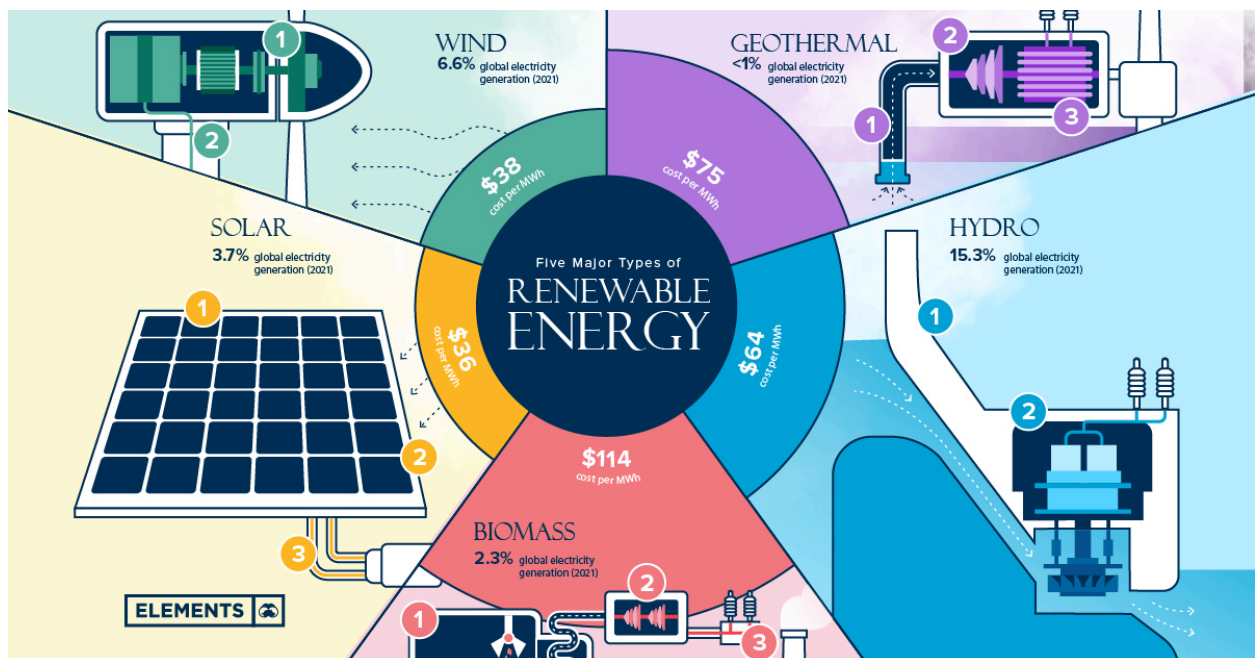


Forum: United Nations Economic and Social Council (ECOSOC)

Issue #2: Addressing the social, environmental, and economic impact of implementing renewable energy.

Student Officer: Ana Saa

Position: Chair of the United Nations Economic and Social Council



Introduction

The idea of converting fossil fuels and other carbon products to renewable energy has been debated since climate change started being considered a global crisis. The burning of fossil fuels leads to the release of greenhouse gases, which lead to an increase in global temperatures by trapping more heat in the atmosphere (Nunez). According to UNEP, there could be irreversible repercussions on the Earth's ecosystems if we continue burning

fossil fuels, causing species extinction. These effects will make it impossible to live on Earth due to a lack of resources, air pollution, etc. Because of this, many scientists and experts rally for the implementation of renewable energy sources to ensure the climate crisis can be stopped or at least slowed down (Roberts).

Jackson reports that climate change was first identified as a crisis in the late 1980s and early 1990s by the United Nations Environment Programme. Although these reports related to climate change, none were specifically linked to renewable energy. A recent conference that has had a significant impact on the international perception of renewable energy is the UN Climate Change Conference (COP21), which concluded with the signing of the Paris Agreement in 2015. According to the UN, this treaty describes the first international plan of action against the climate crisis, with its main goal being to keep the global temperature from rising above 1.5°C.

The controversy over renewables begins as an economic debate, especially since many countries rely on the exportation of crude oil as their greatest source of national income. In the long run, however, the renewable energy industry has also proven to be more cost-effective while opening up new markets and local job opportunities (Fields).

These shifts also have an important social impact on our communities, since, according to Fletcher, these new employment opportunities will also develop new, well-paying careers we don't know about yet and improve the overall quality of life for many people and their families. However, these changes won't be seen immediately, causing people to question its effectiveness in comparison to what the fossil fuel industry offers.

From an environmental perspective, scientists have proven that renewable energy sources pollute significantly less (or are even net-zero) in

comparison to fossil fuels since they don't release carbon dioxide, methane, or any other greenhouse gas.

Renewable energy forms a large part of the solution to reverse the effects of climate change since energy is a resource we use to mobilize and produce everything we consume. Despite the individual stance each party may have, common ground must be found to solve this issue to ensure a safe, healthy, and sustainable future for all.

Definition of Key Terms

Renewable energy: Energy created from natural sources that restore themselves faster than humans can consume. Some forms of renewable energy include solar, wind, hydroelectric (water), geothermal (naturally occurring heat sources), and even biofuels (plant-based fuels).

Climate change: Significant changes in the Earth's climate patterns caused by both natural changes and human activity. The main human cause of the current shift in climate patterns is the burning of fossil fuels, which has been increasingly occurring since the Industrial Revolution in the 1800s.

Fossil fuels: A general term for hydrocarbon materials such as carbon and natural gas. They are generally created from the fossils of ancient organisms found in sedimentary rocks and burned as a heat and fuel source

Greenhouse effect: The trapping of heat in the Earth's atmosphere due to the release of gasses. This effect contributes to the rise in global temperatures, and, therefore, to climate change.

Greenhouse gasses: Gasses that contribute to the greenhouse effect, which include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and other fluorinated gasses.

Net-zero: The goal of eradicating carbon emissions or reducing them to the

point where nature can naturally process them. Some parties propose that these smaller emissions can be considered “zero” if other carbon-eliminating measures are taken.

Pollution: The presence of contaminants or other substances in ecosystems where they aren't naturally occurring, such as the overwhelming presence of greenhouse gasses in the atmosphere.

Carbon negative: When a specific action or entity cleans out more greenhouse gasses from the atmosphere than what they emit.

Carbon footprint: How much carbon pollution a specific country or entity emits in a specific period.

General Overview

Consequences of climate change

Although renewable energy technologies and research have advanced a lot over recent years, there are still lots of things we don't know. From an environmental perspective, Gibbens suggests renewables are necessary to replace fossil fuel combustion as energy, given that this process contributes to 75% of global greenhouse gas emissions (UN). Some of the side effects of fossil fuel combustion are rising sea levels, changes in weather patterns, and the extinction of important species, irreversibly altering ecosystems and their respective food webs. Although at first glance, many don't think these changes will affect the lifestyle we currently know, that is far from the truth. The emission of greenhouse gasses also has an immediate effect on people's health, with WHO reporting that reduced air quality caused by air pollution currently accounts for 43% of deaths from chronic obstructive pulmonary disease and 29% of deaths from lung cancer. The World Bank reports that as climate change continues to

progress, agriculture will also be affected, since there will come a point where crops won't be able to adapt to the changing temperatures, rainfall, etc.

Applications of renewable energy

Experts have contradicting conclusions about the best replacement for fossil fuels since it isn't a question of if the step should be taken, but more of *how* it should be taken. Most recommendations state that the ideal clean energy grid shouldn't rely only on one source (solar, wind, etc.) but should rather include a mix of several (Roberts). However, while some argue that the clean energy solution should only include renewable energy sources such as the ones mentioned above, others argue that nuclear energy and carbon capture and storage (CCS) are also necessary. This argument is mainly based on the fact that although renewables are naturally occurring, this also means that they aren't constant; the sun won't always be shining and the wind won't always be blowing.

Economic impacts

Although research suggests that renewable energy will help counteract climate change's current and future effects, some argue that there are still many economic obstacles that make it difficult to invest in upcoming technologies. Countries whose economies rely heavily on fossil fuel production and exports state that their country will be, at least in the short and medium term, negatively impacted by substituting oil with renewables. According to Turgeneva, Russia, for example, states they do not wish to invest in renewable energy due to it being a long-term investment, while fossil fuels provide them with immediate income and benefits. Other smaller countries continue to invest in fossil fuels due to their low cost, especially for lower-income communities that can barely access electricity at all. As Demetrios Papathanasiou, the Global Director of Energy and Extractives at the World Bank stated, "*Poorer countries are stuck in a*

vicious cycle where they pay more for electricity; cannot afford the high upfront cost of clean energy; and are locked into fossil fuel projects. In essence, they are paying a triple penalty for the energy transition," (World Bank).

Major Parties Involved and Their Views

Sweden

Sweden is one of the world's leading countries in implementing renewable resources since over 60% of its energy came from renewable sources in 2022. According to the Swedish government, approximately 70% of Sweden's energy comes from the combination of hydroelectric power plants (41%) and nuclear power plants (29%). Sweden is consistently active in UN conferences regarding advancements on the matter, like the Paris Agreement in 2015, and has even set its own goals, like reaching net zero by 2045 at the latest (Swedish Environmental Protection Agency). Since 2003, they have also implemented an Electricity Certificate System in which companies that must fulfill a clean energy quota for their business can purchase a certificate from their energy producer to legally validate their carbon footprint (International Energy Agency). The Swedish government also invests a lot in investigating new renewable energy possibilities, such as the implementation of hydrogen as a fuel and heat source.

Russia

Russia is known to be one of the world's largest producers of natural gas, which is not considered a renewable energy source. The fuel and energy industry is the country's biggest source of income, making up 12.8% of its gross domestic product (GDP) in 2021, according to Statista. In the past, this has caused the Russian government to question investing in renewable energy since it would mean an immense shift in their national economy. For example, during a conference in 2016, the Deputy Minister of the Energy Department of Energy Saving, Mr. Mitreykin, stated that renewable energy "is a Western weapon

against the Russian Federation” (Turgeneva). Sauer states that a turning point in these opinions was Russia’s adoption of the Paris Agreement in 2019, 4 years after most countries. Over time, however, the government has set goals for reducing its carbon footprint, such as reaching 5% renewable energy in its total mix by 2024, according to Kakade.

United States of America (USA)

Renewable energy is a highly politicized topic in the United States, especially due to the polarization of the Republican and Democratic parties in their opinions regarding it. For example, the country has agreed, withdrawn, and agreed again to join the Paris Agreement due to disagreements from three different administrations. The country has been the biggest producer and consumer of natural gas for a very long time, having implemented new technologies over time that have facilitated different methods of oil extraction (Diaz). However, the use of renewable energy sources in the country doubled between the years 2000 and 2019, as new policies were implemented to facilitate the use of wind, solar, and biofuels. An important national policy is the Energy Policy Act, which includes support for companies that innovate to prevent greenhouse emissions as a by-product of industrialization (EPA).

China

China is the current leading market for renewable energy and is simultaneously the country with the highest production of greenhouse gasses in the world. China led the way in 2022 by installing more solar energy plants than all other countries combined the previous year. From 2022 to 2024, Park reported that China had a 66% increase in wind power magnitude. On the other hand, however, Chinese President Xi Jinping withdrew from the Paris Agreement in 2023, stating that “China will decide its own path in achieving carbon goals and will not be ordered about by others.” (Shepherd, et al). China’s economy is still

heavily dependent on fossil fuels, and Furchtgott-Roth states that the government has made it very clear that they will not leave fossil fuels behind until renewable energy profits compensate for the loss of fossil fuels.

Timeline of Events

Date	Description of Event
700 BCE	Ancient civilizations used mirrors to reflect the sun's rays to start fires.
300 BCE	The Ancient Greeks and Romans lit ceremonial torches with the magnified sun rays' reflection from a mirror.
1590	The use of windmills to mill grain and pump water in the Netherlands is perfected and expanded due to its efficiency.
Late XVIII century	With the boom of the Industrial Revolution, fossil fuels began to be implemented as an energy source.
1767	Horace-Benedict de Saussure creates the first "solar collector", which uses three layers of glass to magnify the rays and effectively heat food.
1876	Professor William Grylls Adams invented the first solar cells made from selenium, which can capture solar energy at a higher rate than ever before.
1887	Scottish engineer James Blyth invented the first wind turbine to generate electricity.
1950	The International Solar Energy Society is formed, a

	non-profit international agency that incentivizes the implementation of renewable energy.
1954	The first commercially available silicon solar panel is put on the market by the company Bell Labs.
1970s	Energy crises in places such as the US, New Zealand, Canada, and Western Europe force countries to invest in renewables as a replacement for oil shortages.
1972	The United Nations Convention on the Human Environment is signed, which states that signatories must investigate the effects of greenhouse gas emissions and aim to reduce them to be able to preserve the environment.
1987	The Montreal Protocol on Substances that Deplete the Ozone Layer is signed, in which signatories must regulate their use of man-made chemicals that affect the ozone layer. This protocol urges countries to seek out alternative sources of energy.
1991	Denmark is one of the first countries to pioneer in renewable energy alternatives, establishing the first offshore wind farm in the world.
2015	The Paris Agreement was signed at the UN Climate Change Conference (COP21), which binds all signatories to create 5-year action plans for the following decades to ensure global warming is limited to 1.5° by 2030.
2022	The Russia-Ukraine War set off a global oil crisis as many countries applied sanctions on Russian oil as a form of

	support to Ukraine. Many sought to invest in renewable energy as an alternative.
2023	The second United Nations Climate Change Conference (COP28) was held, where nations agreed that action to achieve the previous conference's goals was falling short.
Present day	The world is currently producing the most energy from renewable energy sources ever recorded, but current forecasts predict that, by 2030, global renewable capacity will only have increased by 2.5 times since 2022 despite the set goal from COP28 of a tripled capacity.

UN Involvement, Relevant Resolutions, Treaties, and Events

United Nations Convention on the Human Environment

The United Nations Convention on the Human Environment was the first-ever UN convention to acknowledge the negative effects of greenhouse gasses on the environment and the effects the emissions could and were causing to the human lifestyle. The convention's action plan stipulated humankind's responsibility to preserve the Earth's environment and renewable resources, recognizing that countries must step up to protect the flora and fauna in the name of the current and future generations (UN). The convention also culminated in the establishment of the United Nations Environment Programme, which, as the name suggests, helps oversee most environmental concerns, including the transition to renewable energy.

Montreal Protocol on Substances that Deplete the Ozone Layer

The Montreal Protocol addresses the production of what would later be coined as greenhouse gasses and the harm it creates to the environment and humankind by propagating air pollution. According to the Australian Department of Climate Change, Energy, the Environment, and Water, this agreement was the first of its kind, establishing the need for regulations on the emission of ozone-depleting substances (ODS) such as carbon tetrachloride, chlorofluorocarbons, halons, etc, setting down restrictions on 96 types of ODS. This agreement's establishment began to create consciousness on the matter of air pollution, which is also inevitably tied to the transition to renewable energy (UNEP). The protocol continues to be applied today and is constantly edited and amended, adapting it to newer scientific discoveries on ODS and their effects.

UN Climate Change Conference & the Paris Agreement

Held in Paris in 2015, the UN Climate Change Conference (also known as COP21) was the first conference to specifically address the adverse effects of climate change and greenhouse gas emissions, incentivizing participating countries to prevent global temperatures from increasing past 1.5°C from temperatures recorded before the Industrial Revolution by the end of the century (UNFCCC). The Paris Agreement was drafted and signed at the conference, which helps countries set timely goals for themselves on the route to net zero and requires reports on the progress of their action plans to achieve them every five years. The conference was held again 8 years later in Dubai, where countries presented their advancements in their long-term goals and what their new short-term goals will be to achieve the conference's objective. The success of this conference relies on its periodicity since it constantly and consistently holds the signatory countries accountable for their actions.

Evaluation of Previous Attempts to Resolve the Issue

Over time, different agencies and countries have implemented regulations and projects to incentivize the use of renewable energy both regionally and internationally. Many of these campaigns are based on the UN agreements and protocols stated above. Some of these examples are:

1. UN-Energy Commission

In 2004, the United Nations established the UN-Energy as the body responsible for ending energy poverty and advancements in sustainable energy. According to the UN, this inter-agency mechanism connects committees to ensure cohesive and coherent steps are taken to achieve the UN's 2030 Agenda for Sustainable Development and the Paris Agreement.

2. European Union Emissions Trading System (EU ETS)

The European Union's Emissions Trading System works based on a "carbon tax", where companies have a cap on the amount of carbon dioxide (or a carbon-dioxide equivalent) they can emit. If they emit less than the cap, they can either "save it" for later use or sell those extra "free" emissions to other companies. The European Commission reports that this protocol creates consciousness amongst private consumers since they must stay within the cap to avoid fines.

3. International Standards on Energy

The International Organization for Standardization focuses on creating regulations for member states in different industries, one of them being energy. The organization has regulations on solar panel manufacturing, solid biofuels, and carbon dioxide capture, among others. These regulations make it easier for organizations and countries to transition to

renewables in a financially sustainable way (International Organization for Standardization).

Possible Solutions

Despite these past attempts at resolving this issue, the “global consensus” tends to be one-sided. The most important resolutions and agreements often only include countries that are financially capable of investing and transitioning to renewable energy. On the other hand, countries without enough resources are left without a means of doing so. This split must be eradicated if all nations are to take the necessary steps toward renewables since some countries will need initial support to carry out these large-scale projects, which would mitigate the economic stress on their communities. Similarly, people still need to be educated on the impacts of climate change and the importance of transitioning to 100% renewable energy, given the current illiteracy on the subject, since many aren't aware of the environmental consequences on our ecosystems. Educating people will make them more willing to collaborate with governments and organizations toward these changes, causing less confusion because they understand the “why” and the “how” of what is happening around them.

Another important thing to remember about renewable energy is that there isn't a “one-size-fits-all” type of energy, like assuming that all countries can run on only solar or wind power. Researchers should understand the geographical, meteorological, and topographic advantages and disadvantages of each region to know which renewables would be more beneficial, efficient, and reliable for them. This will also facilitate the transition to renewable energy by preventing countries from investing in tools that won't produce energy efficiently, discouraging them from transitioning at all. In addition to these measures, countries should support scientists' innovation in renewable energy. These discoveries can not only prove discrepancies or underlying negative

impacts about some current renewable sources but also uncover new forms of renewable energy that may be less contaminating and more productive.

Sustainable Development Goal (SDG)

The UN is directly invested in switching as efficiently as possible to 100% renewable energy, since it is part of their 2030 Agenda for Sustainable Development and was given a full goal devoted to the cause.

1. SDG #7: Affordable and Clean Energy

The issue of assessing the social, environmental, and economic impact of implementing renewable energy worldwide is encompassed in SDG #7, which directly aims to give people around the world access to “clean and affordable energy, which is key to the development of agriculture, business, communications, education, healthcare and transportation.” (UN).

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Appendix

- I. A database from the Gapminder Organization created by Hans Rosling which has data on the development of renewable energy and its use as well as the use of other common forms of non-renewable energy such as coal and natural gas in different countries.

- A. [https://www.gapminder.org/tools/#\\$model\\$markers\\$bubble\\$encoding\\$y\\$data\\$concept=eg_fec_rnew_zs&space@=geo&=time;&source=wdi;&scale\\$domain:null&zoomed:null&type:null;:&x\\$data\\$concept=time&space@=time;:&scale\\$domain:null&zoomed@=1900&=2021;&type:null;:&frame\\$speed:533&value=2021;&trail\\$show:false&data\\$filter\\$markers\\$swe=1990;:::;&chart-type=bubbles&url=v2](https://www.gapminder.org/tools/#$model$markers$bubble$encodingydata$concept=eg_fec_rnew_zs&space@=geo&=time;&source=wdi;&scale$domain:null&zoomed:null&type:null;:&x$data$concept=time&space@=time;:&scale$domain:null&zoomed@=1900&=2021;&type:null;:&frame$speed:533&value=2021;&trail$show:false&data$filter$markers$swe=1990;:::;&chart-type=bubbles&url=v2)

- II. A database by the law firm Baker McKenzie on national jurisdictions about renewable energy requirements, CO2 and energy requirements, among other topics.

- A. <https://resourcehub.bakermckenzie.com/en/resources/global-sustainable-buildings>

- III. An in-depth exploration and explanation video of how the EU implements its

Green Electricity Certificate System to incentivize companies to use renewable energy sources.

A. <https://www.youtube.com/watch?v=CX8cUw4ziHw>

IV. The Renewable Energy Progress Tracker from the International Energy Agency describing the global progress in renewables up until 2023 and the path to fulfill the 2030 goals in graphs.

A. <https://www.iea.org/data-and-statistics/data-tools/renewable-energy-progress-tracker>