Forum: *Sustainable Development Committee (SDC)*

Issue: *Measures to conserve global resources crucial for the shift away from fossil fuels*

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Introduction

The catastrophic statements coming from recent international conferences on climate change may be seen as melodramatic. Inadequate resources, technology and political will may make the challenge to come seem impossible. Yet the United Nations is an institution built upon the premise of optimism: that the nations of the world can work together, that they can solve grave problems, just as they are able to band together and resolve conflicts. Still, scientists, year after year, warn that, unless the trends in global climate change are immediately reversed, the world will face disasters and disruptions that will dwarf past crises.

Whether the transition away from fossil fuels happens rapidly, as scientists demand, or slowly, as politics may demand, there will be a period in which the world migrates from carbon fuels to green. During this change certain resources and specific materials will need to be conserved. Technologies, minerals and even access to natural resources may need to be shared. The times demand worldwide cooperation as never before.

The difficulties that lie ahead will undoubtedly press the global community into discord and rivalry. It is the duty of the United Nations to see to it that the world does not fall into the seemingly inevitable disarray. Instead the UN must steer its members into cooperation, as only this will ensure the world's survival.

Definition of Key Terms

Fossil fuels

Fossil fuels are the most common source of energy in modern days, supplying 80 percent of the total global energy. They are made from decomposed living organisms such as animals and plants. Fossil fuels have been put into widespread usage ever since the 1880s, generating power for factories and transportation that eventually led to the Industrial Revolution. As they are a common source of energy, fossil fuels are also a harmful one. The extraction of fossil fuels is costly to both natural and human resources. Damage done by the mining, drilling, and fracking of fossil fuels is still incomparable from the carbon ignition that is released by fossil fuels usage.

Global warming

Global warming describes the rising of global average temperatures. The more general term, “Climate Change,” can usefully describe many periods throughout Earth’s history when temperatures have risen and fallen. In contemporary context, the term global warming refers to the dramatic rise in atmospheric and oceanic temperatures accompanying the Industrial Revolution, brought about by burning of fossil fuels for energy and various industrial and agricultural processes.

Green / Clean Energy

Green or clean energy is a term used for all energy sources that do not pose any harm to both the environment and the society. Most of these types of energies share the characteristics of being sourced from nature or are very easily replenishable.

Renewable Energy

Renewable energy refers to energy that is replenishable both naturally and artificially. As part of the clean energy category, renewable energy has been studied extensively and increasingly. Most see renewable energy as the solution and replacement to all harmful energy sources. Nevertheless, the effectiveness of renewable energy has yet to exceed those of “dirty” energy.

Zero-Carbon Energy

Zero-Carbon Energy, otherwise known as Net Zero Carbon and carbon neutral energy, refers to all energy sources that have no carbon emission. Since one of the most crucial disadvantages with fossil fuels is its large amount of carbon emission, the most suitable replacement would likely be one that could be described as or similar to Zero-Carbon energy.

Solar Energy

Solar energy is the energy gained through sunlight. Solar energy generates energy by harnessing radiant energy of the sun by solar panels. It has been highly popularized over the years due to the sun's seemingly unlimited supply of energy. In fact, many nations that are located in the desert areas, such as Saudi Arabia, are most likely to achieve full transition from fossil fuel to clean (solar, in this case) energy.

Geothermal Energy

In locales with the good fortune of lying on volcanic land, thermal energy can be tapped directly from the ground, providing a clean and nearly free source of energy for turbines and home heating.

Nuclear Energy

Some might not consider nuclear energy as clean due to the nuclear waste it produces. However, in the time frames that global warming science presents, nuclear energy is an established and reliable source of energy that, even if not improved upon, may offer an interim or transitional solution. However, the fear of nuclear power is exaggerated. These fears often originated from historical weaponization of nuclear power and accidents such as the 2011 Fukushima nuclear disaster. Contrary to popular belief, nuclear energy is one of the safest and most convenient forms of energy. It produces zero-carbon energy and humans are already experts on its usage.

Biomass

Biomass is a type of renewable energy that, like fossil fuels, sources from organic materials. The most notable difference between biomass and fossil fuels is that biomass does not release carbon; this alternative energy source is carbon neutral. Some disadvantages of biomass is that although it is renewable, it is not completely clean. Also, in comparison to other possible methods of shifting away fossil fuels, biomass is one of the most costly options.

Hydropower

The kinetic energy of fast-moving or falling water can be harnessed through a turbine to create electrical energy. On smaller scales, the kinetic energy can be used directly as mechanical power. However, it is unable to produce nearly as much as the energy produced by other less environmentally friendly sources.

Energy Storage

Perhaps the greatest challenge facing energy infrastructure and policy designers of the future is the consideration of energy storage. Energy consumption fluctuates throughout a day, week or season.

Balancing and distributing the time and place of demand with production requires practical means of storing energy, which usually means batteries. Battery technology has improved greatly, and it remains a pressing concern for engineering. Current technology uses Rare Earth Elements

Rare Earth Elements

Rare Earth Elements places geopolitical questions over who has them, who needs them, and how to equitably distribute them—not to mention the mining processes, which also pose pollution risks of their own.

Energy Conservation

Energy conservation refers to the general efforts of decreasing energy usage. As most source of energy today has detrimental consequences, energy conservation is one alternatives to protect the environment

Background Information

The discovery of fossil fuels' harmfulness

The book Silent Spring, published in 1962, first brought attention to the possibility that the earth was being massively impacted by human activities, specifically pesticide use. That and several highly publicized pollution-related accidents in the late 1960s led to the creation of Earth Day in 1970. This was the beginning of an international environmental movement.

Indifference and inaction 1960s-1990s

Even though there was awareness of human effect on the environment, most positive action was aimed toward reducing pollutants in the air (smog, acid raid) and water. Yet as early as 1965, the US President's Science Advisory Committee warned of a "greenhouse effect" that would affect world temperatures. A decade later, the term "global warming" was coined.

As air and water pollution were more visible and alarming to the public, most activity aimed at reducing egregious polluters. The effects of greenhouse gasses, much less noticeable at the time, were largely overlooked. In fact, it was not until the 1980s that scientists and the public alike began to focus on extreme weather events—heatwaves, droughts, extensive wildfires—that were occurring more frequently around the world.

A growing concern 1990s-present

The 1992 United Nations Conference on Environment and Development, or the "Earth Summit", was the first time that nations were asked to commit to addressing the problem of climate change and to stabilize concentrations of "greenhouse gasses." With theUnited States vice-president Al Gore as a prominent advocate, an anti-global warming movement gained vigor.

International efforts to mitigate and reverse the effects of global warming

The Paris Agreement

In 2015, 196 nations came together and negotiated the Paris Agreement. To anyone who has any level of knowledge toward environmental safety and climate change, this agreement should not be unfamiliar. This agreement, also known as the Paris Agreement Under the United Nations Framework Convention on Climate Change, was in replacement of all previously made agreements such as the Kyoto Protocol of 1997. The agreement states the hope of peaking the carbon emissions of each member state as soon as possible and began the reduction of greenhouse gasses. The signatories of this agreement planned to achieve the goals set by the agreement through transformations of economy and society. This agreement also focuses on transparency. Nations should share their progress on reducing carbon emission with other members. This not only keeps nations in check, it also creates frameworks and recommendations for other nations, especially LDCs, to build their plans on.

Key Issues

Sourcing and distributing rare-earth elements

Key to the quest of a fossil fuel-free future are solar panels, wind turbines and batteries. Using current technology, all three are dependent on rare-earth elements, such as arsenic, gallium, germanium, indium, tellurium and others. Although these elements may be relatively more or less "rare", they are not evenly geographically distributed in deposits that allow them to be mined practically. This gives some nations an advantage, and a possible source of leverage over other nations that do not have useful deposits.

Vagaries of the effects of climate change put countries on different schedules

The dramatic and immediate effects of climate change are unpredictable and likely to appear much more in some areas of the globe than others. Undoubtedly, some nations will be far more catastrophically impacted, while others will feel fewer effects, perhaps even some that might feel like improvements. The differing results could give nations differing ideas of the urgency of the problems.

Less developed nations at risk

Droughts, heatwaves, extreme wildfires, desertification, cyclones, and flooding may occur in surprising places, but it is likely that the global south will be afflicted worst, if not first. The countries of the region are largely developing, and lack the domestic finances and resources to deal with disasters and relief, much less massive and initially costly transition to renewable and carbon-free energy.

Geographically "lucky" nations may not feel the immediacy of the problem

Conversely, other nations in cooler or more insulated areas may feel that the crisis, not upon them yet, can be given lower priority. They may deem the news of climate catastrophes elsewhere as none of their concern. Worse, some may see the human suffering in other nations as a reason to close off, fearing refugees or disease, rather than an impetus to expand cooperation and aid.

Major Parties Involved and Their Views

United States of America (USA)

The United States of America was among the first to identify and address the problems of human activities on the earth and its climate, and was a signatory of the 1992 UNFCCC and the 2015 Paris Agreement. The presidential administrations, from George H.W. Bush's to Joe Biden's, have been inconsistent in their support for international agreements. In November 2020, the US withdrew from the Paris Agreement, only to rejoin three months later. Questions of authority plague discussions of, and legislation concerning, regulations to limit or eliminate greenhouse gasses. Prior to 2007, all initiatives to reduce emissions were voluntary, as the supreme court had not decided that the federal government had the authority to enforce regulations. The Congress of the United States, as expected, includes a wide variety of attitudes toward curbing fossil fuel use, emissions, and the move to clean energy. The US is the world's top producer of petroleum and natural gas, and the extraction industries are very prominent in regional and national politics.

People's Republic of China

As the world's leading producer of carbon emissions, China dedicated much effort in the transition away from fossil fuels. The Chinese government is aware of the detrimental effects to their

carbon emissions, however, they do have the most population to provide energy to in the entire global community. Knowing their possible outcome, China has become the world's leading producer of solar panels, electric vehicles, and other renewable energy based products. China has achieved more progress in making their society carbon-neutral than most other nations around the world to make up for their large amount of carbon emissions, surpassing the United States on both fronts. Now, China is no longer only known to have the world's largest carbon emission, it is also known to have the biggest environmental commitment. China also has more solar and wind farms than all other nations. But due to its population, this advantage is not sufficient to make China transform fully away from fossil fuel usage. The Chinese government is known to have close relationships with many local industries in order to achieve certain goals. In the case of shifting away from fossil fuels, the Chinese government has stimulated many renewable energy businesses and is slowly discontinuing its support to non-environmental policies companies. Tesla has become the largest importer of electric cars in China. China plans to put 325 million electric cars out on Chinese roads by 2026, all of which using China-made batteries to boost its renewable energy market. China also developed technologies to clean the carbon out of air so some of the fossil fuels industries and their employees can still survive until the transition is fully completed. Overall, China has made up for its emission by becoming a global green-superpower nation.

Republic of India

Coming up in third in carbon emission is the Republic of India, having more than 80% of electricity generated by coal. The Indian government is aware of their overreliance on coal and the consequences it brings; however, experts have pointed out that it is quite impossible for India to phase out fossil fuel usage. All changes to shift away from fossil fuels usages were done by the individual states. As of 2021, states like Gujarat, Chhattisgarh, Maharashtra, and Karnataka all made restrictions to stop new coal plants from being built. India's efforts for fossil fuels replacement at the national level seem fertile in comparison to the states' efforts. This isn't without reason. India's heavy reliance on coal is so deeply rooted that it will not only impact the national economy, the livelihood of many Indians would be dismantled. Many Indian families' rely economically on the coal business without being directly employed by the coal plants. There are resorts, restaurants, and many other services that are for the miners. These economies are referred to as the "coal belt". Another reason why the shift to non-fossil fuel society is difficult for India is due to its large population. In most cases, cleaner energy means weaker energy. Smaller population nations are more capable to achieve total clean energy usage since they require less energy than other nations. The Indian government is hesitant to contribute to the transformation to clean-energy society due to the fact that many of its citizens would not have access to power if new clean energy is put into use.

European Union (EU)

The EU has pledged to implement its international commitments on climate change with at least 55% fewer greenhouse gas emissions by 2030. Binding emission targets for key sectors of the economy to reduce greenhouse gas emissions have been agreed to by the EU member states. Of the parties involved in the aim to reduce greenhouse gasses, the EU has made better progress than most others, even promising to increase their target of 40% reduction by 2030 to a 55% reduction within the same time frame.

Russian Federation

Russia is one of the nations that are rich in natural resources; largest in natural gas, second in coal, and eighth in oil. Russia's relationship with oil is unlike most other oil-drilling nations; they see the source as their pride, not only just money. Oil gave these people (in the oil-drilling parts of Russia) identity. They have built museums and memorials, written movies and novels for their “heroic” oil workers. One can imagine how some parts of Russia are not fully aware of the danger that climate change could bring. The Russian government hopes to achieve net-zero carbon emission by 2060. For now, the government is working toward making clean energy to coexist with “traditional” energy-fueled industries. Both the government and the industries are working together for the traditional energy sources, ones that are less environmentally friendly, would be suitable under the Paris Agreement’s standard.

Timeline of Relevant Resolutions, Treaties and Events

Date	Description of event
February 12th – 23rd, 1980	**First International Climate Programs was created (WCRP)** In 1980, the world had its first climate change conference, named appropriately as the First World Climate Conference (WCRP). It was a combined effort of many previously established international scientific organizations such as the International Science Council (ISC) and the World Meteorological Organization (WMO). This conference was held for the purpose of science and to research on variation and their cause in climate.

During this conference, the participants established the World Climate Programme, World Climate Research Programme, and the Intergovernmental Panel on Climate Change (IPCC) later on. These are all programs that are of great importance in global environmental protection to this day.

Intergovernmental Panel on Climate Change (IPCC)'s Establishment

November, 1988

Though they were directly in a cause-effect relationship, the Intergovernmental Panel on Climate Change was established eight years after the First World Climate Conference. The panel was created from the same sponsors of the WCRP. It was for the goal of achieving cooperation among various nations on the topic of science. At the time, the United States under the Reagan Administration called for restrictions on greenhouse gasses. This panel was then utilized for providing data and information regarding climate change and the possible harm it could lead to.

166 nations signed the United Nations Convention on Climate Change

June 3rd – 14th, 1992

On May 9th, 1992, The United Nations Framework Convention on Climate Change was adopted and it was opened for signature in June. The signatories finally recognized climate change as a human-caused issue and the fact that it requires action upon. The convention was made to combat human activities that could worsen the climate system and bring various damages down to the environment. Its main objective is to stabilize greenhouse gas concentration so the climate system won't be interfered with.

Kyoto Protocol

December 20, 1997

The Kyoto Protocol was the first time the international community committed to real, verifiable policy changes toward the reduction of greenhouse gasses. It was an extension of the previously mentioned United Nations Framework Convention on Climate Change. The protocol identified and targeted six greenhouse gasses as most harmful and in need of most attention. These are: Carbon dioxide, Methane, Nitrous oxide, Hydrofluorocarbons, Perfluorocarbons, and Sulfur hexafluoride. This agreement bound 37 industrialized nations together to reduce all those aforementioned gas emissions in each respective territory through monitoring and record taking.

April 22nd, 2015	**Paris Agreement** The Paris Agreement is an international treaty on the topic of climate change. For the first time, all countries are signatories to a climate change reduction regime. A warming target of 2°C is set and the developed nations concede that no global program will succeed without rich countries' support for developing countries' efforts. The agreement works toward a transformation of economy and society from non-environmental friendly to zero-carbon. Most, if not all, efforts put into low-carbon solutions and creation of new markets in replacement of dirty energy sources. The agreement estimated 70% of global emission to be zero-carbon by 2030.
November 12th, 2021	During the United Nations Climate Change Conference, better known as COP26, the participating member states established "Green Climate Fund", which. COP26 is the first COP to mention fossil fuel. However, instead of actually initiating any efforts to shift away from fossil fuels usage entirely, COP26 participants only asked for a decrease in unabated coal power usage. Greta Thunberg summarized this conference in an adequate manner in an interview with BBC: "Nothing has changed from previous years really. The leaders will say 'we'll do this and we'll do this, and we will put our forces together and achieve this', and then they will do nothing."

Relevant UN Treaties and Events

- First World Climate Research Programme, 1980
- Intergovernmental Panel on Climate Change establishment, November 1988
- The United Nations Framework Convention on Climate Change, 9 May 1992
- The Kyoto Protocol to the United Nations Framework Convention on Climate Change, international treaty, 20 December 1997
- Paris Agreement Under the United Nations Framework Convention on Climate Change (COP21), 22 April, 2015
- 2021 United Nations Climate Change Conference (COP26), 12 November 2021

Evaluation of Previous Attempts to Resolve the Issue

Past agreements to curb emissions of greenhouse gasses and transition to clean energy sources need renewed attention and a zealous commitment from all nations of the world. None of the agreements so far have addressed directly the inter-governmental challenges that will arise from the transition, however. As deadlines approach, the participating nations must include the conservation of resources necessary for transition *as well as* obligating member nations to global responsibility to poorer and more severely afflicted nations.

Possible Solutions

The reason why the transition from fossil fuels to alternative energy sources is so complicated is that there are people who benefit and/or rely on the fossil fuel economy. As one can conclude from the key term section of this report, there are numerous alternative energy sources that can replace fossil fuels and reduce the carbon emissions by a large percentage. The most feasible solution to shift away from fossil fuels is for the nations to find a way to compensate the people who suffer from the shift, such as job loss and decreased income.

In order to address the issues presented by the need to conserve rare-earth elements, international agreements that ensure a monitoring mechanism can be forged. Much as agreements allow international inspectors and monitors to watch civilian nuclear power production, a similar framework can be made to ensure that rare-earth elements are properly conserved and, where necessary, shared with nations that do not have them.

A second approach could see international efforts to explore more sources for the rare-earth elements. These elements are fairly well distributed on earth, but only a few sites are practically exploitable. More sources around the world could remove many of the perils of depending on a few countries for them. The negative side of this, of course, is that facing the challenges of global pollution ought not include *more* mining.

Finally, the international community may embark on a focused drive to improve technologies that would allow the production of carbon-free energy with greater efficiency, requiring fewer rare-earth elements, or the development of completely new technologies that would eliminate the need for them altogether.

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