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Promoting global utilization of new technologies to reduce the impact of climate change

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Introduction

The world continues to face one truth: it is getting warmer. Every year the needle continues to move up on the global thermometer and the globe is feeling the consequences of this. Wildfires occur more frequently and vehemently, droughts and floods destroy communities and economies more commonly and strongly, and the weather happens more unpredictably and destructively.[1]

The Member States of the United Nations is not blind to this reality. Of the 17 Sustainable Development Goals that were agreed in 2015 to guide all development activity world-wide, 12 deal directly with minimizing or preventing climate change in some way.[2] But there is great disagreement among them about how to respond. Member States differ on how much to change their economic systems, how much economic risk to accept, how quickly to respond, if they will respond at all in the near future—member States led by China and India want to delay action until their goals of ending poverty have been achieved—and how much to spend, as well as where the money will come from.

The General Assembly tends to approach climate change issue by setting goals and encouraging progress. One of the main criticisms of United Nations efforts to guide global responses is its lack of specific solutions for problems the world faces. Because its Member States are sovereign, and cannot be told what to do, General Assembly resolutions stress setting goals and encouraging Member States to make efforts to achieve them.

Can the Member States of the UN agree to do more? Can they promote specific technological measures to help persuade or even reverse climate change? Can the Member States agree support specific measures? Can they agree to establish new agencies and fund them to make these technologies available?

As the world teeters, humanity begins to do as they usually do: invent. Technology provides a hope with which nations can prevent and eventually reverse the harmful effects of climate change. However, technology faces multiple issues all of which require multilateral and cohesive solutions. Within this Conference of Parties on Climate Change (COP) the member states meet to try and provide a framework which analyzes which technologies exist, which ones they can hope to exist, and how they can change the world for their usage to be widespread.

The weight of past decisions teeters the planet into a path for a dark future, it is now that heavier decisions need to happen to bring the world back into balance.

Background

The main technology which the international community utilizes are renewable energy resources. Solar, geothermal, wind, hydropower, and other renewables pave the way for a net-

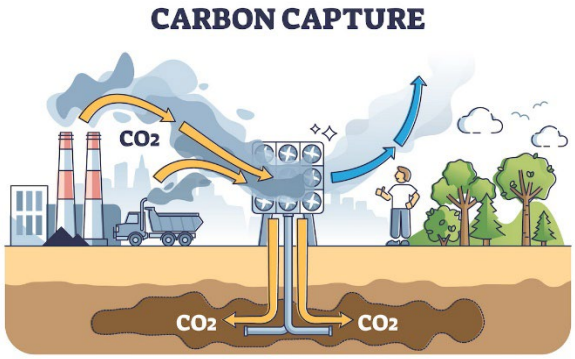
[1] Muhlren Owen, "11 Interesting Climate Change Fact"

[2] "Climate Action - United Nations Sustainable Development"

zero carbon future. For example, In 2020 renewable energies accounted for around 28% of the entire globe's energy profile.[3] This of course shows the world's propensity to further invest into renewable energy as it is one of the most proven forms of preventing climate change from occurring.

While it may seem that renewable energies are the end all be all to preventing the climate crisis from occurring, one needs to note the weaknesses that it also has. For one thing, renewable energy is usually more expensive than non-renewables. This leads to an issue where more developed nations are able to invest into these resources, while the rest of the world lags behind. Any resolution needs to address this issue, as a global effort is necessary to stop further damage. Another issue which these resources face is their unreliability. One of the main appeals of non-renewables in electric grids is their ability to match the current demand at any point in time. Renewable energies by and large do not have this ability. If the sun does not shine, then solar energy does not work. If the wind does not blow, then wind turbines do not work.

So far scientists have two main fixes for this, diversification and batteries. Diversification is the idea of utilizing more than one source of energy, which ideally are different types of renewable energies. If one has solar energy then it is also smart to have biomass energy, as the production biomass energy can increase or decrease at the will of those overseeing any electricity grid. The other solution, batteries, is one that is more in development. The main idea behind this is to store renewable energy when there is a surplus (like solar on a sunny day) to use it when there is a deficit (like solar on a cloudy day). This COP needs to decide how to further advance research and utilization into these.



Another technology which nations utilize is Carbon Capture Technology, or Carbon Sequestration. The idea behind this is to remove $C0^2$ from emissions before it reaches the atmosphere. To do this, companies install filters at various coal plants to remove $C0^2$. This technology has the direct benefit that it allows for an immediate way to reduce carbon emissions in existing grids. Coal plants can use this to immediately allow for a reduction in emissions while bridging the gap towards a full renewable energy electric grid.[4]

Removing $C0^2$ from the atmosphere is also something within the interest of the global scientific community. Direct Air Capture technology creates plants whose sole purpose is to filter CO^2 from the atmosphere. This technology is still within its infant stage and remains expensive and highly energy intensive to work. On the other hand, it provides a hope that carbon emissions are reversible at a faster rate than previously thought. If this technology becomes inexpensive and reliable, then it would allow humanity to reverse climate change.

[3] Morris Jennifer , "Renewable Energy"

[4] "Carbon Capture, Utilisation and Storage"

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Current Issues

There are a few major roadblocks which prevent the world from properly utilizing these technologies. An improper way to store renewable energy might be the most major of them. Without proper energy storage, current electrical grids cannot become fully reliant on renewable energy. This is one of the primary reasons besides economic factors that most electrical grids are heavily mixed between renewable and nonrenewable energy sources. Demand matching is the primary goal for an electrical grid and it cannot happen with only renewable energy at the current moment. Investment into battery technology or more research and development into batteries is necessary to properly satisfy the needs of an electrical grid with only renewable energy.

Another roadblock is the global politics associated with carbon emissions. Historically, Europe and North America emitted a majority of the world's entire carbon dioxide since the industrial revolution, while being a minority of the world's population.[5] Not only this but developing countries also face the consequences of climate change the most. Famines, floods, droughts, and storms affect nations without modern infrastructure the harshest. This brings about the idea of climate justice as more equal economic conditions are necessary to properly utilize technology.

The other issue with climate change technology in particular is that a solution needs to occur *now*. The adverse effects of global warming are already taking root and a solution can no longer happen later. A great example of this is fusion technology. In the 1950's, research into fusion technology began. For humanity it represented a holy grail to solving all of its problems as it provided promises of being a clean and endless supply of large amounts of energy. However, its arrival was always "20 years" away according to researchers, but through the years it faced more and more issues. It is now 2023, and fusion technology is still about "20 years" away. Fusion technology provides insight into the dangers of speculating on future technologies. Research and Development provide many benefits, but one needs to take the current solutions at hand to stop something as devastating as global warming.

One also needs to consider the "How?" when talking about all of these technologies. Scientific organizations and various governments possess the knowledge of what *needs to happen* to stop climate change, but lack the specifics on how these solutions *will happen.* Different economic models work better for different countries depending on their culture and what stage of development they are in. Oftentimes economic models might need to change drastically within a country to allow for change to happen, but if such a change happens without proper precautions then it puts the entire nation into economic chaos.

[5] Ritchie Hannah, "CO2 Emissions"

Take for example, Saudi Arabia, a country where 46 percent of its GDP comes from oil and its related products. [6] In order for the entire global community to achieve carbon neutrality, oil needs to eventually not be a resource the world uses. This of course would plunge Saudi Arabia into chaos, where half of its economy is suddenly nixed in favor of a different technology. Saudi Arabia is not the only country with this issue; Russia, Brunei, and others export many sources of non-renewable energies and their economies are heavily dependent on this. This issue applies to every country on different levels of scale.

This is not to say that renewable energy and technology is bad for the global economy, quite the opposite is true. Doubling the total amount of renewable energy by 2030 would increase the global GDP by 1.1%, however, one needs to address how these countries can transition into a different economic model. [7]

The way this relates to technology is that it provides a way for these economies to transition their economic models. Technology allows for the death of oil, coal, and other non-renewables to turn into a metaphorical phoenix that gives rise to a more robust economy. This COP needs to address *how* such industries can utilize technology to do this.

Monetary aid towards creating infrastructure within developing nations is another issue. Examining China's economic diplomacy gives insight into why monetary aid is not always the best way to properly allow every country to utilize technology. China is the biggest economic contributor to renewable energy within Africa, but they maintain ownership of the infrastructure by incurring debt onto the nations they offer this help to. Furthermore, they also do not train individuals within these countries how to maintain this infrastructure, increasing dependence on Chinese help in the future. [8]

Any resolution passed needs to consider this issue as well as utilization of technology cannot come at the expense of economic instability within more developing nations.

Past Resolutions

The United Nations debated this issue before as it acknowledges the need to utilize every resource possible in order to mitigate the effects of climate change. Most relevant to this meeting of the COP is the *Resolution A/Res/77/320*, the most recent resolution approved by the United Nations Plenary on how technology can fight climate change. One of the key issues mentioned within this document is that fighting inequality

[6] "Saudi Arabia GDP Growth"
[7] Ferroukhi Rabia , "Measuring the Economics"
[8] Omolere Mitota, "China's Renewable Energy Empire…"

on a global scale is necessary to properly utilize technology. Countries that are not as equipped with infrastructure, such as internet coverage and electricity, cannot implement the technologies which help combat climate change. Investing into solar, hydro, or other renewable energies within these less developed countries helps build up their infrastructure, while also allowing them to more effectively utilize other technologies. Overall, the United Nations pushes a message that solving inequality on a global scale will ultimately be the most important step to properly utilizing technology everywhere. [9]

It is important to consider these clauses within any new resolutions written, as the United Nation provided framework in the past on how to solve these issues. One of the goals of this COP is to analyze this framework to see what works and what does not.

Another important document released by the United Nations is the 2023 Technology and Innovation Report released by the United Nations Conference on Technology and Innovation (UNCATD). This report is a document produced by hundreds of scientists and experts within the field of climate change and contains detailed information on what present and emerging technologies help the most with climate change and what strategies are the most effective at utilizing them. [10]

Country and Bloc Positions

The most important thing to consider within the different blocs on a global scale especially with an issue such as climate change, is how economically developed each bloc is. Domestic policy is also the main focus here, as it provides a realistic view into what these countries actually do to fight climate change.

China: China continues to become a developed nation, but it still aims for economic growth rather than long term sustainability. It aims to peak its carbon emissions by 2030 and then become carbon neutral by 2060. It also continues to invest into less developed countries to try and help them utilize technologies. It often does so with debt involved.[11] Above all, China insists that every country be left free to follow its own path on specific choices, so their sovereignty is not infringed. China previously invested massively on global infrastructure aid through its Belt and Road Initiative (BRI). Today, China offers less development assistance of any kind, preferring to offer development loans from Chinese banks, in exchange for guarantees that Chinese firms will be able to buy much of the products.

Europe Union (EU): The European Union (EU) committed to reducing carbon emissions by at least 55% by 2030 and to be carbon neutral by 2050. The EU also says it will pledge 30% of its total budget towards climate change prevention projects. It is also important to note that every country within the EU has a different view on climate change and how to mitigate its effects. [12] Countries like Germany and France focus much more on becoming Green, while countries like Poland focus more on their immediate economic growth rather than investing into renewables.

Fossil Fuel Exporting States: Led by the Members and Associate Members of the Organization of Petroleum Exporting Countries (OPEC), most oil and gas exporters want to maintain production through the foreseeable

[9] "Impact of Rapid Technological Change…"
[10] Sirimanne Shamika, "Technology and Innovation Report"
[11] "Climate - Tracker China"
[12] "Climate Change: What the EU is Doing"

future. At the CoP 28 Conference in Dubai in November-December 2023, they agreed to establish the goal of reducing oil consumption, in the long term. Some oil exporters, especially Norway, the United Kingdom, and the United States, are more supportive of measure that would promote substitutes to fossil fuel burning.

Non-Aligned Movement (NAM): the 120 Member States of the UN's largest voting bloc are divided on measures to halt or reverse climate change. Many are very supportive. Others depend on income from oil and gas exports and fear the consequences of rapid change. They are more supportive of measures to take effect in the future, after their oil reserves decline.

All NAM member states agree that paying for new technologies—from wind power to carbon sequestration—is the responsibility of the wealthy former colonial states who freely polluted for decades and decades before their own economies began to emerge. Some NAM countries worry that new technologies will be made available to them by cutting current development assistance. They demand that technological assistance be financed with new funding sources, so current humanitarian and development aid projects can continue.

Russia: Much of Russia's current power stems from its exports of natural gas to other nations. This was especially evident at the beginning of its war with Ukraine, where the largest leverage it had over Europe was revoking natural gas from European countries. This dependency on a non-renewable resource for economic and political power naturally makes it less likely to agree to any resolution which might make other countries less dependent on them. Their domestic policy reflects this where companies are only required to report emissions by 2024. They are not expected to adapt any new technologies to mitigate climate change.[13] Russia also will oppose UN measures that might endanger its freedom to export oil and gas, or could establish a precedent that could be sued to impoverish Russia.

[13] "Policies & Action Russian Federation"

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