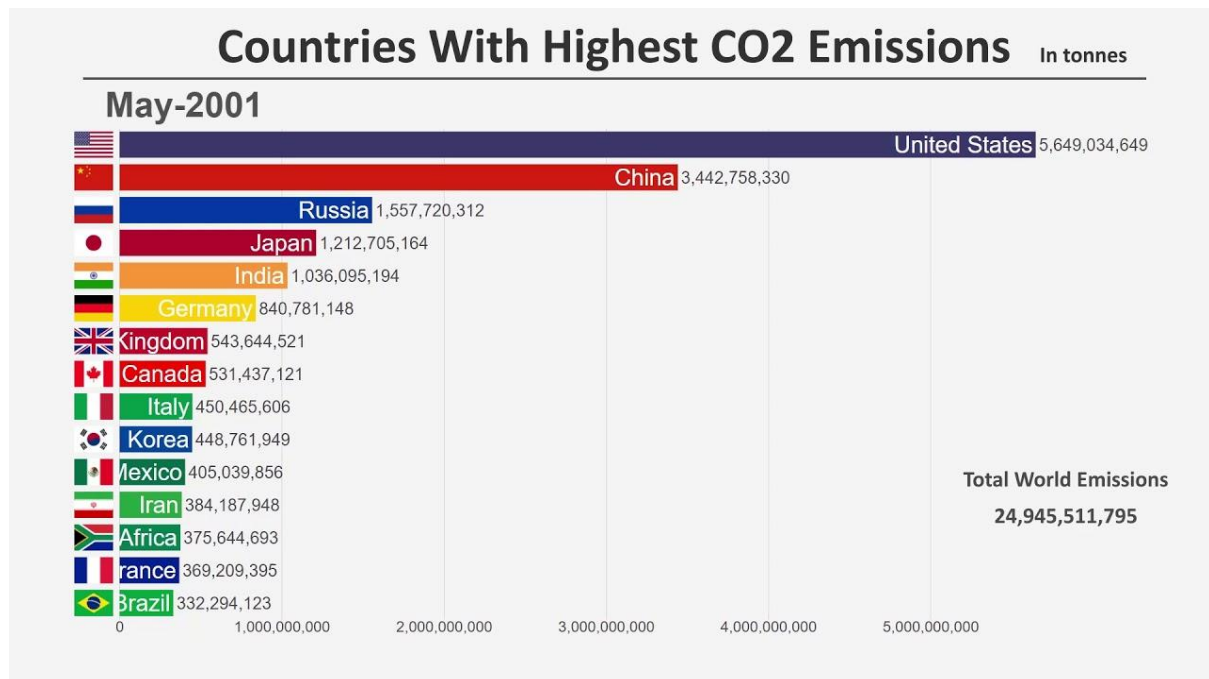
AMOC Collapse

AMOC is a hydrothermal system that consists of deep ocean currents in the Atlantic Ocean. One might wrong it for its effects, however, it is significantly important for our planet to balance its temperature. The AMOC is maintained by cold, salty water sinking in the North Atlantic, so as the ocean warms from increasing greenhouse gases, and freshwater from melting glaciers enters the ocean, the AMOC may be weakened due to the change in temperature and salinity. Climate change has the potential to weaken the AMOC through increases in ocean heat content and elevated freshwater flows from the melting ice sheets. Oceanographic reconstructions generally suggest that the AMOC is already weaker than it was before the Industrial Revolution, although there is a robust debate over the role of climate change versus the circulation's century-scale and millennial-scale variability. Climate models consistently project that the AMOC would weaken further over the 21st century, which would affect average temperature over areas like Scandinavia and Britain that are warmed by the North Atlantic drift, as well as accelerate sea level rise around North America and reduce primary production in the North Atlantic.

Melting Glaciers and The Sea Level Rising

As our planet gets warmer and warmer every day, we might see the giant ice blocks in our planet called glaciers, melting. "What are glaciers?" One might ask themselves, as our planet habits oxygen hydride (water), we might see that a significant part of this water is resting frozen, at the poles of the earth. Also stating that, under the effects of climate change, these resting glaciers are waking up. As an answer to the question "What will happen if these glaciers wake up?" We might say that a sea level rise will be happening, causing most of the coastal cities to go underwater. Today, about 10% of the land area on Earth is covered with glacial ice. Almost 90% is in Antarctica, while the remaining 10% is in the Greenland ice cap. Rapid glacial melt in Antarctica and Greenland also influences ocean currents, as massive amounts of very cold glacial-melt water entering warmer ocean waters are slowing ocean currents. And as ice on land melts, sea levels will continue to rise.

6) Fossil Fuels



Fossil fuels refer to non-renewable energy sources that are limited on Earth. Such sources as coal, crude oil and natural gas may not be found again on the planet following their usage. Also stating that these resources are extremely harmful to the planet as their use releases carbon dioxide, methane, water vapour and nitrous oxide which are categorised as greenhouse gases and are extremely harmful to the planet. Also looking economically one might speculate that as we run out of these sources, the price will also increase and industrial technology will be hurt in the progress. As we can see, each day, U.S. per capita energy consumption includes 2.5 gallons of oil, 8.86 pounds of coal, and 246 cubic feet of natural gas. Residential daily consumption of electricity is 12 kilowatt-hours per person. Since the beginning of the Industrial Revolution in Great Britain in the second half of the 18th century, fossil fuels have been consumed at an ever-increasing rate. Today they supply more than 80 per cent of all the energy consumed by the industrially developed countries of the world. Although new deposits continue to be discovered, the reserves of the principal fossil fuels remaining on Earth are limited. The amounts of fossil fuels that can be recovered economically are difficult to estimate, largely because of changing rates of consumption and future value as well as technological developments. Advances in technology such as hydraulic fracturing, rotary drilling, and directional drilling have made it possible to extract smaller and difficult-to-obtain deposits of fossil fuels at a reasonable cost, thereby increasing the amount of recoverable material. In addition, as recoverable supplies of conventional oil became depleted, some petroleum-producing companies shifted to extracting heavy oil, as well as liquid petroleum pulled from tar sands and oil shales.

Coal

Coal is a combustible sedimentary rock that has been used as a source of energy for centuries. Coal is formed from the decomposition of organic matter under high pressure and temperature over millions of years. It is a cheap and abundant energy source, but it is also a major contributor to global warming. Coal is primarily composed of carbon, along with other elements such as hydrogen, sulphur, nitrogen, and oxygen. It is extracted from underground mines or surface mines and then transported to power plants or other facilities where it is burned to produce electricity, heat, or other forms of energy. Coal combustion releases carbon dioxide (CO₂), a greenhouse gas, into the atmosphere. Following those actions, carbon dioxide traps heat in the Earth's atmosphere, leading to global warming and climate change.

The use of coal has been linked to a range of negative impacts on the environment and public health. Coal mining can cause habitat destruction, water pollution, and soil erosion. Coal combustion produces air pollution that can cause respiratory illnesses, such as asthma and lung cancer. Coal ash, a byproduct of coal combustion, contains toxic heavy metals and can contaminate water sources and harm wildlife. The negative impacts of coal on the environment and public health have led to efforts to reduce its use and transition to cleaner energy sources. Many countries have set targets to phase out coal use and increase the use of renewable energy sources, such as wind and solar power. The use of carbon capture and storage (CCS) technologies has also been proposed as a way to reduce carbon dioxide emissions from coal combustion. CCS deliberately involves capturing carbon dioxide from power plant emissions and storing it underground.

Crude Oil

Crude oil is a fossil fuel that is made up of hydrocarbons and other organic compounds. It is formed from the remains of ancient plants and animals that have been buried deep within the earth's crust for millions of years. Crude oil is extracted from the ground and refined into various products, such as gasoline, diesel, jet fuel, and heating oil. These products are then used to power our transportation systems, heat common homes, and run industry individuals. While crude oil has played a significant role in driving the world economy for more than a century, its use has also caused considerable harm to our planet. The extraction and use of crude oil have a significant impact on the environment. One of the most significant environmental impacts is the release of greenhouse gases into the atmosphere. Burning fossil fuels such as crude oil produces carbon dioxide, which is a major contributor to climate change. The transportation sector, which is largely powered by crude oil-based fuels, is responsible for a significant portion of global greenhouse gas emissions.

In addition to greenhouse gas emissions, the extraction and processing of crude oil can also lead to environmental damage. The process of drilling for oil can lead to oil spills and leaks, which can harm marine life and coastal ecosystems. Oil spills also have a significant impact on human health, as exposure to crude oil and its toxic components can cause respiratory problems, skin irritation, and other health issues. The refining process of crude oil also produces a variety of pollutants, including sulphur dioxide, nitrogen oxides, and particulate

matter. These pollutants can have a significant impact on air quality and human health. They can cause respiratory problems, exacerbate asthma and other lung conditions, and even lead to premature death.

Another significant impact of crude oil on the environment is its contribution to ocean acidification. When carbon dioxide is released into the atmosphere, it is eventually absorbed by the ocean, where it reacts with seawater to form carbonic acid. This process makes the ocean more acidic, which can harm marine life and ecosystems. While crude oil has played a crucial role in driving the world's economy, its use has also caused considerable harm to our planet. The extraction and processing of crude oil have significant environmental impacts, including greenhouse gas emissions, oil spills, air pollution, and ocean acidification. As the world seeks to transition to a more sustainable energy future, we must reduce our reliance on fossil fuels such as crude oil and shift towards cleaner, renewable sources of energy.

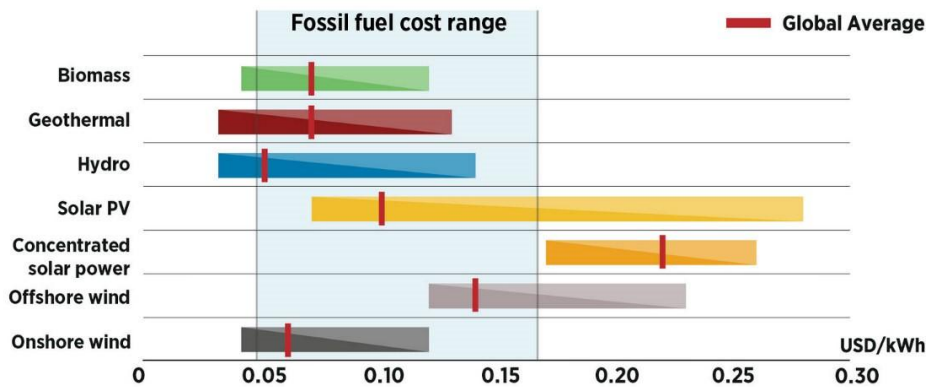
Natural Gas

Natural gas is a type of fossil fuel that has been increasingly used as a source of energy around the world. It is composed mainly of methane, a potent greenhouse gas that contributes to climate change. While natural gas has some economic advantages, its environmental impacts cannot be ignored. Firstly, the extraction and production of natural gas can have significant environmental impacts. Hydraulic fracturing or "fracking," which is used to extract natural gas from shale formations, involves injecting a high-pressure mixture of water, chemicals, and sand into the ground to fracture the rock and release the gas. This process can result in water contamination, air pollution, and habitat destruction.

Secondly, natural gas is a major contributor to climate change. Methane, the main component of natural gas, is a potent greenhouse gas that is over 80 times more effective at trapping heat in the atmosphere than carbon dioxide over a 20-year timeframe. The combustion of natural gas also releases carbon dioxide, which further contributes to global warming. Despite these environmental concerns, natural gas has some economic advantages. It is often touted as a cleaner-burning alternative to coal and oil, and its abundance and relatively low cost have made it a popular energy source in many countries. Additionally, natural gas can be used to generate electricity, heat buildings, and power vehicles. However, the economic benefits of natural gas must be weighed against its environmental costs. The economic benefits of natural gas extraction and production are often concentrated in the hands of a few large companies, while the environmental costs are borne by local communities and ecosystems. Moreover, the low price of natural gas has led to the displacement of other, cleaner energy sources like wind and solar power. To address the environmental impacts of natural gas, policymakers and industry leaders must take steps to reduce its use and transition to cleaner, more sustainable energy sources. This may include investing in renewable energy technologies like wind and solar power, improving energy efficiency, and reducing the use of fossil fuels in transportation and industry.

7) Renewable Energy

Average renewable power generation costs in the fossil fuel range in 2017



Making a definition about these resources, renewable energy sources refer to energy sources that originate from the earth and do not cause pollution to the environment as a result of their use (terrestrial, marine or air), which can be easily produced and easily obtained. Those sources have lots of positive effects compared to limited energy sources. The fact that their use creates little to no waste is just one of them. For example, the usage of coal leaves behind a pile of puss that can be seen with one's eyes. Most developed countries think that the waste created by these energy sources may benefit them. They usually exchange these gigantic amounts of waste for money with developing or undeveloped countries and use their land as their grounds for waste. Diplomatic relationships depending on this “trade” may be at a political disadvantage with the usage of renewable energy.

To continue, it is obvious that the production and use of these resources is a good solution, but it has an opposite connection with their monetary costs. That is why most countries think twice when they wish to take steps on the path to green energy.

7.a) Renewable Energy Sources

The energy that is continuously or repeatedly derived from the natural environment is referred to as renewable energy. Renewable energy is also characterised as being sustainable and derived from natural resources. Renewable energy is produced from naturally occurring sources like sun, wind, biomass, geothermal, and wave energy. These resources are alternatives to non-renewable energies like coal, gasoline, and natural gas since they are perpetually replenishable, unlike fossil energy sources. Their application is conceivable in numerous domains. The following are the seven most common forms of renewable energy sources;

Wind Energy

Wind energy is a rapidly growing industry throughout the world, as more countries strive to reduce their reliance on fossil fuels and transition to renewable sources of energy. In 2020, wind energy capacity reached 733 gigawatts (GW) globally, with China, the United States, and Germany leading in installed capacity. The rapid growth of wind energy can be attributed to its many advantages, such as being a clean and sustainable source of energy that produces no greenhouse gas emissions or air pollution. Additionally, wind energy is cost-effective, as the cost of wind turbines has decreased significantly in recent years, making it a more accessible option for many communities. The use of wind energy has many benefits for the environment and human health. By producing clean energy, wind turbines can help reduce our carbon footprint and mitigate the impacts of climate change. Wind energy also reduces air pollution, which can have a positive impact on human health, particularly for those living near power plants or in urban areas with high levels of pollution.

Furthermore, wind energy can create jobs and stimulate local economies, as the installation and maintenance of wind turbines require skilled labour. Despite its many advantages, wind energy also faces challenges, particularly related to its intermittency. The wind may not always be blowing at a consistent rate, which can result in fluctuations in the supply of electricity. To overcome this challenge, energy storage systems and grid integration must be developed to ensure a consistent supply of electricity. Additionally, the development of wind energy infrastructure can face resistance from local communities, particularly those concerned about the impact of wind turbines on wildlife, scenic landscapes, and property values. To address these concerns, it is important to engage in community outreach and education to increase understanding of the benefits of wind energy and its potential to create a more sustainable future.

Solar Energy

Solar energy is a clean and sustainable source of power that utilises the energy of the sun to create electricity. The technology used to convert solar energy into electricity includes photovoltaic (PV) panels and concentrated solar power (CSP) systems. PV panels convert sunlight directly into electricity using semiconductor materials, while CSP systems use mirrors or lenses to focus sunlight onto a small area, which heats a fluid that drives a turbine to generate electricity. The use of solar energy is growing rapidly around the world, with China, the United States, and Japan leading in installed capacity. In 2020, global solar energy capacity reached 761 GW, making it a major player in the transition to renewable energy.

Solar energy has many advantages that make it an attractive alternative to fossil fuels. Unlike coal, oil, and natural gas, solar energy is a clean and renewable source of power that produces no greenhouse gas emissions or air pollution. Additionally, solar energy is becoming increasingly cost-effective, with the cost of PV panels and CSP systems decreasing significantly in recent years. Solar energy can also be installed on a variety of surfaces, including rooftops, parking lots, and fields, making it accessible to many communities. In addition to being a source of electricity, solar energy can also be used for heating and cooling

through the use of solar thermal technology. The use of solar energy has many benefits for the environment and human health. By producing clean energy, solar power can help reduce our carbon footprint and mitigate the impacts of climate change. Despite its many advantages, solar energy also faces challenges, particularly related to its intermittency. Solar energy production is dependent on sunlight, which varies based on weather conditions and the time of day. To overcome this challenge, energy storage systems and grid integration must be developed to ensure a consistent supply of electricity. Additionally, the high upfront costs of solar energy technology can be a barrier to widespread adoption. However, as the cost of solar energy technology continues to decrease, and the benefits of renewable energy become increasingly apparent, the use of solar energy is expected to continue growing around the world.

Energy Storage

Energy storage is becoming increasingly important in the transition to renewable energy sources such as wind and solar power. Energy storage technology allows excess energy to be stored for use when demand is high or when the sun is not shining or the wind is not blowing. There are several types of energy storage technology, including batteries, pumped hydroelectric storage, and thermal energy storage. Battery storage is the most common type of energy storage and is used in a variety of applications, including electric vehicles and grid-scale energy storage systems. Pumped hydroelectric storage involves using excess energy to pump water from a lower elevation to a higher elevation, which can be released to generate electricity when needed. Thermal energy storage involves storing excess energy in the form of heat, which can be used to generate electricity when needed. The use of energy storage technology has many benefits for the transition to renewable energy sources. Energy storage allows for a more reliable and stable energy grid, as excess energy can be stored and used when needed, reducing the need for fossil fuel-based power plants. Additionally, energy storage can help reduce energy costs by allowing excess energy to be used during periods of high demand when energy prices are typically higher. Energy storage also allows for the integration of more renewable energy sources onto the grid, as the intermittent nature of wind and solar power can be managed through the use of energy storage technology. The use of energy storage technology is growing rapidly around the world, particularly in countries with high levels of renewable energy generation. In 2020, global energy storage capacity reached 250 GW, with China, the United States, and Germany leading in installed capacity. The development of energy storage technology is also creating jobs and driving innovation, particularly in the battery storage sector. As the costs of energy storage technology continue to decrease and the benefits become more apparent, the use of energy storage is expected to continue growing around the world, playing a vital role in the transition to a more sustainable energy future.

Hydraulic Energy

Hydroelectricity, also known as hydraulic energy, is a renewable energy source that utilises the power of flowing water to generate electricity. Hydroelectric power plants use the force of water flowing through turbines to produce electricity, which can then be distributed to homes and businesses through the electrical grid. Hydroelectric power is one of the most widely used renewable energy sources in the world, accounting for approximately 16% of global electricity production. Hydroelectric power is used around the world, with China, Brazil, Canada, and the United States leading in installed capacity. In 2020, global hydroelectric power capacity reached 1,308 GW, making it the largest source of renewable energy in the world. The development of hydroelectric power has been driven by its many benefits, including its ability to provide baseload power, which means that it can be used to meet a consistent level of demand throughout the day. Hydroelectric power is also a clean and renewable energy source, producing no greenhouse gas emissions or air pollution. One of the primary challenges is related to the environmental impact of dams, which can disrupt river ecosystems and affect the migratory patterns of fish. In addition, the construction of large-scale hydroelectric power plants can be costly and require significant infrastructure development. However, advances in technology have made it possible to develop smaller-scale hydroelectric power plants, which can be more cost effective and have less impact on the environment. Overall, hydroelectric power is an important source of renewable energy that has many benefits for the environment and the economy. As the world moves towards a more sustainable energy future, the use of hydroelectric power is expected to continue to grow, particularly in countries with significant water resources. While there are challenges to be addressed, the development of new technologies and approaches to hydroelectric power generation will help ensure that it remains a viable and important source of renewable energy for years to come.

Biomass Energy

Biomass energy is a renewable energy source that utilises organic materials such as wood, agricultural waste, and municipal solid waste to produce heat and electricity. Biomass energy is widely used around the world, with the majority of biomass used for energy production coming from wood and agricultural waste. The use of biomass energy is growing rapidly around the world, particularly in countries with significant agricultural and forestry resources. In 2020, global biomass energy capacity reached 127 GW, with China, the United States, and Germany leading in installed capacity. The development of biomass energy has been driven by its many benefits, including its ability to provide a stable and reliable source of energy, reduce dependence on fossil fuels, and reduce greenhouse gas emissions. However, the use of biomass energy is not without challenges. One of the primary challenges is related to the sustainability of biomass production, as the harvesting of organic materials for energy production can have environmental impacts such as deforestation and soil erosion. Additionally, the combustion of biomass can produce air pollutants such as particulate matter and nitrogen oxides, which can have negative health impacts. To address these challenges, there is a growing focus on the development of sustainable biomass production practices and

the use of advanced technologies to reduce emissions from biomass combustion. Overall, biomass energy is an important source of renewable energy that has many benefits for the environment and the economy. As the world moves towards a more sustainable energy future, the use of biomass energy is expected to continue to grow, particularly in countries with significant agricultural and forestry resources. While there are challenges to be addressed, the development of new technologies and approaches to biomass energy production will help ensure that it remains a viable and important source of renewable energy for years to come.

Wave Energy

Wave energy is a renewable energy source that is generated by the movement of waves on the surface of the ocean. It is a relatively new technology and is still in the early stages of development. Wave energy has the potential to provide a significant amount of electricity to coastal communities around the world. The energy generated from waves can be used for a variety of purposes, including powering homes, businesses, and even entire cities. The technology used to harness wave energy is still being developed, and there are currently a number of different approaches being explored. Some of the most promising technologies involve the use of buoys or other floating devices that are anchored to the sea floor. As waves pass over these devices, they move up and down, generating electricity through a variety of mechanisms such as hydraulic pumps or turbines. One of the main advantages of wave energy is that it is a predictable and reliable source of renewable energy. Waves are generated by the movement of the moon and the sun, and they follow a predictable pattern that can be forecasted with a high degree of accuracy. This makes it easier to plan and manage the generation of wave energy, which is important for ensuring a steady supply of electricity. Another advantage of wave energy is that it is a clean source of energy that does not produce greenhouse gas emissions. Unlike fossil fuels, which release carbon dioxide and other pollutants into the atmosphere when they are burned, wave energy does not contribute to climate change. This makes it an important tool in the fight against global warming and climate change. Therefore, wave energy is a promising technology that has the potential to play an important role in the transition to a more sustainable energy future. While it is still in the early stages of development, there are a number of promising technologies being explored that could make wave energy a significant source of renewable energy in the years to come. As the world continues to search for ways to reduce greenhouse gas emissions and combat climate change, wave energy is likely to play an increasingly important role in meeting our energy needs while protecting the planet.

Geothermal Energy

Geothermal energy is a renewable energy source that uses the heat from the earth's core to produce electricity and heat homes and buildings. This energy source is harnessed by drilling into the earth's surface and tapping into the heat stored beneath. Geothermal energy is a reliable and constant source of energy, as the earth's core maintains a relatively stable temperature, and it has many benefits, including its ability to reduce greenhouse gas

emissions and provide a source of renewable energy. Geothermal energy has been used for centuries in some parts of the world, particularly in areas with volcanic activity. Today, it is used in many countries around the world, with the United States leading in installed geothermal capacity. Geothermal power plants typically use a binary cycle system or a flash steam system to convert the heat from the earth's core into electricity. These systems use turbines to generate electricity, which is then distributed to homes and businesses through the power grid. In addition to electricity generation, geothermal energy can also be used for heating and cooling. Geothermal heat pumps can be used to extract heat from the earth during the winter months and provide cooling during the summer months. These systems are highly efficient and can provide significant cost savings compared to traditional heating and cooling systems. One of the primary challenges is related to the cost of drilling and building geothermal power plants. The initial investment in geothermal energy can be high, and the availability of suitable locations for geothermal power plants can be limited. However, advances in drilling technology and the development of new geothermal systems are helping to reduce the cost and increase the accessibility of this renewable energy source.

In conclusion, geothermal energy is a promising source of renewable energy that has the potential to play an important role in the transition to a more sustainable energy future. With its ability to provide a reliable and constant source of energy, geothermal energy has many benefits, including reducing greenhouse gas emissions and providing a source of renewable energy. While there are challenges to be addressed, the continued development of geothermal energy technologies and practices will help ensure that it remains a viable and important source of energy for years to come.

Tide Energy

Tidal energy is a renewable energy source that is generated by the natural movement of tides. The gravitational forces of the moon and the sun cause the tides to rise and fall, and this movement can be harnessed to generate electricity. Tidal energy has the potential to provide a significant amount of electricity to coastal communities around the world, and it is considered to be a reliable and predictable source of energy. Tidal energy is generated through the use of underwater turbines that are placed in areas with strong tidal currents. As the tides rise and fall, the water passes through the turbines, which spin and generate electricity. The electricity generated by tidal turbines can be used to power homes, businesses, and even entire cities.

One of the main advantages of tidal energy is that it is a predictable and reliable source of renewable energy. The tides are generated by the gravitational forces of the moon and the sun, and they follow a predictable pattern that can be forecasted with a high degree of accuracy. This makes it easier to plan and manage the generation of tidal energy, which is important for ensuring a steady supply of electricity. Another advantage of tidal energy is that it is a clean source of energy that does not produce greenhouse gas emissions. Unlike fossil fuels, which release carbon dioxide and other pollutants into the atmosphere when they are burned, tidal energy does not contribute to climate change. This makes it an important tool in the fight against global warming and climate change. So, tidal energy is a promising technology that has the potential to play an important role in the transition to a more

sustainable energy future. While it is still in the early stages of development, there are a number of promising technologies being explored that could make tidal energy a significant source of renewable energy in the years to come.

7.b) Green Energy Around the Globe

According to data from the International Energy Agency (IEA), renewable energy sources accounted for 29% of the world's electricity production in 2020, up from 27% in 2019. The majority of this renewable energy came from hydropower, followed by wind and solar energy. While the use of renewable energy sources is growing, fossil fuels still account for the majority of the world's electricity production, with coal being the largest contributor.

One of the countries leading the way in the adoption of renewable energy sources is Germany. According to data from the IEA, renewable energy sources accounted for 46% of Germany's electricity production in 2020, up from just 6% in 2000. The majority of this renewable energy came from wind and solar energy. Germany has been able to achieve this significant increase in renewable energy usage through the implementation of policies and incentives that encourage the development of renewable energy sources.

Another country that has made significant progress in the adoption of renewable energy sources is China. According to data from the IEA, renewable energy sources accounted for 29% of China's electricity production in 2020, up from just 7% in 2000. The majority of this renewable energy came from hydropower, followed by wind and solar energy. China has invested heavily in the development of renewable energy sources in recent years, and it is now the world's largest producer of solar panels and wind turbines.

The United States is also making progress in the adoption of renewable energy sources, although at a slower pace than Germany and China. According to data from the IEA, renewable energy sources accounted for 12% of the United States' electricity production in 2020, up from 3% in 2000. The majority of this renewable energy came from wind and solar energy. The United States has implemented policies and incentives to encourage the development of renewable energy sources, but progress has been slowed by political opposition and the continued use of fossil fuels.

In contrast to these countries, some countries have been slow to adopt renewable energy sources. For example, India, which is the world's third-largest emitter of greenhouse gases, has been slow to transition away from fossil fuels. According to data from the IEA, renewable energy sources accounted for just 10% of India's electricity production in 2020, with the majority of this renewable energy coming from wind and solar energy. India has set a target to increase its renewable energy capacity to 175 gigawatts by 2022, but progress has been slowed by a lack of investment and political opposition. So the adoption of renewable

energy sources around the world is growing, but progress has been uneven. While some countries, such as Germany and China, have made significant progress in the adoption of renewable energy sources, others, such as India, have been slower to transition away from fossil fuels. As the world continues to grapple with the challenges of climate change and the need to reduce greenhouse gas emissions, the adoption of renewable energy sources will become increasingly important. While there are challenges to be addressed, including political opposition and the cost of renewable energy technologies, the potential benefits of a transition to clean and renewable energy sources are significant and must be pursued.

7.c) Economics of Green Energy

The renewable energy sector has seen remarkable growth in recent years. It is a diverse sector that includes wind power, solar power, hydropower, geothermal power, and bioenergy. One of the primary advantages of renewable energy is that it is a clean source of energy that does not emit harmful greenhouse gases into the atmosphere. This is in contrast to fossil fuels, which are non-renewable sources of energy that emit significant amounts of carbon dioxide, methane, and other greenhouse gases. The economics of the renewable energy sector are compelling. Renewable energy sources are becoming increasingly cost-competitive with fossil fuels. The cost of solar power, for example, has fallen by 90% over the past decade, and the cost of wind power has fallen by 70%. As a result, renewable energy is becoming more accessible and affordable for consumers and businesses. In addition, renewable energy creates jobs and stimulates economic growth. According to the International Renewable Energy Agency (IRENA), the renewable energy sector employed 11.5 million people worldwide in 2019. In contrast, the use of fossil fuels has significant economic and environmental costs. Fossil fuels are a finite resource, and their production and consumption contribute to climate change, air pollution, and other environmental problems.

The cost of producing and transporting fossil fuels has also increased in recent years, making them more expensive for consumers and businesses. The United Nations Environment Programme (UNEP) has been a strong advocate for renewable energy and has called for a phase-out of fossil fuels. UNEP has highlighted the urgent need to reduce greenhouse gas emissions to limit the impacts of climate change. In its Emissions Gap Report 2020, UNEP stated that the world must reduce its greenhouse gas emissions by 7.6% every year between 2020 and 2030 to limit global warming to 1.5°C above pre-industrial levels. To achieve this goal, UNEP recommends a shift towards renewable energy and the phasing out of fossil fuels. UNEP also calls for policies and incentives that encourage the transition to renewable energy, such as carbon pricing, subsidies for renewable energy, and regulations that limit the use of fossil fuels. Therefore, the economics of the renewable energy sector are compelling, and there are strong reasons to discourage the usage of fossil fuels economically. The

renewable energy sector provides clean, affordable, and accessible energy, creates jobs, and stimulates economic growth.

In contrast, the use of fossil fuels has significant environmental and economic costs. The United Nations Environment Programme has called for a phase-out of fossil fuels and a shift towards renewable energy to limit the impacts of climate change. Governments, businesses, and individuals must take action to transition towards renewable energy and reduce their reliance on fossil fuels.

8) Nuclear Energy

Nuclear energy is the energy released by splitting atoms, a process called nuclear fission. This energy can be harnessed to produce electricity in nuclear power plants. While nuclear energy has its risks, it also has many advantages over the use of fossil fuels. Firstly, nuclear energy is a low-carbon energy source, meaning it produces significantly fewer greenhouse gas emissions than fossil fuels. This makes it a key player in the fight against climate change. In addition, nuclear power plants have a much smaller footprint than fossil fuel power plants, making them more environmentally friendly. Secondly, nuclear energy is highly efficient. A small amount of nuclear fuel can produce a significant amount of energy, meaning that nuclear power plants require far less fuel than fossil fuel power plants. This translates into cost savings, as the cost of nuclear fuel is relatively stable compared to the fluctuating prices of oil and gas. Thirdly, nuclear energy is a reliable source of power. Nuclear power plants can operate continuously for extended periods, unlike renewable energy sources such as wind and solar which are dependent on weather conditions. This makes nuclear energy a critical component of energy security, as it can provide a stable source of power when other sources are unavailable. Finally, the development and use of nuclear energy technology have significant potential for technological innovation and economic growth. Investing in nuclear energy technology can create high-skilled jobs, promote innovation in related industries, and contribute to economic growth.

While nuclear energy has its risks, such as the potential for nuclear accidents and the challenge of disposing of radioactive waste, these risks can be mitigated through effective regulation and technology. In addition, the risks associated with nuclear energy must be weighed against the risks associated with the continued use of fossil fuels, which include air pollution, water pollution, and the destabilisation of the global climate. In conclusion, the benefits of nuclear energy make it a critical component of a sustainable and secure energy future. The use of nuclear energy should be encouraged and supported, alongside other low-carbon energy sources such as wind, solar, and hydro. Investing in nuclear energy technology can create jobs, promote innovation, and contribute to economic growth while also reducing greenhouse gas emissions and ensuring a reliable source of power for future generations.

9) Past UN Actions and Constitutional Changes

The United Nations has been at the forefront of addressing the issue of global warming for several decades, recognizing the significant threat it poses to the planet and its inhabitants. The UN established the Framework Convention on Climate Change (UNFCCC) in 1992, which aimed to stabilise greenhouse gas concentrations in the atmosphere to prevent dangerous anthropogenic interference with the climate system. Since then, the UN has continued to play a critical role in global efforts to mitigate climate change, with landmark agreements such as the Paris Agreement in 2015, which set ambitious targets to limit global temperature rise and reduce greenhouse gas emissions. The UN has also launched various initiatives to support climate action, such as the Climate Neutral Now campaign, which encourages individuals, businesses, and governments to take action to reduce their carbon footprint. Additionally, the UN supports and collaborates with scientific bodies such as the Intergovernmental Panel on Climate Change (IPCC), which provides authoritative assessments of the state of knowledge on climate change. The UN continues to prioritise global action on climate change, recognizing the urgency of the issue and the need for immediate and sustained efforts to address it.

9.a) Paris Agreement

The Paris Agreement, also known as the Paris Climate Accord, is an international treaty that was adopted by the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015. The agreement aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius. The Paris Agreement is a critical tool in addressing the global climate crisis. The agreement recognizes that climate change is a threat to human societies and natural systems, and that urgent action is needed to reduce greenhouse gas emissions and prevent further warming of the planet. To achieve this goal, the Paris Agreement sets out a framework for countries to work together to reduce emissions and build resilience to the impacts of climate change.

One of the key features of the Paris Agreement is the concept of Nationally Determined Contributions (NDCs). Each country is required to submit an NDC, which outlines its climate action plan and emissions reduction targets. These targets are not legally binding, but they are important commitments that countries make to one another and to the global community. The Paris Agreement also establishes a system for countries to regularly report on their emissions and progress towards their NDCs. Another important aspect of the Paris Agreement is its recognition of the need for adaptation to the impacts of climate change. The agreement calls for increased efforts to build resilience to climate impacts, particularly in vulnerable countries.

and communities. This includes measures to protect food security, water resources, and human health, among other things. The Paris Agreement also includes provisions for financing and technology transfer to support climate action in developing countries. Developed countries are required to provide financial resources to help developing countries reduce emissions and adapt to the impacts of climate change.

The Paris Agreement is also closely tied to the United Nations, as it was negotiated and adopted under the auspices of the UNFCCC. The UNFCCC is a treaty that was adopted at the 1992 Earth Summit in Rio de Janeiro, and it provides the framework for international cooperation on climate change. The Paris Agreement builds on the principles and objectives of the UNFCCC, and it is considered a major achievement in the UN's efforts to address the climate crisis. The UNFCCC and the Paris Agreement are closely linked to the Sustainable Development Goals (SDGs), which were adopted by the UN in 2015. The SDGs provide a framework for global development efforts, and they include a specific goal (Goal 13) on climate action. The Paris Agreement is seen as a critical component of achieving this goal and ensuring a sustainable future for all.

9.b) Kyoto Protocol

The Kyoto Protocol is an international treaty signed in Kyoto, Japan in 1997 as part of the United Nations Framework Convention on Climate Change (UNFCCC). The aim of the Kyoto Protocol is to reduce greenhouse gas emissions and combat global warming. The Kyoto Protocol sets binding targets for industrialised countries to reduce their greenhouse gas emissions by an average of 5.2% below their 1990 levels by 2012. This target was established based on the scientific consensus that global warming is primarily caused by human activities, particularly the burning of fossil fuels. By reducing greenhouse gas emissions, the Kyoto Protocol aims to limit the increase in global temperature to 2 degrees Celsius above pre-industrial levels, which is considered to be a threshold beyond which the impacts of climate change become increasingly severe. The Kyoto Protocol has several environmental benefits. Firstly, it helps to reduce the amount of greenhouse gases in the atmosphere, which can lead to a decrease in global temperatures and limit the impact of climate change. Secondly, it promotes the use of renewable energy sources and energy efficiency, which can reduce the reliance on fossil fuels and lower greenhouse gas emissions. Thirdly, it encourages countries to work together to address the global problem of climate change, fostering international cooperation and collaboration. The Kyoto Protocol is also an important part of the United Nations' efforts to address climate change. The UNFCCC was established with the objective of stabilising greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Kyoto Protocol is a key instrument of the UNFCCC, providing a legally binding framework for countries to take action on climate change.

9.c) Barcelona Convention

The Mediterranean Action Plan (MAP), which was developed in 1975 with the involvement of the Mediterranean riparian countries and the EU, was a direct result of the UN Environment Programme's (UNEP) decision to make the protection of the Mediterranean Sea one of its priority objectives within the framework of the "Regional Seas Programme" established in 1974. The "Convention for the Preservation of the Mediterranean Sea against Pollution" (also known as the "Barcelona Convention"), which was created to serve as the legal framework for the actions to be taken within the framework of the MAP, was adopted in Barcelona in 1976 and went into effect in 1978. Under the United Nations Environment Programme, it is the first regional marine programme to be adopted. The main goals of the Mediterranean action plans have been to help the nations in the region control marine pollution, help them build national environmental policies, enable governments to recognize alternative development models and get the most out of resource allocations. Control of marine pollution is its top priority among all of these. By implementing the Mediterranean Action Plan, European countries in the Mediterranean region work to safeguard species, improve inland and coastal areas' quality of life, combat environmental deterioration, and manage resources sustainably to promote economic growth. According to the principles of the Barcelona Convention, the UN summit on environment and development in Rio de Janeiro in 1992 was enlarged to include coastal areas of the marine environment and the goal of sustainable development, public involvement, and environmental impact assessment in 1995. The "Convention on the Preservation of the Marine Environment and Coastal Zone of the Mediterranean Sea" was given a new name within this framework and went into effect in 2004. In 2002, our nation ratified the updated Barcelona Convention. The EU and 21 other nations are signatories to the accord. 7 Main Goals that the Barcelona Convention aims for are, the management of integrated coastal areas, conflict and collaboration in the emergency response to oil pollution and other toxic chemicals, contamination caused by the seabed and continental shelf exploration, sustaining biological diversity, maritime pollution brought on by burning materials, contamination released from aircraft and vessels, protective measures against issues brought on by land-based activities, fostering biodiversity. This point especially refers to the consequences of conflicts and the use of weapons of mass destruction in the Barcelona Agreement. Furthermore, it is well known that the aforementioned agreement will include sanctions for such gratuitous behaviour that is against the interests of the globe because the effects of wars that have finished and are now in progress do not conform to this sustainable policy. Concerning the preservation of diversity, numerous United Nations committees are still engaged in conservation efforts. This is connected with environmentally friendly technologies and aims to stop such issues without having harmful effects. Undisputed facts include the high biological diversity in these areas, which might mean species with high economic value reside there, and the size of the future economic contribution that hunting and breeding operations will make to the economies of the nations that have established their exclusive economic zones on the continental shelf. The existence of fossil fuels beneath the sea and ocean bottom, or the potential for such resources, is another commercial aspect of the continental shelf.

The territorial waters, the airspace over the territorial seas, the bottom of the territorial waters, and the legal system of the subsoil make up the second set of general provisions. Also, this continental shelf approach changed after the 1964 statute was updated and the International Maritime Law accord permitted a breadth of up to 12 miles. The idea of having 6 miles of territorial seas was accepted together with the 1964 territorial waters statute, which was passed on May 20, 1982. The 1982 UN Convention on the Law of the Sea and the Geneva Agreement on the Continental Shelf both govern the legal standing of the continental shelf. This suggests that the continental shelf is not a body of water under the state's control. Lastly, maritime pollution is one of the biggest threats to sustainability in the world. According to facilities in use today, sustainability is defined as not matching pollution. This problem has been around for a long time, and although many agreements and contracts have been made to address it, individual choices and precautions can make a significant difference. Also, they can be put to use in this circumstance by working with businesses that are creating goods and materials to stop pollution in the oceans and seas.

10) Questions To Be Addressed

- 1) What can be done in order to encourage member states into enhancing their carbon reduction plans?
- 2) What makes green energy unappealing and how can the conditions be enhanced?
- 3) Have the past UN actions succeeded and if not how can they be strengthened?
- 4) What can be done to create awareness regarding the topic?
- 5) What methods and new technologies can be implemented into the renewable energy field?
- 6) How does climate change affect our daily lives and what can be done to lower the effects to minimum?
- 7) What can be done to encourage member states for the usage of nuclear energy?

11) Further Reading

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