WORLD AFFAIRS COUNCIL
of Philadelphia

PROVIDING CLEAN AND AFFORDABLE ENERGY FOR ALL

"Energy is the golden thread that connects economic growth, social equity, and environmental sustainability."
Former Secretary-General, Ban Ki-Moon

Statement of the Problem

The world is at a defining moment in terms of energy use and climate change. Humans' reliance on **fossil fuels** has had an increasingly negative impact on the environment and human health. The effects of climate change pose a continuous threat to ecosystems, peoples, societies, and the international community as a whole. Today, energy accounts for about 60% of total **greenhouse gas emissions**.[1] Global efforts to reduce reliance on fossil fuels and move toward **clean energy** have gained momentum, especially in the past decade. In 2015, **renewable energy** made up 17.5% of all energy **consumption** in the world.[2] Despite an increase in technological innovations to create new, more efficient forms of clean energy, these advancements can often be slow-moving and may face many obstacles to providing people with forms of energy that do not negatively affect the environment and people.

Approximately 4 million people in rural Peru have no access to electricity and spend much of their income on toxic lighting solutions, which over time can negatively affect health and safety. (Photo: Solar Worldwide)

The issue of clean energy also involves individuals' consumption of energy and access to clean and affordable energy. While clean, affordable energy is not explicitly listed as a human right in the United Nations' **Universal Declaration of Human Rights** (1948), it underlies Articles 25 and 26 which state that "everyone has a right to a standard of living adequate for health and well-being…including food, clothing, housing and medical care, and necessary social services…[and] everyone has the right to education."[3] Today, 13% of the global population still lacks access to modern electricity.[4] Furthermore, a large portion of the world's population still cooks their daily food with polluting fuel and stove combinations. Communities, primarily in **developing countries** that have limited access to energy, have to put a lot of time and effort into completing daily tasks necessary for survival. Providing clean and affordable energy for more of the world's population can help

[1] SDG 7 – Sustainable Development Goals, United Nations, 2019.
[2] SDG 7 – Sustainable Development Goals, United Nations, 2019.
[3] Universal Declaration of Human Rights, United Nations, 1948.
[4] SDG 7 – Sustainable Development Goals, United Nations, 2019.

to improve **standards of living** by ensuring greater access to education and medical services, improving infrastructure and transportation methods, providing more jobs, boosting household incomes, closing **gender gaps**, allowing more time for productivity, and creating a cleaner environment that reduces health risks and complications.

Many forms of clean and renewable energy already exist and are being used around the world, but there needs to be more **investment** in these forms of energy in order to prevent any further **irreversible** damage done to the environment. The possibilities for new forms of clean energy are numerous. Researchers and **entrepreneurs** are finding new, creative ways every day to create clean energy with things such as bio-fuels, solar power, and wave power. Technological innovations and investment in communities that lack reliable access to sustainable forms of energy can lead the way in switching from using fossil fuels and other harmful, **non-renewable forms of energy** to forms of energy that help to halt climate change, protect our environment, and provide more people around the world with the means to lead healthy, productive lives in thriving communities.

History of the Problem

The environment and people's livelihoods have been negatively affected on a large-scale by human energy consumption since the **Industrial Revolution** from the mid-1700s to the 1800s. While there have been a multitude of environmental movements around the world since then, the United Nation's first major step in addressing climate change came in 1992 during the "Rio Earth Summit." The summit produced the **United Nations Framework Convention on Climate Change (UNFCCC)**, a treaty that obligated all countries who signed to reduce carbon emissions in an effort to lessen the harmful effects of excess greenhouse gasses in the atmosphere. In 1997, the **Kyoto Protocol** was added to the UNFCCC. The Kyoto Protocol obliged countries who signed the treaty to cut their emissions of greenhouse gasses by an average of about 5% for the period of 2008-2012 compared with emissions levels in 1990. The second commitment period began on 1 January 2013 and will end in 2020. The specific details and stipulations of the Kyoto Protocol have been a topic of much debate and continue to be today.

World leaders celebrate the official announcement of the Paris Agreement on December 12, 2015. (Photo: UN Climate Change)

There have been several other UN conventions on climate change since 1997, the most notable being the **Paris Agreement**, adopted on December 12, 2015 by the **Parties** of the UNFCCC. The Paris Agreement was a monumental event in the international community's fight against climate change. The main goal of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping the global temperature rise in the current **century** below 2 degrees Celsius (35.6 degrees Fahrenheit) above temperature levels before the world industrialized. The ultimate goal is to limit the temperature even further to 1.5 degrees Celsius (34.7 degrees Fahrenheit). Countries who signed the Paris Agreement must report regularly on their emissions and on their efforts to implement policies that

encourage switching to cleaner forms of energy. The Paris Agreement not only encourages all nations to work towards the common cause of combating climate change and reducing harmful energy practices, but it also encourages wealthier countries to support developing countries who often lack the money and infrastructure to do so.[5]

In 2000, the UN member states adopted the **Millennium Development Goals (MDGs).** The MDGs aimed to eliminate global poverty and inequality by 2015**.** MDG #7 focused on climate change, energy use, and healthy standards of living connected to energy and the environment.. However, MDG #7 was very broad, and included issues like deforestation, clean water and sanitation, and reducing the number of people living in slums around the world.

In 2015, the UN and its member states came together again to adopt the 2030 agenda for Sustainable Development and **Sustainable Development Goals (SDGs)**. MDG #7 was split into multiple SDGs, one being SDG #7, which pledges to "ensure universal access to affordable, reliable, and modern energy services…[and] increase substantially the share of renewable energy in the global energy mix" by 2030.[6] SDG #7 focuses on clean energy use on both the global scale and also in terms of individual or household energy use in order to create more sustainable, inclusive communities and resilience to environmental issues like climate change. Today, there are multiple UN agencies that are involved in the effort to promote and implement the use of clean, affordable forms of energy around the world. UN Energy, Sustainable Energy for All, and the UN Industrial Development Organization (UNIDO) are a few of these agencies.

Key Challenges

The world's population is growing at a rapid rate. Today's global population of about 7.7 billion people is expected to reach 9 billion by 2050. More countries continue to develop rapidly, hoping to provide better infrastructure, services, and standards of living for their people while boosting their national economies. All of this means that the number of people worldwide who have access to forms of energy like electricity is increasing and will continue to increase quickly. Increasing the number of people who have access to electricity and other forms of energy that can improve people's lives is a key goal of SDG #7 and has many positive effects. The negative result is that electricity is often generated with unclean, non-renewable energy sources.

Southeast Asia and Sub-Saharan Africa are the two regions of the world where people have the least access to energy and suffer from the use of harmful cooking fuels and cooking methods. The 48 countries in the Sub-Saharan African region together have less than half the energy-generating capacity of Spain.[7] Even if clean energy sources have been implemented and are used in these countries, they are often not affordable for most people. Also, in these two regions and in other developing regions of the world, people

[5] "Climate Change" – Global Issues, United Nations, 2019.
[6] SDG 7 – Sustainable Development Goals, United Nations, 2019.
[7] "Kenya straddles a volcanic rift. It's a green-energy geyser" – National Geographic & UNDP, 2018.

often cook indoors with charcoal, wood, or animal waste. These materials are unsustainable forms of energy as gathering them can contribute to pollution and deforestation. Cooking with these materials indoors on an open fire fills homes with toxic fumes. This issue disproportionately affects women and girls, thereby making the issue of clean energy one that also involves **gender**. In a majority of the places where harmful, non-sustainable forms of energy are used for cooking indoors, societal norms still dictate that women and girls do a majority of the cooking. Finally, these areas of the world are also the ones that are and will continue to be the ones most affected by climate change.

Women and young children receive the highest household air pollution exposure because they spend the most time in or near the kitchen when the stove is alight. (Photo: World Health Organization)

The majority of people living in **developed countries** have access to electricity and other forms of energy. Therefore, these countries are usually most responsible for carbon emissions and other harmful effects of non-renewable energy that contribute to climate change. The United States, for example, has the largest **per capita** energy consumption in the world and therefore is responsible for the most carbon dioxide put into the atmosphere per capita each year. The top six greenhouse gas emitters in the world (in order) are China, the United States, the 28 European Union countries, India, Russia, and Japan.[8]

In both developing and developed countries, there is not enough investment in clean, renewable energy sources from both the **public sector** and the **private sector**. Each year, greenhouse gas emissions and pollution levels rise, despite increased global awareness and efforts to combat climate change.

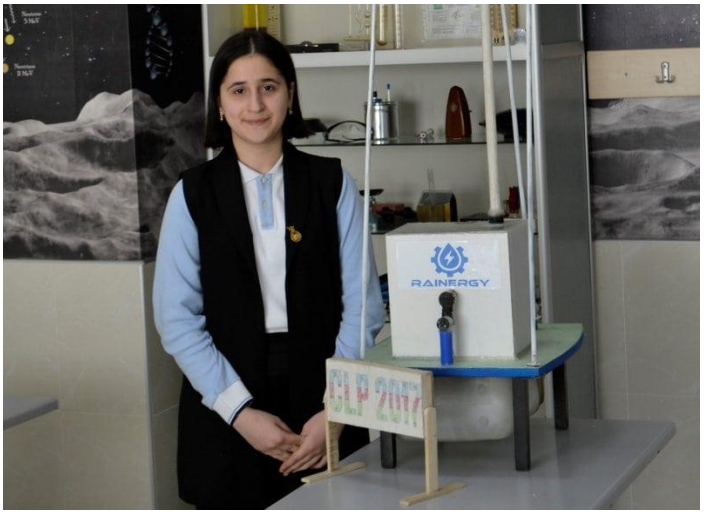
Possible Solutions

Both developed and developing countries need to invest much more in renewable energy, energy efficiency, clean energy research and technology, and improved energy **infrastructures** if the goals of SDG #7 and other SDGs are to be reached by 2030. Developed countries, in accordance with the Paris Agreement and UN goals, need to lend support to less-developed countries in establishing these cleaner and more efficient forms of energy and energy infrastructures. The more widespread clean energy becomes, the

A college in India trains women in rural communities to be solar engineers and has so far produced more than 750 women solar engineers from 78 countries. (Photo: Darpan Magazine)

[8] "This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed" – World Resources Institute, 2017.

more affordable it will be for a larger portion of people in the world. Additionally, countries do not need to be the only actors in the pursuit of clean energy. Cities and communities have taken their own initiatives to encourage more widespread use of clean energy through **grassroots approaches** to the issue. **Private enterprises** have also contributed to researching new, more efficient forms of clean energy and have worked with governments to bring these forms of energy to their countries. All of this becomes increasingly important as more and more people in the world gain access to energy and energy consumption around the world continues to rise.



Reyhan Jamalova, a 15 year old from Azerbaijan, stands in front of her invention, Rainergy, which generates electric power from raindrops "to solve the problem of energy deficiency in rainy and low income countries." Azerbaijan and other countries have invested thousands of dollars in her clean energy technology. (Photo: United Nations)

As humans continue to develop more advanced energy technologies, there becomes more ways that we can use energy cleanly, efficiently, and sustainably while also helping to empower more people around the world. Innovators and entrepreneurs all over the world, in a variety of countries, are finding ways to harness renewable energy sources that help to create jobs, boost economic activity, decrease harm done to the environment, and provide better standards of living for people around them. Solar, wind, and tidal or wave power energy methods continue to be improved upon, while in more recent years, people have begun to invest in things like bio-fuels and **bio-waste** as alternative energy sources. Some countries are using the Earth's **geothermal energy,** which uses the heat produced from the core of the earth, to power houses and factories in a completely clean and sustainable way. If these innovators and entrepreneurs, who come from a variety of countries and **socioeconomic** backgrounds, had more funds they could work on their projects faster and improve upon them as well.

Conclusion

Overall, the biggest factor in successfully slowing down climate change, protecting the Earth, and improving life for all of Earth's inhabitants is if all countries make investing in clean, sustainable, affordable, and efficient energy a top priority. Countries and people need to look at energy and development more long-term, by implementing policies and making investments that increase clean energy use. "If the world wants to cut emissions quickly and meet the climate goals laid out in the Paris Agreement…clean energy will need to grow about five times as fast each year between now and 2040 as it did [in 2017]."[9] While clean energy technology and ideas have improved vastly in recent years and while

[9] "Greenhouse Gas Emissions Rose Last Year. Here Are the Top 5 Reasons." – New York Times, 2018.

countries have made some improvements in reducing their reliance on fossil fuels and other non-renewable sources of energy, it has not been nearly enough. Investing in clean sources of energy that are sustainable and more affordable can serve as the solution for a lack of available jobs, slow economies, gender power gaps, a lack of education, a lack of access to medical services, health issues, food insecurity, and issues caused by climate change and suffering ecosystems.

Questions to Consider

1) Do a majority of people in your assigned country have access to energy like electricity? If not, why? How does this directly impact their daily lives?

2) Considering the short and long term impacts, how can using more sources of energy that are clean and sustainable enhance the overall lives of children, adults, and communities as a whole?

3) Where does your country fall in the ranks of global carbon emissions per country? (Use "Climate Watch" website in Helpful Resources section below to find out). How can you explain this ranking?

4) Has your country invested heavily in clean and sustainable energy sources? Have they invested in ways to make energy use more efficient? Why or why not? What progress, if any, have they made in switching from the use of non-renewable energy sources to more clean energy sources?

5) Is the use of toxic cooking fuels a major issue in your assigned country? Why or why not? If your assigned country does not face this issue, what can it do to help countries who are affected by this issue?

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6) Is clean energy affordable for most people that live in your assigned country? Why or why not? What could be done to make it more affordable for more people?

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7) How can switching to clean and sustainable energy improve the standards of living for people and communities? Give some specific examples (i.e. access to electricity can give children the opportunity to have light to study and do homework at night).

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8) What are some of the biggest obstacles that exist in switching from fossil fuels to clean energy? Are there obstacles that are unique to your assigned country?

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9) Using some of the suggestions in the solutions section of the briefing paper (pages 4 – 5), what are some solutions that a UN delegate from your assigned country could recommend to help ensure affordable and clean energy for all? What (if anything) is working to promote the use of more clean energy sources in your assigned country?

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10) Are there any international organizations or regional alliances (with your neighboring countries) from which you could seek support in order to achieve your assigned country's goals?

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Quick Facts

- From 2000 to 2016, the proportion of the global population with access to electricity increased from 78% to 87%, with the number of people living without electricity dipping to just below 1 billion.
  Source: Sustainable Development Goal 7 – Sustainable Development Goals Knowledge Platform, 2018.
- In 2016, 3 billion people (41 per cent of the world's population) were still cooking with polluting fuel and stove combinations.
  Source: Sustainable Development Goal 7 – Sustainable Development Goals Knowledge Platform, 2018.
- Indoor air pollution from using combustible fuels for household energy caused 4.3 million deaths in 2012, with women and girls accounting for 6 out of every 10 of these.
  Source: Affordable and Clean Energy – Sustainable Development Goals, United Nations, 2019.
- One in seven people still lacks access to electricity; most of them live in rural areas of the developing world.
  Source: Goal 7: Affordable and Clean Energy – United Nations Development Programme, 2019.
- Since 1990, global emissions of CO2 [carbon dioxide] have increased by more than 46%.
  Source: Goal 7: Affordable and Clean Energy – UN Environment, 2019.
- Today, coal still supplies 1/3 of all energy used worldwide and generates 38% of all electricity worldwide.
  Source: "Coal" – International Energy Agency, 2018.

Helpful Resources

- CIA World Factbook (Online Resource for Country Statistics)
  A helpful resource that provides information and statistics on a country's history, people, government, economy, geography, and more.
- Why it Matters: Affordable and Clean Energy (pdf)
  Helpful summary of SDG #7 main goals, challenges, and potential solutions.
- "A new global agenda for action on sustainable energy" (3:18)
  Video that describes what is on the Global Agenda for promoting sustainable, clean energy, who is affected/will be affected, and why it is important.
- "A bio-based, reuse economy can feed the world and save the planet"
  Online article and video; Learn about utilizing biomass – organic materials, such as plants and animals and fish – as opposed to fossil resources to produce food and non-food goods.
- "Today three billion people still lack access to clean cooking"
  Online article and video; Take a look at how Rwanda is increasing access to clean cooking solutions for the country, highlighting what can be done with political will and private sector mobilization in moves towards clean energy and improved standards of living for communities.
- Solar Empowerment Across Countries
  Read how increased access to solar energy has transformed these communities around the world, helping increase incomes, better irrigate crops so as to produce more food to eat and sell, empower women, and more.
- Climate Watch
  Search for data on carbon emissions, clean energy consumption, and more by country.

Glossary of Terms

Term	Description
bio-waste	Waste from agricultural or manufacturing processes to produce food products that can be used for clean energy purposes ;Bio-waste can help produce clean bioenergy (energy produced from organic materials from plants or animals)
century	100 years
clean energy (renewable energy)	Energy that comes from natural sources or processes that are constantly replenished and sustainable, for example, sunlight, wind, and tidal/wave power. Clean energy does not cause pollution or emit greenhouse gasses into the atmosphere
climate change	A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
consumption	The act or process of using something up
developed countries	Countries that have a high level of industrial activity and where people tend to have higher incomes. Developed countries are also commonly referred to as industrialized countries.
developing countries	A relatively poor, usually agricultural, country that is seeking to become more advanced economically and socially. Geographical regions for developing countries are as follows: Africa, East Asia, South Asia, Western Asia, and Latin America and the Caribbean.
entrepreneurs	A person who organizes and operates a business or businesses
fossil fuels	A natural fuel such as coal or gas, formed in the geological past from the remains of living organisms
geothermal energy	Energy obtained by tapping underground reservoirs of heat, usually near volcanoes or other hot spots on the surface of the Earth
gender	The socially defined set of roles, rights, responsibilities, entitlements and obligations of girls/women and boys/men in societies. The social definitions of what it means to be girls/women or boys/men vary among cultures and change over time.
gender gaps	The difference in opportunities, status, empowerment, education, and/or income between men and women, with women having less of these things in most places in the world
grassroots approaches	Movements, solutions, and ideas created and driven by the common people, rather than the political and economic elites of a society
greenhouse gas emissions	The amount of gasses, like carbon dioxide and methane, that a person or country puts into the atmosphere; These gasses contribute to the warming of Earth's surface
human rights	The rights and freedoms that we are all entitled to including (but not limited to) the right to go to school and to work.
Industrial Revolution	Time period from the mid-1700s to the 1800s when the manufacturing of goods moved from small shops and homes to large factories; During this time cities (urban areas) grew rapidly
infrastructure	The basic physical and organizational structures and facilities (i.e. buildings, roads) needed for a society to operate.
investment	To put money and/or time into a purpose or to achieve something; To put money/time into something that will become profitable in the future
irreversible	Not able to be undone or altered; Something you cannot change once it has already happened

Kyoto Protocol	International treaty that extended the 1992 UNFCCC that further commits participating countries to reduce greenhouse gas emissions
member state	The term used for a country that is a member of an international organization, such as the United Nations.
Millennium Development Goals (MDGs)	Eight international goals aimed at eliminating global poverty and inequality that all 193 United Nations member states agreed to try to achieve by 2015.
non-renewable energy sources	A natural resource (usually fossil fuels) such as coal, gas, or oil that, once consumed (used), cannot be replaced or it takes many, many years to replace. Most energy sources currently in use are non-renewable and are harmful to the environment and people
Paris Agreement	Landmark agreement among countries to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future
Parties	A person or group that participates in some action, affair, plan, etc.; member states in the United Nations that have all agreed to participate in a specific action plan
per capita	The amount of something per person in a specific area. For example, looking at carbon emissions per capita in the United States means looking at how much carbon is put in the atmosphere per person in the country
private sector	All for-profit businesses that are not directly controlled by the government.
public sector	The part of an economy that is controlled by the State (government)
socioeconomic status	Looking at a person or population's income, education, financial security, and perceptions of social status and social class in that society
standards of living	How well or poorly a person or group of people live in terms of having their needs and wants met. Education, health, income and well-being are included in looking at standards of living
Sustainable Development Goals (SDGs)	Also known as Global Goals, these build on the success of the Millennium Development Goals (MDGs) and aim to go further to end all forms of poverty. The new Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet. SDG 2 is to: "end hunger, achieve food security and improved nutrition, and promote sustainable agriculture."
Universal Declaration of Human Rights (UDHR)	A famous document adopted by the UN in 1948 that established a common standard of rights that belong to all individuals and nations.
United Nations Framework Convention on Climate Change (UNFCCC)	Treaty adopted in 1992 that obliges all 197 participating countries to reduce carbon emissions during two commitment periods (2008-2012 and 2013-2020).