Forum: ECOSOC

Issue: Ensuring an economically sustainable transition into a non-dependent model on fossil fuels and non-renewable energy.

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Introduction

Throughout recent years, renewable energy has started playing a larger role globally, being seen as the most effective way to combat our ever rising fossil fuels emissions. Renewable energy can generally be defined as all energy collected from natural resources. Renewable energy, in theory, is a much more sustainable model for our energy consumption; sources of renewable energy are naturally replenished, meaning that they will always be available regardless of how much is used. This is extremely important, especially to provide the energy for our growing population. That said, several problems present themselves that must be addressed before transitioning to a fully renewable model of energy.

One of the biggest problems is the amount of energy available from natural sources, and whether that is enough to be the global, sole provider of energy. This is an issue because natural resources, for the most part, are out of the control of humans, and are rarely providing the most energy possible. Solar energy only works during the day, and wind energy requires there to be large enough amounts of wind to create energy in the first place. Any fluctuation in the amount of power being provided to a certain place could result in serious consequences. This problem is perpetuated by the fact that many regions of the world simply can't use certain types of renewable energy; for example, a landlocked region can't take advantage of hydropower. This uncertainty could potentially provide a large challenge for nations trying to implement a completely renewable energy system.

However, the problem that is perhaps most important to address is the issue of the economic sustainability of implementing renewable energy globally. The initial installation of almost all renewable energy sources is expensive, and likely unreasonable for developing countries. The initial price for the average residential system can exceed 25,000 USD, which will provide a big hurdle for all nations, most notably nations with smaller GDPs, or nations with large populations. That said, the price of renewable energy has been dropping drastically in recent years. In 2019, half of solar and wind installations were cheaper than fossil fuels, with solar power falling by 82% and wind power falling by 39% over the past decade. This has prompted many nations to double down on their renewable energy reliance. Various solutions to this economic issue have surfaced over the past years, which have gotten countries emitting the most fossil fuels, such as China, Brazil, and India, to start moving towards more sustainable futures.

Definition of Key Terms

Renewable Energy

An energy source which comes from natural sources, and therefore doesn't deplete when used. Common types of renewable energy include solar power, wind power, and hydro power.

Non-Renewable Energy

Energy sources that, once used, are not replenished.

Fossil Fuels

A fossil fuel is a fuel formed from a natural resource, which can include coal, petroleum, oils, and natural gas. Fossil fuels all contain carbon, and are some of the primary factors that lead to global warming. They are heavily relied upon by most nations around the world.

Greenhouse Gases

Greenhouse gases are types of gasses that absorb and trap heat within our atmosphere. They are found within fossil fuels. The main types of greenhouse gases are water vapor, carbon dioxide, nitrous oxide, ozone, and methane.

Global Warming

The process of the Earth getting warmer over extended periods of time. It is largely driven by human emissions of greenhouse gases which cause heat to be trapped within our atmosphere.

Background Information

The Current State of Fossil Fuels

Fossil fuels have been an essential part of our lives for many years. They are used to produce heat and electricity and to power the engines of jets and cars. In fact most of the energy that allows for our society to function comes from a source that is non-renewable. It is for this reason that transitioning to a non-dependent model is such a difficult task for us to face. On top of that, fossil fuels make up a large part of the global market. 53.8% of the European Union's energy in 2010 was imported from outside of the EU. The International Monetary Fund estimates that the fossil fuels industry received 5.2 trillion USD in subsidies in 2017, making up 6.4% of the global gross domestic product (GDP). The infrastructure needed to power our globe through fossil fuels already exists, making it difficult to incentivize nations to switch to a form of energy that needs work to be done before it is a viable alternative to fossil fuels, which have been around for 250 years. This means that many nations see fossil fuels as a more reliable, safer source of energy that doesn't require drastic changes to the current energy industry. That said, many nations have started taking the necessary steps to eliminate fossil fuels emissions, which has in large part been spearheaded by the United Nations Paris Agreement. While the Paris Agreement simply calls for carbon neutrality, a large part of the agreement could be solved with renewable energy. In fact, zero-carbon solutions have started becoming competitive in sectors responsible for 25% of our carbon emissions. Also, nations such as Iceland, Paraguay, and Norway have essentially reached 100% renewable power over the past years. However, we are still far from a fully carbon neutral model of energy, with only 17% of our electricity generation coming from renewable sources.

The Pros and Cons of Renewable Energy

Transitioning to a renewable energy model has many potential benefits, but also has several disadvantages. A large advantage is that, renewable energy will never run out, as the natural sources of energy we harness, such as sun, wind and tides, can't be depleted. This is the primary reason that renewable energy is much more sustainable than fossil fuels; in other words, what we do with renewable energy will have no direct negative impact on our environment. Also, renewable energy sources require very little maintenance, making them relatively cheap once they have been installed. This is because they have very few moving parts (in contrast to traditional energy sources), and are generally much safer, not relying on flammable materials. The reason renewable energy is

more cost effective is that it requires no refueling payments and very few payments for either operation or maintenance. Another important advantage of renewable energy is its potential to spark local economies, by taking away the reliance on foreign nations to provide energy. Many countries in the world do not have any oil exports, making it a market dominated by several nations such as Saudi Arabia, Russia, Iraq, the United States, and the United Arab Emirates. Transitioning to renewable energy sources could potentially contribute to the independence of smaller nations from their petroleum and energy providers. The final and perhaps most important benefits the renewable energy provides are its environmental benefits. By decreasing our carbon footprints, we pave the way for future generations to have a positive impact on our environment. This has many long term and short term benefits, including a decrease in extreme weather events, preventing a rise in global temperatures, and stopping cardiac and respiratory health issues which often rise as a result of harmful pollutants.

That said, renewable energy also presents a serious challenge, and has several downsides that are important to consider. Although it is true that the cost of maintaining renewable energy facilities is cheaper than its traditional counterpart, the initial installation cost of those sources can be extremely high. This cost, especially for countries with small GDP's looking to widely implement renewable energy across a nation, can be an immediate reason in itself to stick with fossil fuels. Also, renewable sources are rarely giving 100% of their potential energy; the sun doesn't shine at night, some days are less windy than others, and problems with hydroelectric power such as droughts can occur with a moment's notice. This makes them much less reliable than fossil fuels. The process of storing energy is also a difficult one. Considering renewable energy sources don't work at all times of the day, it is important to store all the energy we don't use. That said, storage for these types of energy sources are often not enough to consistently store all the energy we produce, and what is available is not always affordable, presenting further economic burdens. The final con of renewable energy is that it has many geographic limitations. Many sources require very specific conditions, which many landscapes simply cannot provide. Some people live in shady areas, where solar energy would be ineffective, limiting the possibilities for a complete transition into renewable energy. However new options, such as purchasing renewable power or entering into community plans for renewable energy have started popping up, showing that the future for renewable energy is bright. That said, it is important to weigh these pros and cons against each other. While different people adamantly take positions on both sides, what is for certain is that a solution to this issue will

require flexibility and commitment.

Major Countries and Organisations Involved

United Nations Intergovernmental Panel on Climate Change (IPCC)

The IPCC is the United Nations' main committee and panel on climate change. It was created by the World Meteorological Organization and the United Nations, meant to provide scientific information about climate change. This is crucial because the goal of the IPCC is to then take that information and provide it to policymakers, who have the power to enact changes regarding climate change and sustainable development. The panel has already done work researching the potential to use renewable energy as an energy source. To help us reach net zero carbon emissions in the coming decades, they have strongly recommended clean energy be implemented globally. Although the panel has 195 members, and most of those members draw upon the recommendations of the committee to guide their climate related decisions, there is still work to be done, and other solutions, including the responsibility of the nations themselves, are needed to truly solve this problem.

United States of America

The United States is one of the two countries with the most carbon emissions per year and is therefore at the forefront of this issue. Although the United States has taken steps in the right direction, with 17% of its total electricity generation coming from renewable sources, it still makes up 15% of the world's carbon emissions. The nation's 2020 budget for renewable energy dropped to 700 million USD, from as high as 2.3 billion USD during past years. In 2017, ex-President Donald Trump made history, removing the United States from the Paris Agreement, destroying much of the work that the United States had done in the past. However President Joe Biden has officially re-entered the United States into agreement, showing that the United States has the potential to establish itself as a leader of renewable energy. For the first time in 130 years, the United States' renewable energy consumption has passed its coal consumption. Due to the resources it has available, the United States should make itself a leading nation regarding this issue.

China

China is the world's greatest emitter of fossil fuels, making up 28% of our global emissions. For this reason, it is important that China work hard to try to transition to a renewable energy model. Several challenges present themselves however, becauses a large part of China's economy revolves

around fossil fuels. That economy also acts as a base for the global economy, with many nations relying heavily on products produced in China. To solve that problem, it is important that all nations economies are not jeopardized, but protected while simultaneously implementing renewable energy across the nation. All that said, surprisingly China has started becoming a leader in renewable energy. It is currently the world's largest producer of wind and solar energy, and China owns five of the world's six largest solar energy manufacturing companies as well as the largest manufacturer of wind turbines. By 2030, it is projected that ⅕ of the country's energy will come from renewable sources, promising millions of jobs and a bright future for China.

India

Similar to the US and China, India is one of the largest emitters of greenhouse gas emissions. In fact, New Delhi, the capital of India, is the world's most polluted city, and India is home to 21 of the world's 30 most polluted cities. That said, India has reduced its carbon emission intensity by over 21%since 2005. Prices of solar manufacturing have decreased, and an increase in domestic manufacturing of solar energy has put India in a good position to start a new chapter in their history as a nation which relies heavily on renewable energy.

Norway

Norway, alongside its Nordic counterparts such as Sweden and Denmark, has become the first nation which comes to mind when we think of renewable energy. 98% of Norway's energy comes from renewable sources, with Norway taking advantage of hydropower and wind energy. It is important to note that many nations which have been able to implement viable renewable solutions also have much smaller populations which make the process easier, but Norway has still been a global leader regarding this issue. On top of that, Norway is a large exoprter of natural gas and oil, making up 25% of the EU's supply, showing a potential two-sided approach to this issue. Norway should put itself at the forefront of the fight for renewable energy.

Iceland

Iceland is one of the few nations which has essentially reached 100% renewable energy power. It is currently the world leader in renewable energy and its electricity output per person is also the highest in any nation in the world. Although it has a much smaller population and a landscape which

allows them to take advantage of various types of renewable energy, such as hydropower and geothermal energy, they are a source of hope for the global community and show that transitioning into an economically sustainable non-fossil fuels dependent model of energy is possible, even if it is on a smaller scale.

Sub-Saharan Africa

It is widely recognized that Sub-Saharan Africa is the region of the world where the energy situation is most dire. The region has the lowest energy access rate in the world, with only about one half of its population having access to energy of any form. That number translates to about 600 million people who lack electricity and another 890 million people using traditional fuels for everyday activities such as cooking. Sub-Saharan Africa also highlights the need for economic sustainability while implementing renewable energy, being a region with very little economic development. It is estimated that 27 billion USD would need to be invested in renewable energy yearly to finance this electricity access, of which only half is currently being reached. To achieve the United Nations 2030 Sustainable Development Goals, much work would need to be done in this region.

Singapore

Singapore is a good example of the possibilities that importing renewable energy could present. Partnering with nations such as Australia and Malaysia, Singapore, a nation that has very few renewable energy options as a result of their geography, has begun importing renewable energy from external nations to power their country. By making up parts of their electricity demand with imported renewable energy, Singapore helps solve the problem of climate change while also covering their own electricity needs. It also helps boost the provider's economy, providing income and jobs.

Australia

This past year, 21% of Australia's energy production came from renewable sources, in large part because of their geographical opportunities. However, beyond generating its own electricity, it is a large exporter of renewable energy, with it being projected that Australia could be the world's number one exporter of renewable energy by 2030.

Brazil

Brazil is the top producer of renewable energy in South America. This is in large part due to its vast investments in hydropower; a 14 GW project done with the Paraguayan government became operational this past year. Although the South American continent is not the most developed when it comes to renewable energy, they have the tools needed to make a renewable system work. Overall, Brazil is a leader in renewable energy of the Southern Hemisphere and should make that position clear during the debate.

Timeline of Events

1839

The Discovery of Solar Energy

Edmond Becquerel discovered that shining light on certain materials covered in a conductive solution creates an electrical current.

1887

The First Electricity Producing Wind Turbine

Although wind turbines have been used for hundreds of years, the first electricity producing wind turbine was built in Scotland by James Blyth.

February 12, 1979

The World's First Climate Conference

Held in Geneva, this first climate conference introduced climate change as an important issue and called on governments to prevent man from having an impact on the climate.

1987

The Hottest Year on Record (up to that point)

1987 was the hottest year ever recorded up to that point in time, with the 1980's being the hottest decade on record and holding seven of the eight warmest years up to 1990.

November, 1988

IPCC Established

The United Nation's Intergovernmental Panel on Climate Change was established, making it the first UN body specific to climate change. It still plays an important role to this day.

1990

First IPCC Report and Second World Climate Conference

The Intergovernmental Panel on Climate Change (IPCC) made its first report, determining that the planet has warmed by 0.5 degrees over the past century. They warned that measures had to be taken to limit human greenhouse gas emissions to prevent further problems. The Second World Climate Conference took place, and the Alliance of Small Island States (AOSIS) was created to give a voice to developing island states regarding global warming.

1992	**Climate Change Convention** Signed by 154 nations, the convention aimed to reduce emissions in industrialized nations by 2000.
December 11, 1997	**The Kyoto Protocol** A legally binding treaty to cut carbon emissions by an average of 5.4% by 2010. The United States voiced concerns and asked for "meaningful participation" from developing countries. President George W Bush denounced the protocol, not wanting to risk the American economy. This complex ratification process meant that no treaty was signed until February 16, 2005.
February 16, 2005	**Kyoto Protocol Comes into Force** Talks also began to surface about future steps to be taken, and it was decided that the second period of protocol would begin in 2012.
2007	**The IPCC wins the Nobel Peace Prize and Kyoto Protocol Part Two Discussions** On December 10, 2007 the IPCC, along with American climate activist Al Gore won the Nobel Peace Prize. Later that year in April, the United States Supreme Court ruled that the United States Environmental Protection Agency (EPA) didn't have the authority to regulate carbon emissions. At the UN climate summit in Bali, the United States was publicly booed during talks to agree to a new timetable for the Kyoto Protocol. They eventually decided to join at the last minute.
December 8, 2012	**The Doha Amendment** The Doha Amendment was proposed to be added to the Kyoto Protocol and to renew nations' commitments from 2013 - 2020. That said, this amendment has still failed to enter into force.
December 12, 2015	**The Paris Agreement** The Paris Agreement is a legally binding treaty which was adopted by 196 parties. It aims to reduce global warming to below 2 degrees Celsius by limiting greenhouse gas emissions, and could potentially be the most successful global action taken to promote renewable energy.

January 1, 2016

United Nations Sustainable Development Goals

The 17 Sustainable Development Goals were created as a part of the 2030 agenda for sustainable development. Goal number seven calls for Affordable and Clean Energy.

December, 2017

One Planet Summit

Through the UN, many leaders gathered in Paris and provided examples as to how money could be used to create a low carbon future. It is made clear that financial resources are a key part of solving the climate crisis and maintaining the Paris Agreement.

November 4, 2020

US Withdraws from Paris Agreement

Three years after President Donald Trump's promise to remove the nation from the Paris Agreement in 2017, the United States withdrew themselves from the agreement.

February 19, 2021

The US Rejoins the Paris Agreement

The day of his inauguration, President Joe Biden signed an executive order to rejoin the Paris Agreement, which moved into power 30 days later. In doing so, he made the United States' new position on renewable energy clear, and placed the nation at the front of the fight once again.

Relevant UN Treaties and Resolutions

Resolutions:

Dec. 22, 2005 - Resolution 60/199

The resolution touches on the promotion of "New and renewable sources of energy." It also stresses the importance of the implementation of the World Solar Programme.

Feb. 16, 2011 - Resolution 65/151

The resolution declares 2012 the "International year of sustainable energy for all," stressing both the importance of sustainable energy and its universal implementation.

Dec. 19, 2019 - Resolution 74/219

This resolution reaffirms the work and guidelines put into place by the Paris Agreement. It sites renewable energy as an important step to take to meet the UN's climate goals.

Dec. 30, 2020 - Resolution 75/221

This resolution aims to ensure universal access to sustainable forms of energy.

Treaties:

The Kyoto Protocol/Doha Amendment

The protocol established, adopted on December 11, 1997, put into operation the United Nations Framework Convention on Climate Change and their work. It was the most important and influential action the UN had taken up to that point. Different from many other actions taken by the UN, this treaty takes an annex-based approach. In other words, it is only binding for developed nations, and places a heavier burden on them than it does of nations with lower carbon emissions. It is for this reason that it only set binding emissions targets for 37 nations. This was a famously controversial approach, which stopped the protocol coming into force until 2005, with nations such as the United States voicing their disapproval. In 2012, after the expiration of its first commitment period, the Doha Amendment was created, keeping a similar approach. Although it was adopted in 2013, it required the acceptance of 75% of nations, a process which took another 7 years, only happening on October 28, 2020, close to when the second commitment period was supposed to end.

The Paris Agreement

The Paris Agreement is a legally binding treaty which was adopted in 2015 and moved into force in 2016. The stated goal of the agreement is to keep global warming to below 1.5 degrees Celsius.

Different from the Kyoto Protocol, the agreement is binding to all member nations, marking one of the first times all nations have been brought together to combat climate change. Although not every aspect of the agreement has to do with renewable energy, it reaffirms the importance that developed countries provide financial assistance and investments to help with the implementation of new technologies, including renewable energy, to help mitigate the effect of climate change globally. At the current rate of progress, the UN estimates that zero-carbon solutions "could be competitive in sectors representing over 70% of global emissions," 45% above where we are now. It would also be ignorant to not recognize the large amount of work that still must be done to keep its goals realistic.

The Africa Renewable Energy Initiative (AREI)

This initiative, spearheaded by the African Union and the United Nations Environment Programme, aims to achieve renewable energy through the continent's vast renewable energy potential. It is a good example of how it is possible to achieve renewable energy globally, even in developing nations, if the strategies considered are good ones. It set the goal of developing renewable energy over two phases, the first of which lasted from 2016-2020 and aimed to generate 10 GW of additional electricity, and the second of which is set to last from 2020-2030 and generate an additional 300 GW of electricity. For comparison, 1 GW of electricity is enough to power 110 million light bulbs, and would require 3.125 million solar panels or 412 utility wind-turbines to achieve, showing the ambition this project has. It aims to achieve this through large investments and finance, allowing the continent to overcome initial costs and making renewable energy the most economically reasonable option.

United Nations Sustainable Development Goals (Goal 7)

Goal 7 of the United Nations Sustainable Development aims to "ensure access to affordable, reliable, sustainable and modern energy for all." Although the goals don't specifically provide methods, it provides the jumpstart needed for nations to prioritize renewable energy. Included under goal 7 are five different targets, which include ensuring access to energy, increasing shares of renewable energy, and increasing infrastructure and research in the electricity sector. Since they were created in 2015, electrification rates and access to clean cooking fuels have gone up globally, and global primary energy intensity also improved. It also increased funding, with developing nations now receiving double the funds for renewable energy that they were in 2010, with a 46% increase in wind

power and a 19% increase in solar energy since 2017.

Previous Attempts to solve the Issue

Sun Cable

Sun Cable is “developing the world’s largest solar energy infrastructure network.” The company is based in Australia and has been supported by the Australian government; it is taking advantage of what many believe could be the future of renewable energy. Using vast amounts of solar power, the company not only generates power for Australia but has also begun exporting its power to Indonesia and Singapore. It projects that by 2027, it will be able to generate 20% of Singapore’s electricity supply. Using the exportation of renewable energy could be a fantastic opportunity to both provide renewable energy to nations who don’t have the geography to take advantage of it, but also to provide billions of dollars in revenue and increase jobs across a nation.

Lighting Africa

This program, in conjunction with the World Bank Group, aims to provide off-grid renewable energy products across Africa. By partnering with an external organization, they have been able to be provided with constant funding to ensure quality products. Although developing complete infrastructure to constantly provide large communities with power would be ideal, in many places (especially in parts of the world that are rural) that is simply unreasonable. Providing products which are renewable and can stand alone is a smart solution to that problem. So far, Lighting Africa has provided 32.3 million people enough power for their basic electricity needs at a reasonable price, and by 2030 aims to provide 250 million people with lighting and energy products. Standalone products that don’t provide energy on a full grid could be replicated similarly on a larger scale and could be a good solution for developing nations or rural communities not connected to a power source.

Possible Solutions

Improved Funding

When it comes to economic sustainability regarding this issue, it is important for nations, especially developing countries, to receive adequate funding. The good thing about this is that it primarily requires an initial investment, not long term commitment to countries being helped. If developing nations in Africa, South America and Asia could receive the funding they needed, they could get over the initial cost of installation of renewable energy and be able to focus on running the power sources. Examples of funds, such as the United Nations Green Energy Special Fund (GESF), sponsored by the Taiwanese government and the European Bank for Reconstruction and Development, have had success in the past, and increasing funding in the future would do the same.

Renewable Energy Sharing

This solution could help mitigate two of the main problems that renewable energy poses: geographic problems and economic problems. By importing and exporting renewable energy, nations would be able to decrease their dependence on fossil fuels and help create a new global industry. On a smaller scale, these attempts have started becoming successful around the world, and by using renewable energy sources from around the world, this could potentially provide a solution for this problem. It would also avoid the high installation costs of renewable energy sources, beneficial for developing countries, and would also provide the opportunity for private companies to work in collaboration with governments to provide this energy.

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