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United Nations Industrial Development Organization

Topic A: Increasing Investment in Technological Development

Topic B: Phasing Out Fossil Fuels

Committee Overview

Established in 1966 through the UN General Assembly, the United Nations Industrial Development Organization (UNIDO) is a specialized agency of the United Nations that aims to reduce poverty as well as promote globalization and environmental stability through industrial development, which was determined by the adoption of the *Lima Declaration and Plan of Action on Industrial Development and Cooperation* in 1975.¹ UNIDO recognizes the economic growth and thus job generation that industrialization offers struggling populations, and has been successfully tackling poverty this way since its inception. The committee cooperates with Member States by providing “research and policy advisory services, standards and compliance” in order to fully realize its mandate.²

UNIDO’s work overlaps with some of the Millennium Development Goals established by the UN, specifically goal one which focuses on eliminating penury and world hunger, as well as goal seven which

focuses on environmental protection.³ Therefore, as the deadline for the Millennium Development Goals (MDGs) approached, UNIDO added the promotion of inclusive and sustainable industrial development (ISID) to its mandate in order to accelerate industrial development to meet the goals of 2015.⁴

Likewise, UNIDO works very closely with the Sustainable Development Summit and its corresponding Sustainable Development Goals (SDGs). In 2015, UNIDO adopted the *2030 Agenda for Sustainable Development* as its driving framework toward these SDGs.⁵ The *Medium-term program framework 2018-2021* (MTPF) serves as the framework for how UNIDO plans to achieve these goals through four main pillars: promoting shared prosperity, increasing competition in the economy, protecting the environment, and spreading knowledge.⁶ These work in unison and allow UNIDO to fulfill its agenda, and serve as a guide for all future projects it will partake in. UNIDO continues to be the leading agency in advancing sustainable industrial development.

¹ “UNIDO in Brief.” n.d. UNIDO. Accessed October 10, 2019. <https://www.unido.org/who-we-are/unido-brief>.

² Ibid.

³ UNIDO, *UNIDO and the Millennium Development Goals*, 2009.

⁴ Britannica, The Editors of Encyclopaedia. n.d. “United Nations Industrial Development Organization.” Encyclopaedia Britannica.

Encyclopaedia Britannica, inc. Accessed October 10, 2019.

<https://www.britannica.com/topic/United-Nations-Industrial-Development-Organization>.

⁵ Ibid.

⁶ UNIDO, *Medium-term programme framework 2018-2021*, 2017.



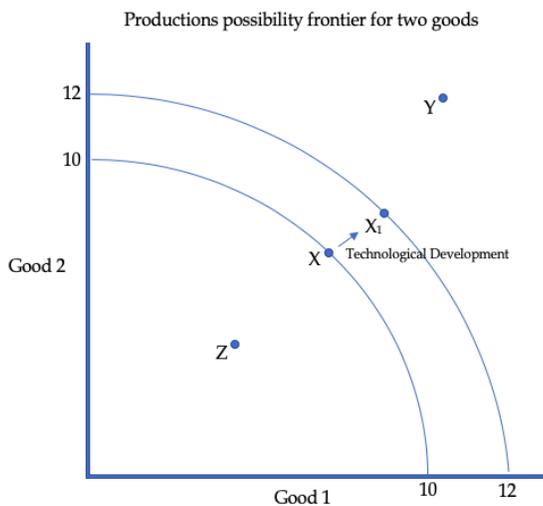
Topic A:

Increasing Investment in Technological Development

Introduction

In an increasingly globalized economy, propelled by the development of different technologies just as the agricultural revolutions of times long past catapulted ancient civilizations into modern times, technological developments are increasingly more interdependent on the success of the economy. The more technological developments there are, the more the economy can grow and continue developing.⁷

A foundational topic in economics is the production possibilities frontier (PPF). This simplified model represents all the different combinations a country, entity, or other body can produce of two different goods given a certain input.⁸



⁷ United Nations, General Assembly, Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1, available from

<https://sustainabledevelopment.un.org/post2015/transformingourworld>

⁸ United Nations, Sustainable Development Goals, A/RES/70/1, available from

An arbitrary PPF is shown above. Combinations on the line utilize all the available inputs to the max (X), combinations above/to the right of the line are deemed impossible given the current inputs (Y), and combinations under the line/to the left of the line are possible, but do not utilize all the available inputs to their maximum capacity (Z). Shifts in the PPF are enabled by a couple things, but the most prominent one is development in technology. This increases the amount of goods that can be produced given the same input, shifting the PPF outward (X_1). As such, an increase in technological development effectively expands the economy – it therefore comes to the United Nations to implement goals to increase investment in such developments.⁹

Historical Background

Ever since humans began innovation and investment into technological development, the results have directly and consistently contributed to increased efficiency and productivity. They have also increased the quality of life for all citizens involved. One of the earliest and most notable examples of this is the Neolithic or

<https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>

⁹ United Nations, UNDESA, The 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns, available from

<https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1444&menu=35>

Agricultural Revolution.¹⁰ Starting around 10,000 BCE and ending around 2000 BCE, the Neolithic Age was home to some of the most fundamental, yet necessary human technological developments.¹¹ During this Age, previously nomadic communities were able to create tools and discover agricultural techniques that led to the shift towards agriculture. This new technology, such as blades, axes, and arrows allowed communities to plant crops year round, leading to a reliable food source. Not only did this allow them to settle down and start living in permanent villages, but it also led to better health and population growth.¹² The reason this period is so notable is because the time and energy that these communities invested into technology completely revolutionized their lives for the better.

Another widespread example of rampant development is the Industrial Revolution in the 18th century.¹³ This period witnessed the transformation of mostly rural and agrarian populations to bustling urban cities. New techniques and distribution methods allowed goods to be mass produced in factories as opposed to slowly crafted individually by hand. Goods that had once been painstakingly crafted by hand started to be produced in mass quantities by machines in factories, thanks to the introduction of new machines and techniques in textiles, iron making and other industries. Steam power and innovations like the spinny jenny and the power loom made weaving cloth and spinning yarn and thread much easier. As a result, making

cloth become more efficient and required less labor.¹⁴

While these are examples of global technological advancements and their benefits, many nations throughout history have also taken actions to develop their nations internally. Japan's industrialization through the 1868 Meiji Restoration is indicative of this. After years of maintaining isolationist policy, new free trade relations with the United States launched Japan into a series of economic and social changes, primarily driven by an influx of technological investment.¹⁵ Once the government prioritized industrial growth, the nation developed at an unprecedented rate. In a mere span of 18 years, over 1,400 miles of rail connected the nation, and all major cities were linked by telegraph.¹⁶ In addition to government spending, private firms aided financially in this restoration, mimicking the European banking systems of the time. By the early 20th century, the efforts undertaken during the Meiji Restoration had established Japan as the first non-Western world power, and the modernized nation began to gain respect in the eyes of the Western world – all thanks to technological investment.¹⁷

Despite the many benefits of technology and globalization, thousands of years of imperialism and egregious colonialism have led to a digital and technological divide between developed and developing nations that has remained unresolved to this day. Despite Africa's natural resources, human capital, and ability in science, the years it lost because of plous

¹⁰ History.com Editors. "Neolithic Revolution." *History.com*, A&E Television Networks, 12 Jan. 2018, www.history.com/topics/pre-history/neolithic-revolution.

¹¹ Ibid.

¹² Ibid.

¹³ History.com Editors. "Industrial Revolution." *History.com*, A&E Television Networks, 29 Oct. 2009,

www.history.com/topics/industrial-revolution/industrial-revolution.

¹⁴ Ibid.

¹⁵ The Editors of Encyclopaedia Britannica. "Meiji Restoration." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 27 Sept. 2018, www.britannica.com/event/Meiji-Restoration.

¹⁶ Ibid.

¹⁷ Ibid.

such as the “scramble for Africa” has caused it to be significantly behind in comparison to its counterparts.¹⁸ While the Western World exploited slavery as cheap labor to further their economies of scale and maximize production, the more backward the continent seemed. The invention of superior military weapons and gunpowder in the Western science created a dichotomy that developing countries would have to spend years bridging.¹⁹ The shipping transportation developed in the West allowed them to become explorers of the world, developing a perception of racial superiority that directly contributed to the mentality behind military conquests and transatlantic slavery. Today, we must combat the effects of this long term exploitation when determining how to bridge the inequality between the developed and developing.

Contemporary Conditions

The technological divide is one of the main causes of the rapidly expanding socio-economic gap between rich and poor nations, and constitutes a major challenge for developing countries in their efforts to achieving the development goals. In other words, there is a direct correlation between a country’s technological advancement and average incomes among the population.

The fact that the least developed countries (LDCs) are falling behind in technological development is not a result of subpar efforts. According to one measure of science, technology, and innovation (STI), “in 2013, only 7 scientific and technical journal articles were published

for every 1 million people in African LDCs. In comparison, in the member countries of the Organization for Economic Co-operation and Development, about 1,100 scientific and technical journal articles were published for every 1 million people.”²⁰ Key to advancing STI in a given country is having science-literate citizens, whether that means they are writing and publishing scientific research, or they are reading and comprehending said research. However, in LDCs in 2013, tertiary enrollment was at 9 percent, compared to 33 percent for the rest of the world. A systematic gap such as this makes it difficult for more scientific and technological development to occur, and therefore becomes a cycle of disadvantage.

Progress in Technological Development

Despite the bleak outlook on the gap between LDCs and developed countries in terms of STI and therefore economic growth and development, there have been and will continue to be accomplishments to help close the gap.

The Technology Bank, opened by the United Nations in September 2017 in its host country of Turkey, aims to fulfill the SDGs and in its institution, has already achieved SDG target 17.8 which is to: “Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications

¹⁸ Moghalu, Kingsley Chiedu. “Why Has Africa Fallen behind the Rest of the World's Economies? | Kingsley Chiedu Moghalu.” *The Guardian*, Guardian News and Media, 4 Aug. 2014, www.theguardian.com/global-development/2014/aug/04/africa-fallen-behind-economies-science-technology.

¹⁹ Ibid.

²⁰ “Closing the Technology Gap in Least Developed Countries | UN Chronicle.” UN Chronicle. United Nations. Accessed November 6, 2019. <https://unchronicle.un.org/article/closing-technology-gap-least-developed-countries>.

technology.”²¹ In a partnership with Research4Life, the Technology Bank is promoting “digital access to research” in all LDCs. Specifically, the Technology Bank is focusing its efforts and STI initiatives on 12 LDCs: Bangladesh, Bhutan, Burkina Faso, Liberia, Madagascar, Malawi, Mozambique, Nepal, Rwanda, Senegal, Tanzania and Uganda. Agriculture, a main component of most LDCs, has especially benefited from technological development and closing the digital divide. Different platforms and distributions of new tech can connect farmers to markets, bring new ideas and advice from one farmer to another, and bring investors into the fray.²²

Past United Nations and International Actions

The goals of UNIDO are meant to be accomplished only in accordance with the 2030 agenda and the SDGs put forth by it. This agenda takes into account that different countries have different challenges while trying to promote sustainable development—“the most vulnerable countries and, in particular, African countries, least developed countries... deserve special attention, as do countries in situations of conflict and post-conflict countries.” In addressing the production and consumption of different goods and services, “[we] must contribute to changing unsustainable consumption and production patterns, including through the mobilization, from all sources, of financial

and technical assistance to strengthen developing countries’ scientific, technological and innovative capacities to move towards more sustainable patterns of consumption and production.”²³ Sustainable Development Goal 9 specifically addresses the importance of industrialization, innovation, and infrastructure— “Without technology and innovation, industrialization will not happen, and without industrialization, development will not happen. There needs to be more investments in high-tech products that dominate the manufacturing productions to increase efficiency...”²⁴

As supplementary material, The 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) discusses different technical and financial assistance put forth by the United Nations in order to achieve the goals put forth in the 2030 Agenda for Sustainable Development— “The Secretariat has established the 10YFP Trust Fund aimed at providing financial support to the 10YFP and specific programmes and initiatives in developing countries and countries with economies in transition... Current contributions to the Trust Fund amount to \$1 million.” The six programme areas adopted by 10YFP are as follows: “consumer information; sustainable lifestyles and education; sustainable public procurement; sustainable buildings and construction; and sustainable tourism, including ecotourism... [and] Sustainable Food Systems.”²⁵ As is the case with the United Nations, other

²¹ “SDG Indicators.” Sustainable Development Goals. United Nations. Accessed November 6, 2019. <https://unstats.un.org/sdgs/metadata/?Text=&Goal=17&Target=17.8>.

²² “Closing the Technology Gap in Least Developed Countries | UN Chronicle.” UN Chronicle. United Nations. Accessed November 6, 2019. <https://unchronicle.un.org/article/closing-technology-gap-least-developed-countries>.

²³ “Transforming our World: the 2030 Agenda for Sustainable Development” *United Nations General Assembly*, 21 Oct. 2015,

https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf

²⁴ “Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation” Sustainable Development Goals. United Nations. Accessed November 6, 2019.

<https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>

²⁵ “The 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns” *United Nations*. 2014.

resolutions passed in different committees, with different goals, surely address sustainable development, but these two resolutions specifically address industrialization and therefore have been included in this section. In other words, these two resolutions are nowhere near exhaustive and should not be treated as such.

Questions a Resolution Must Address

1. *What is the final outcome that this resolution intends to promote?*

In more colloquial terms, what is the endgame of this resolution? What is the overarching goal, the one-to-two sentence summary of the entire resolution? This is the snippet of information given to someone asking about the resolution as a whole.

2. *If this resolution will be implemented differently in different economies, how so?*

As addressed in the 2030 Agenda for Sustainable Development, different economies have different abilities to implement sustainable goals. If this resolution does not intend to take a blanket-style implementation that asks all countries the same thing, what sort of implementation styles will accommodate different countries?

3. *What economic systems are currently in place/need to be implemented in order to achieve these goals?*

Are there already systems in different economies that will help UNIDO reach the goal(s) put forth in the resolution? If there are not, what sort of economic assistance would help different countries achieve the goal(s)?

4. *How will this resolution address the Sustainable Development Goals?*

As addressed in the 2030 Agenda for Sustainable Development, there are 17 different goals that ensure and promote development in a sustainable manner. UNIDO is committed to these goals, so how will this be encompassed in the resolution?

5. *What incentives or consequences will UNIDO provide to promote the implementation of this resolution?*

How will this resolution get countries to agree with and continue implementing the goals of this resolution? Are there specific incentives UNIDO can provide to ensure cooperation?

Bloc Positions

- *Developed Countries*

Larger countries that are already developed would fall into this bloc. These countries have already industrialized, are leading efforts in technological development, and have already invested in technology. Countries in this bloc may be hesitant to invest in development, because they have taken care of their own country and do not have much incentive to help other countries if it does not benefit them directly.

- *Semi-Periphery Countries*

Countries that are semi-periphery countries would fall into this bloc. These countries have invested some money into technological development but are not quite at the capacity of more-developed countries. Countries in this bloc would approve of plans to invest more in development, but in moderation.

- *Less Developed Countries*

This last bloc would mostly be populated by smaller, periphery, less-developed countries that have significantly less resources than other countries. These countries have not had the opportunity to invest in development, either due to instability, conflict, or allocation of resources that prioritizes something else. Countries in this bloc would require the most assistance from the United Nations and would support plans to invest in development because they would benefit from it.

Conclusion

Investment in technology has been proven, from economic to political to social theory, to contribute to industrial development, and overall bring countries to a higher development index and thereby achieve the goals of the United Nations Industrial Development Organization. To conclude, the discussion at hand should not revolve around whether or not technological development is valuable or not – the UN has confirmed time and time again that they should and will put concerted efforts into development, especially sustainable

technological development. The issue at hand, as is the case with most general assemblies, is how to implement different policies without infringing on national sovereignty while still achieving the goals set forth by a resolution passed by this committee. We hope this results in an interesting debate, discussion, and meaningful resolution.



Topic B:

Phasing Out Fossil Fuels

Introduction

Fossil fuels, including natural gas, oil and coal, are currently the world's largest source of energy. Coal is made up of carbon, hydrogen, oxygen, nitrogen and varying amounts of sulfur.²⁶ Oil and natural gas are found under ground between folds of rock and in areas of rock that are porous and contain the oils within the rock itself. The folds of rock were formed as the earth shifts and moves. To find oil and natural gas, companies drill through the earth to the deposits deep below the surface. The oil and natural gas are then pumped from below the ground by oil platforms. They then usually travel through pipelines or by ship.²⁷ While they take millions of years to form from organic material, fossil fuels are the driver behind rapid global economic growth. Some of the main uses of fossil fuels include fuel, heating, and electricity.

However, not only are fossil fuels finite resources, but they can also irreparably harm the environment. To release their stored energy, fossil fuels must be burned. In the process, a plethora of particles and deleterious emissions are released as a product of combustion, including sulfur, nitrogen, and carbon. Once these elements react with water vapor, they have the potential to create acidic compounds that come down to the earth

through precipitation (hence the term acid rain).²⁸ Burning fossil fuels also releases carbon dioxide, a greenhouse gas that scientists believe is key factor in global climate change.

The actual process of extracting and transporting fossil fuels even before their combustion holds many environmental risks. Drilling and mining natural resources can permanently change the surrounding landscapes. Nearby ecosystems are also put at risk due to the large amounts of salt water that is brought to the surface in this process, especially considering the lack of proper sequestration and treatment at most sites.²⁹ While companies must adhere to regulations put in place, it is extremely difficult to minimize the risks involved, which begs the need for more research into developing renewable energy as opposed to just increasing conservation measures. Phasing out fossil fuels, or gradually limiting their use until they are no longer relied upon, is necessary to ensure both the sustainability of our planet and prevent the unprecedented degradation of the planet.

²⁶ Ibid.

²⁷ Newman, Nicholas. n.d. "The Rise and Fall of Fossil Fuels?" *The History of Fossil Fuels*. EniDay. Accessed October 9, 2019. https://www.eniday.com/en/education_en/rise-fall-fossil-fuels/.

²⁸ "Fossil Fuels." n.d. The Environmental Literacy Council. Accessed October 9, 2019.

<https://enviroliteracy.org/energy/fossil-fuels/>.

²⁹ "Environmental Risks of Mining." *The Future of Strategic Natural Resources*, web.mit.edu/12.000/www/m2016/finalwebsite/problems/mini ng.html.

Historical Background

Ever since their discovery, fossil fuels have played a critical role in mankind's evolution. Even before they were used for energy, the earliest humans would utilize outcrops of oil and minerals, which led the way for metal production.³⁰ In 1000 BCE, coal was used to smelt copper in Fushun, China. Its prevalence in Asia was further confirmed by Marco Polo when he described the use of coal for heating and cooking in his travels.³¹ Oil was also widely used in ancient civilizations. The Egyptians used it for mummification, and many others lubricated chariot wheels and made water-resistant ships with it.³² Soon enough, in Europe oil was an essential component of medicine, perfumes, and make up in the Middle Ages.³³

The industrial revolution was a major tipping point in terms of both the frequency and magnitude with which fossil fuels were utilized. Instead of relying on water for energy, the improvement to the steam engine made by Thomas Newcomen and James Watt in the mid 1700's revolutionized energy.³⁴ Not only was the power of an engine powered by coal unprecedented for the time, but it was also cheaper than traditional methods. This significant advancement, as well as the discovery of the furnace, led to huge increase in the demand for coal, and it soon infiltrated all aspects of life and fueled Britain's economic boom.³⁵ A strong and reliable source of energy made

mass production more efficient. Transportation also became faster since ships and railways could also be fueled by coal, which directly increased transnational trade.³⁶ Oil also faced a massive spike in consumption in 1859, when the first oil wells were created in Titusville, Pennsylvania.³⁷ Especially with the invention of the engine by Nikolaus Otto in 1863, petroleum liquid became necessary to fuel cars.³⁸ This dependence was only exacerbated when Rockefeller established a massive monopolization of the oil industry and made oil a major energy source in the United States. By 1879, his company, Standard Oil, controlled 90 percent of U.S. refining capacity, as well as the majority of rail lines between urban centers in the northeastern U.S. and many leading companies at various sites throughout the country.³⁹ Due to Rockefeller's efforts and developments, petroleum became the primary energy source not only in the U.S., but worldwide.

By the early 1920's, public opinion began to shift against the unparagoned global consumption of fossil fuels. As science advanced, more reports began to link the harmful effects of greenhouse gases emitted by coal and other resources and the degradation of the ozone, and government action in some developed countries seems to attempt to oversee the issue. However, by this point fossil fuels were too integral to nations' economies to simply abandon. In fact, many countries in the Middle East survived based on their production and

³⁰ Kopp, Otto C. 2019. "Fossil Fuel." Encyclopædia Britannica. Encyclopædia Britannica, inc. September 27, 2019.

<https://www.britannica.com/science/fossil-fuel>.

³¹ Ritchie, Hannah, and Max Roser. 2017. "Fossil Fuels." Our World in Data. October 2, 2017.

<https://ourworldindata.org/fossil-fuels>.

³² . How Ancients Used Oil. Accessed October 9, 2019.

http://www.dnr.louisiana.gov/assets/TAD/education/BGGB/2/ancient_use.html.

³³ Ibid.

³⁴ Palermo, Elizabeth. 2014. "Who Invented the Steam Engine?" LiveScience. Purch. March 19, 2014.

<https://www.livescience.com/44186-who-invented-the-steam-engine.html>.

³⁵ Hamilton, James D. 2011. "Historical Oil Shocks." Department of Economics UCLA. February 21, 2011.

³⁶ Barton, Bob. n.d. "The History of Steam Trains and Railways." Historic UK. History UK Ltd. Accessed October 9, 2019.

<https://www.historic-uk.com/HistoryUK/HistoryofBritain/Steam-trains-railways/>.

³⁷ "First Oil Discoveries." *American Oil & Gas Historical Society*, aoghs.org/petroleum-discoveries/.

³⁸ Ibid.

³⁹ Ibid.

exportation of oil. In 1906, the Organization of Petroleum Exporting Countries (OPEC) was formed to regulate oil prices, which is indicative of how reliant some nations became on these profits to float their economies.⁴⁰

Nonrenewable energy at this point was the driver for everything in society: transportation, jobs, electricity, and more. While there have been increased efforts to diminish this dependence today, there is still a long way to go before we reach the goal of completely leaving fossil fuels behind.

Contemporary Conditions

Today, fossil fuels account for over 80 percent of all the energy consumed by the industrially developed countries in the world.⁴¹ Yet, despite the environmental costs and limits on the supply of reserves, fossil fuels continue to be used at an alarming rate. Instead of investing into alternative energy, many companies have developed new technology including fracking and various drilling techniques that enable the extraction of smaller and more difficult reserves, which is detrimental to the atmosphere. Some oil companies have even started extracting heavy oil, as well as “liquid petroleum pulled from tar sands and oil shales”.⁴²

Alternative Energy Sources

In an attempt to decrease greenhouse gas emissions and to diversify their energy source, several nations have started investing in renewable energy and

increasing efficiency of machines that rely on fossil fuels.

Wind energy is one of the growing sources of energy in the world, which uses wind currents that transfer kinetic energy to the turbine blades connected to the tower in order to generate electricity.⁴³ Compared to other sources of energy, wind power has low operational costs. Another advantage is that once the turbines are installed, no fuel is needed and this reduces operational costs. Over the last two decades, prices have decreased by 80% and they are expected to decrease more in the future.⁴⁴ Wind power currently accounts for 2.5% of the total electricity production, but is expected to grow at a rate of 25% per year.⁴⁵ However, there are some disadvantages. As it depends on the weather, windmills can often be inconsistent. Sometimes it may not meet the baseload energy demands for commercial or residential activities. To utilize energy previously generated, batteries or pumped hydro are used to store energy. The loud noise could also pose a major problem for neighboring residents.

Solar energy is also very prevalent and a common source of clean energy. They work by capturing photons, extremely charged packets of energy that the sun emits through photovoltaic panels.⁴⁶ Every hour, enough photons impact our planet to generate enough global energy for an entire year.⁴⁷ The panels essentially knock the electrons off of the photons and use those to form an electrical circuit and generate

⁴⁰ “Historical Timeline - Alternative Energy - ProCon.org.” n.d. Can Alternative Energy Effectively Replace Fossil Fuels? Accessed October 9, 2019. <https://alternativeenergy.procon.org/view.timeline.php?timelineID=000015>.

⁴¹ “Problems Associated with the Use of Coal.” n.d. Encyclopædia Britannica. Encyclopædia Britannica, inc. Accessed October 9, 2019. <https://www.britannica.com/science/coal-fossil-fuel/Problems-associated-with-the-use-of-coal>.

⁴² Ibid.

⁴³ Daniels, Lisa. n.d. “Pros & Cons of Wind Energy.” Windustry. Accessed October 10, 2019.

http://www.windustry.org/pros_cons_wind_energy.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ SunPower. 2019. “What Is Solar Energy and How Do Solar Panels Work?” SunPower. June 26, 2019.

<https://us.sunpower.com/what-solar-energy-and-how-do-solar-panels-work>.

⁴⁷ Ibid.

electricity.⁴⁸ While they are an efficient source of renewable energy, they have high installation costs.

Geothermal energy harnesses heat from the surface of the earth or deep reservoirs to harness energy to create electricity.⁴⁹ It can either be used on a local level or to improve large scale sustainability. However, most geothermal resources are not very cost effective, with total costs usually averaging around \$2 – 7 million per 1 megawatt (MW) capacity.⁵⁰

While the aforementioned sources are some of the most commonly used today, there is unprecedented research being done regarding new technologies, which is worth looking into.

Methods for Limiting Emissions

While proposing alternatives to fossil fuels is an important part in the transition towards phasing out fossil fuels, there are also several contested systems and policies that try to limit emissions through incentivization. One of the main ways is through carbon pricing, which manipulates the market to lower emissions. It does this by attributing an actual monetary value to emissions, so that consumers and institutions will factor in the cost of emissions into their decisions.⁵¹ Instead of prioritizing profits and disregarding harmful externalities, when emitting carbon is more expensive businesses are forced to optimize efficiency and seek technologies that minimize environmental harm. Carbon pricing is widely considered a powerful,

efficient, and flexible tool for helping to address climate change, and is already used in many states and countries, including in California, the nine Northeast states that belong to the Regional Greenhouse Gas Initiative, and Europe.⁵²

The two main ways this has been done is either through a cap and trade system, or a carbon tax. Under a cap-and-trade program, “laws or regulations would limit or ‘cap’ carbon emissions from particular sectors of the economy (or the whole economy) and issue allowances (or permits to emit carbon) to match the cap”.⁵³ In other words, if the cap was five thousand tons of carbon, there would also be five thousand allowances. If companies wanted more allowances on top of the ones they already received, they could bid for them in an auction, or they could trade them with other market participants.⁵⁴ The price of an allowance would be determined by the intersection of supply and demand for the market, or the equilibrium price. The total amount of emissions would still be restricted in this case, but companies would try to limit their use of allowances in order to avoid paying the price for additional allowances. These caps would hold major sources of emissions like power plants and refineries responsible for their actions. By gradually decreasing the cap over time, the economy can adjust towards lower emissions.

European Union’s Emissions Trading Scheme (EU-ETS) launched the first program of this kind in 2005.⁵⁵ Just three

⁴⁸ Ibid.

⁴⁹ Roberts, David. 2019. “The Global Transition to Clean Energy, Explained in 12 Charts.” Vox. Vox. June 26, 2019. <https://www.vox.com/energy-and-environment/2019/6/18/18681591/renewable-energy-china-solar-pv-jobs>.

⁵⁰ Ibid.

⁵¹ Frank, Charles. 2016. “Pricing Carbon: A Carbon Tax or Cap-And-Trade?” Brookings. Brookings. July 29, 2016. <https://www.brookings.edu/blog/planetpolicy/2014/08/12/pricing-carbon-a-carbon-tax-or-cap-and-trade/>.

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Frank, Charles. 2016. “Pricing Carbon: A Carbon Tax or Cap-And-Trade?” Brookings. Brookings. July 29, 2016. <https://www.brookings.edu/blog/planetpolicy/2014/08/12/pricing-carbon-a-carbon-tax-or-cap-and-trade/>.

⁵⁵ “EU Emissions Trading System (EU ETS).” 2017. Climate Action - European Commission. February 16, 2017. https://ec.europa.eu/clima/policies/ets_en.

years later, it was put in place in Canada.⁵⁶ China currently has several cap-and-trade programs set up as well, and plans to implement a nation-wide trading program soon.⁵⁷

On the other hand, a carbon tax determines a fee that must be paid per ton of carbon emissions released from a certain sector or the economy as a whole. Unlike cap-and-trade, there wouldn't be an initial number of allowances; all emissions would be taxed.⁵⁸ This way, those who produce emissions would have an incentive to use cleaner energy in order to reduce tax payments. Increasing this tax gradually would help move away from the current reliance on fossil fuels. It is important to note that while taxes can also be put in place against individual consumers (for example higher taxes on gasoline), this specific strategy involves taxing the corporations who are responsible for the production of this good in order to influence large scale business decisions and add a social cost of carbon emissions.⁵⁹

There are many hybrid approaches as well. For example, there can be a minimum and maximum price bound on allowances in a cap and trade system in order to prevent them from going too high or low.⁶⁰ Another way would be imposing a carbon tax on some sectors of the economy and implementing a cap and trade system for others.⁶¹ It is also important to realize that many carbon pricing programs work best alongside other regulations and renewable

energy policies, so that companies have a myriad of alternatives to turn to.

But how effective is carbon pricing? While it seems attractive in theory, it hasn't been as great in practice. Many nations already have carbon taxing in place, especially with the Trump administration backing out of its global commitment to climate change, but emissions are still as high as ever. The problem seems to be that carbon pricing puts pressure on certain sectors of the economy while leaving the remainder relatively unaffected.⁶² This is because only extremely large industries (power and heating) would be hurt enough by the taxes to incentivize radical change. Other smaller companies and sectors, however, can't easily relocate their sources because they don't have the means to completely alter their practices. Another issue is that policy makers haven't imposed high enough prices out of fear of backlash from their more conservative constituents.

Past United Nations and International Actions

In 1992, President George H.W. Bush joined 107 other heads of state at the Rio Earth Summit in Brazil to adopt a series of environmental agreements, including the United Nations Framework Convention on Climate Change, which remains in effect today.⁶³ The goal of the pact is to protect the environment from long term human-induced harm. Instead of setting limits on

⁵⁶ Environment, Ministry of. 2019. "British Columbia's Carbon Tax." Province of British Columbia. Province of British Columbia. June 4, 2019.

<https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/carbon-tax>.

⁵⁷ "U.S.-China Joint Presidential Statement on Climate Change." n.d. National Archives and Records Administration. National Archives and Records Administration. Accessed October 9, 2019. <https://obamawhitehouse.archives.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change>.

⁵⁸ Kaufman, Noah. 2018. "Carbon Tax vs. Cap-and-Trade: What's a Better Policy to Cut Emissions?" World Resources Institute. September 26, 2018.

<https://www.wri.org/blog/2016/03/carbon-tax-vs-cap-and-trade-what-s-better-policy-cut-emissions>.

⁵⁹ Ibid.

⁶⁰ Frank, Charles. 2016. "Pricing Carbon: A Carbon Tax or Cap-And-Trade?" Brookings. Brookings. July 29, 2016.

⁶¹ Ibid.

⁶² Ibid.

⁶³ "UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE." 1992. United Nations. 1992.

greenhouse gases from country to country, the international treaty instead focuses on cooperation and negotiations among the international community to set binding emission targets.⁶⁴ Every year, participating countries convene at a Conference of the Parties (COP) to evaluate the results of the policies they set in place and discuss how to best move forward.⁶⁵ The convention specified that governments should work together to minimize the environmental damage caused by fossil fuels and look for alternative energy sources. Importantly, the convention also pressured developed nations to reduce their own emissions, as developed countries cause the majority of greenhouse gas emissions. Although many member states ratified the convention, it has not been upheld to the fullest extent possible.

On December 11, 1997, an amendment to the UNFCCC known as the Kyoto Protocol was introduced, which includes legally binding environmental goals for countries to meet.⁶⁶ If the member states met the requirement, it would cut greenhouse gas emissions by 5% from the 1990 level.⁶⁷ The Kyoto Protocol also included emissions trading.⁶⁸ This allowed countries that have surpassed their emission allotment to purchase emission credits from countries that stay within or below their own limits. Emissions trading allowed for underdeveloped countries to benefit financially from cutting their emissions. However, the Kyoto Protocol ran into some issues, as the United States and China, which were among the world's largest users of fossil fuels did not sign on to the Protocol,

thereby diminishing the legitimacy of the protocol in many nations' eyes. While the commitment period was initially meant to expire in 2012, it was extended for another eight years at the COP18 despite some developed nations dropping out.⁶⁹ The nations at the conference also created a new climate treaty in accordance to a pledge stated in the COP17 that aimed to involve all large emitters not previously included in the Kyoto Protocol. This treaty, now known as the Paris Agreement, took effect in November 2016. Further revised at COP21, the Paris Agreement marked a large step for global climate change action. Specifically, the Paris Agreement set a goal of bringing emission levels back to 2 degrees above preindustrial levels. It also provides a pathway for collaboration between developed and developing nations on this important issue.

The main difference between the Kyoto Protocol and the Paris Agreement is that the latter involves both rich and poor nations, and does not establish legally binding targets or penalties for noncompliance. The greater flexibility offered by the Paris Agreement allows each nation to contribute what they can towards the global goal, and is more conducive to voluntary participation by participating members. The "monitoring, reporting, and reassessing of individual and collective country targets over time" in order to monitor progress, and an announcement of individual nations' targets every five years.⁷⁰

⁶⁴ Ibid.

⁶⁵ "Conference of the Parties (COP)." n.d. UNFCCC. Accessed October 9, 2019. <https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop>.

⁶⁶ "The Kyoto Protocol" United Nations Climate Change. September 2019. https://unfccc.int/kyoto_protocol

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ "CNN Library, "Kyoto Protocol Fast Facts" CNN. March 2018. <https://www.cnn.com/2013/07/26/world/kyoto-protocol-fast-facts/index.html>

⁷⁰ "What is the Paris Agreement?" UNFCCC. <https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement>

There are also multiple governmental and non-governmental organizations that are working toward employing more environmentally friendly renewable energies versus the fossil fuels currently being used. The UNEP is an example of such an organization.⁷¹ The UNEP's Risoe Center on Energy Climate and Sustainable Development (URC) works particularly with developing nations to promote the development and use of renewable energies.

⁷¹ "UNEP : United Nations Environment Programme - Office of the Secretary-General's Envoy on Youth." n.d. United Nations. United Nations. Accessed October 9, 2019.

<https://www.un.org/youthenvoy/2013/08/unep-united-nations-environment-programme/>.

Questions a Resolution Must Address

1. *What incentives can we use to promote the use of renewable energy?*

While renewable energy might clearly be the best option in terms of promoting environmental sustainability, it is not necessarily the cheapest or easiest to implement and integrate change into our societies, especially in developing nations. When devising solutions to phasing out fossil fuels, we must consider what actions can be taken to motivate countries to adopt these resolutions since there are no binding terms.

2. *What are the pros and cons of renewable energy sources?*

Solar, wind, and geothermal energy are just a few of the many types of renewable energy sources being used and developed today. Considering that each country and region has different needs, it is important to weigh the varying aspects of these alternatives and how they would play into each nation's situation.

3. *What is the timeline for when member states should begin the switch from fossil fuels to renewable energy?*

Considering the large dependence that still exists on fossil fuels in today's world, it is necessary to take into account the rate at which integrating alternative energy sources into daily life can feasibly occur. When developing resolutions, keep in mind these goals.

4. *How can we make renewable energy more affordable and practical?*

One of the main problems encountered when dealing with renewable energy is its accessibility. Many efficient technologies are still expensive, and might be difficult to acquire. The gap between developed and developing nations also makes it harder to progress as an international community, so making these resources accessible to all countries should be another factor to consider.

5. *How, if at all, should UNIDO regulate carbon pricing?*

As mentioned earlier, carbon pricing is one of many possible arenas to explore in order to best address this topic. The committee could formally devote itself to this strategy, such that member states are sufficiently informed about it and incentivized to adopt it.

Bloc Positions

- *Northern Europe (Scandinavian Countries)*

Nations such as Sweden, Denmark, and Norway have pioneered the movement towards renewable energy. They are actively promoting clean energy sources and have been very successful at it.

- *Latin America*

“Chile, Peru, Ecuador, Costa Rica, Honduras, Guatemala, Haiti, the Dominican Republic, and Colombia have recently set a goal for 70% renewable energy”⁷². This is currently more than twice that of the European Union. While the prospects of this ambitious agreement are yet to unfold, this indicates a major shift in attitude in this region.

- *Asia*

Southeast Asian countries stand at a crossroads concerning their shared energy future because they still depend on fossil fuels for transport and electricity. India and China are considered leaders as evident by their current clean energy transition and economic transformation⁷³. While southeast Asian countries have huge potential for sustainable energy sources, they are yet to perform globally in renewable energy deployment due to various challenges.

- *United States and Allies*

While the United States was previously a leader in combating climate change on the international stage, recent changes in policy such as pulling out of the Paris Treaty are important to note.

- *Global South*

Less developed countries in the Global South are the most behind in the process of phasing out fossil fuels, perhaps because they lack both the technology and capital to implement solutions. Nations in these groups would focus on making a feasible plan that is realistic and achievable for the future.

⁷² Volcovici, Valerie. 2019. “Latin America Pledges 70% Renewable Energy, Surpassing EU: Colombia Minister.” Reuters. Thomson Reuters. September 25, 2019. <https://www.reuters.com/article/us-climate-change-un-colombia/latin-america-pledges-70-renewable-energy-surpassing-eu-colombia-minister-idUSKBN1WA26Y>.

⁷³ Erdiwansyahab. 2019. “Renewable Energy in Southeast Asia: Policies and Recommendations.” Science of The Total Environment. Elsevier. March 20, 2019. <https://www.sciencedirect.com/science/article/pii/S0048969719312653>.

Conclusion

Fossil fuels have provided us with the energy for our daily activities for hundreds of years, whether that be driving a car, lighting your room, or heating your water. In fact, oil, coal and natural gas are responsible for over 80% of our energy today.⁷⁴ However, the consequences that fossil fuels have imposed on our environment and society can no longer be overlooked. The damage greenhouse emissions pose to our ozone layer is irreversible and needs to be addressed immediately.

While immediate and short-term changes have been attempted, such as improving the efficiency of buildings and vehicles, there is still a long way before we can completely eliminate reliance on fossil fuels. still needs a lot of work. The bright side is, alternatives exist, and we have the knowledge and information needed to make a change away from a fossil fuel dependent economy.

Even now, there has been considerable progress in developing and using renewable energy sources. Educated consumers are beginning to make conscious decisions, as evident by the plastic straw movement, and companies are responding to this change. Federal regulation and global cooperation through international treaties have provided the framework necessary to reach listed goals.

While it might seem difficult at first, it only takes sustained, coordinated policy efforts from all levels of government, the private sector, and local communities to achieve dramatic progress toward a clean energy future.

⁷⁴ "Problems Associated with the Use of Coal." n.d. Encyclopædia Britannica. Encyclopædia Britannica, inc. Accessed October 9,

2019. <https://www.britannica.com/science/coal-fossil-fuel/Problems-associated-with-the-use-of-coal>.

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