Forum: Economic and Social Council

Issue: Responding to the 2021 energy crisis

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Introduction:

Electricity is a fundamental resource that runs appliances such as lighting, heating, and machinery. Currently, due to a plethora of factors, there is an ongoing global energy crisis. In 1698, engineer Thomas Savery discovered the first steam engine. Its mechanism involves burning fuel to boil water to produce steam. This steam turns a turbine causing a generator to generate electricity. This discovery propelled engineering and was the trigger for the industrial revolution where new technologies were rapidly developing. It changed how economies functioned as workers moved from farms to factories. However, with the incredible progress came a limitation. The fuel used to boil the water were fossil fuels. Fossil fuels include coal, natural gas and crude oil. These contain hydrocarbons which are excellent fuels as they combust easily. Fossil fuels form underground from the remnants of dead plants and animals, and therefore they are finite or non-renewable sources of energy.

In recent years, scientists have come up with many renewable alternatives such as wind energy, tidal energy, hydropower, biomass, solar power and nuclear energy. However, seeing the demand for electricity inflate in our fast industrialising world and the cheapness, efficiency and abundance of burning fossil fuels as a source of electricity, many global economies and individual livelihoods have remained reliant on fossil fuels. Therefore, a great challenge when making the change from non-renewable to renewable sources of energy is finding ways to transition the fossil fuel dependent world economy while maintaining the livelihoods of people, preventing high unemployment alongside any possible humanitarian and social crises. This issue,

factored in with lack of investment, lack of practical solutions and greed from autocratic energy suppliers, has led to the ongoing global energy crisis. The situation has been the worst in Europe, India, China and the United States of America.

Definition of Key Terms:

1. **Energy:** Energy is the quantity that must be delivered to a body or physical system in order to perform work on it or heat it. Energy may be transformed in form but not destroyed, according to the rule of conservation of energy.
2. **Non-Renewable Energy:** A non-renewable resource is a natural resource that cannot be replenished at a rate fast enough to keep up with use by natural methods. Carbon-based fossil fuels are one example.
3. **Renewable Energy:** Renewable energy is derived from renewable resources that are renewed naturally and cannot be depleted. They are infinite quantities.
4. **Climate Change:** A shift in global or regional climate trends, particularly one that began in the mid- to late-twentieth century and was primarily attributable to higher quantities of atmospheric carbon dioxide caused by the combustion of fossil fuels.
5. **Cost-push inflation:** Cost-push inflation occurs when the cost of labor and raw materials rises, causing overall prices to rise. Cost-push inflation occurs when increasing production costs are a result of a fall in the economy's total supply. This is a major factor in causing the ongoing energy crisis.
6. **Supply Chain:** A supply chain is a network that connects a company and suppliers in order to manufacture and distribute a certain product or service.
7. **Energy Poverty:** Lack of access to modern energy services is referred to as energy poverty.

Background Information

The Industrial Revolution

The process of transitioning from an agricultural and handicraft economy to one dominated by industry and machine production in modern history is known as the Industrial Revolution. These technical advancements ushered in new methods of working and living, transforming society as a whole. This rapid industrialisation increased market demand for electricity, a resource that helped power and run newly developed technologies which were increasingly becoming more widespread. Scientist Michael Faraday discovered that breaking a consistent magnetic field induces current (electricity). Using his principles, scientists discovered the use of fossil fuels to boil water to produce steam. Steam then can turn a turbine which can rotate a coil in a magnetic field which generates a current. This discovery streamlined technological innovation reflected in the industrial revolution leading up to the highly industrialised and energy reliant modern day society today.

A fossil fuel is a hydrocarbon-containing substance created underground from the remnants of dead plants and animals. Coal, petroleum, and natural gas are the most common fossil fuels, which humans obtain by mining and drilling. They form through pressure as rock sediments settle over dead plant and animal matter over time. Hydrocarbons are fuels, therefore making these resources perfect fuels for combustion, the reaction that generates heat. Despite the fact that natural processes continuously create fossil fuels, they are categorised as non-renewable resources since they take millions of years to develop and known viable reserves are exhausted considerably quicker than new ones are created. The demand for electricity has continued to rise since the industrial revolution, increasing society's dependence on these fuels. These are generally used because they have been readily available for extraction and are relatively cheaper and more efficient that other forms of electric power generation. Thus, causing many economies around the world to shape around the extraction, sale and usage of fossil fuels such as crude oil, natural gas and coal.

The subsequent impact on the environment

Burning and transporting fossil fuels have had major impacts on the environment. A by-product of combustion is carbon-dioxide which is a greenhouse gas. The planet gets its heat principally from radiation from the sun. The greenhouse effect is a natural occurring effect in the earth's atmosphere where a layer of greenhouse gases bend back lost radiation from the earth's surface causing less heat to be lost . With increased emissions of greenhouse gases such as carbon-dioxide, the layer is becoming thicker causing more ultraviolet rays to be reflected back into the earth causing the earth to warm at unprecedented levels. This has caused catastrophic impacts on the environment, such as the destruction of natural habitats, forest fires, rising sea levels, changes in water temperature causing more frequent hurricanes, drought, and the displacement and aggravation of food insecurity. Due to the large market for fossil fuels, minimal efforts took place to alleviate these problems causing this to become an existential threat to the planet.

Current Situation

How has the crisis arisen by the COVID-19 pandemic?

Initially during the COVID-19 pandemic, energy demand fell drastically as transportation decreased and the total demand for goods and services decreased during strict lockdowns and due to financial hardships. This in turn slowed down the extraction of fossil fuels and energy prices fell. As countries have begun opening up and society moved towards a new normal, energy demand is rising at unprecedented levels to the extent that suppliers are unable to keep up. This excess demand is causing prices to shoot up. This is causing a resultant rise in the prices for goods and services that rely on these resources from high production costs. Energy-intensive metals such as steel, nickel, silicon are prime examples. Furthermore, the problem has been aggravated by high money supply in circulation due to increased borrowing, further increasing demand and thus prices. Some corporations and governments have also refused to invest in fossil fuel development due to its social unacceptability caused by its negative environmental impacts. With increased social pressure for global re-investment from nonrenewable to renewable sources of energy, suppliers are unable to meet these ever-increasing demands as ample time and money is needed to make these changes because of how fossil fuel centric most economies in the world are. Therefore, rapid changes may cause

major economic crises including recession, further energy shortages and high unemployment. Additionally, renewable alternatives are unable to sufficiently cut these energy losses.

The role of energy suppliers

Energy suppliers have come into the spotlight amidst this crisis, causing them to become autocratic. Many suppliers have withheld reserves to maintain elevated price levels. Due to the immense scarcity of energy, this has allowed them to enjoy higher profits at the expense of poor energy access. Many oil-supplying nations have stepped in and constricted the supply to recuperate their pandemic losses, as observed by member states of the OPEC (Organization of Petroleum Exporting Countries). This has further increased the global scarcity of energy around the world despite calls from USA and allies to release their reserves.

Major Parties Involved and Their Views

United States of America

The energy crisis has hit the United States hard. Natural gas prices have more than doubled, from an average of $1.92 per thousand cubic feet in September 2020 to $5.16 in October 2021. Gasoline prices have increased by nearly 55 percent in the previous year, reaching $3.36 per gallon countrywide in November 2021. American coal miners majorly decreased their rate of extraction in the early stages of the pandemic due to the dramatic fall in demand and are currently unable to meet the rising demand for energy as world economies and societies start opening up. This is a large problem as the United States is one of the highest net energy consumers in the world. The United States has called upon OPEC nations to pump more oil and for Russia to increase its gas supplies. Seeing the immense energy scarcity with shortages in fossil fuel extraction and the insufficiency of renewable alternatives, the Biden administration has started to plan a more feasible transition policy to gradually phase out the usage of fossil fuels as a source of energy to prevent major economic and social crises.

People’s Republic of China

Many Chinese cities are experiencing widespread power outages. Early this year, a recovery in global economic activity sparked a boom in energy consumption in China's coastal regions, which are home to many of the country's largest manufacturers. Several Guangdong cities were obliged to impose industrial power restrictions in May. Fluctuating weather has

prompted dramatic surges in electrical consumption by mid-September, putting several of China's systems on the verge of collapse. Utility providers in more than 20 Chinese provinces have begun limiting electricity usage. Factory output was limited to a few days each week in China's industrialized south, where global supply chain manufacturers are concentrated, having global repercussions including higher production costs of these goods and services. Entire towns were forced to live in the dark as limitations transformed into frequent blackouts. The unpredictability of China's coal and energy markets lies at the heart of the crisis as it emerges freshly out of the pandemic with major shortages of coal and imported fossil fuels. The Chinese government has pushed for subsidies on non-renewable subsidies, counter-productive to the global fight against the environmental impacts of fossil fuels.

India

India is undergoing a major coal shortage as energy demands have risen dramatically while the Indian economy has opened up. The price of coal has been raised by over 13%. Several reports arose in the first week of October 2021 on the country's coal crisis, with states and union territories reporting that they only had 2-3 days of coal storage remaining to create energy via thermal power plants. Coal-fired power plants supply over 70% of India's electricity. Eighty percent of India's 135 coal-fired power plants have less than eight days' worth of supply as of October 6, with more than half having only two days' enough. India, which is the world's third largest coal importer, saw a 44 percent drop in imported supply in August and September alone. Domestic producers were forced to shoulder an additional load of roughly 17 million tonnes of coal as a result of this. This was majorly attributed to decreasing stockpiles resulting in higher prices of coal from coal supplying countries such as Indonesia and Australia. The Coal Ministry has taken multiple initiatives to address the scarcity and production issue, roughly 22,000,000 tonnes of coal have been shipped to various thermal power plants throughout the nation. This problem has not been solved from the root in India causing uncertainty in the long run.

Saudi Arabia

As a member of OPEC, Saudi Arabia is the world’s second largest supplier of crude oil in the world. Its economy has been built around the extraction, sale and usage of crude oil. The government believes that if the world's climate policies are not carefully implemented, a worse energy catastrophe might occur. Seeing the power Saudi Arabia possesses with access to the

'liquid gold' it will be a challenge to completely remodel the economy around to renewable sources of energy while keeping global energy supplies afloat and preventing economic and social crises in Saudi Arabia. They have pushed for innovative carbon capture, reuse, and recycling technology, to work alongside investments in renewable energy sources to strike that balance for a feasible transferral in the long run.

UN Involvement, Relevant Resolutions, Treaties and Events

Between October 31st and November 13th 2021, world leaders were in the audience of each other during the COP26 summit under the United Nations Framework Convention on Climate Change (UNFCCC). The purpose of the conference was to encourage countries to increase their commitments to combating climate change. The conference ended with the Glasgow climate pact. The agreement attempted to avert disastrous climate change. Coal, the single largest contributor to climate change, is specifically mentioned in the final accord. The Glasgow Climate Pact is the first ever climate agreement to explicitly plan to reduce unabated coal power. The agreement's phrasing refers to a need to "step down" rather than "phase out" the usage of unabated coal power. This can be a good middle ground when it comes to preventing energy shortages when making the change from renewable to non-renewable. The use of coal power with net-zero emissions by neutralizing the generated carbon dioxide via the CO2-to-stone process does not need to be lowered based on this statement. However, most coal-fired power plants cannot afford carbon capture and storage. More than 140 countries have committed to achieving net-zero emissions. Over a hundred nations, including Brazil, have committed to halting deforestation by 2030. More than 40 countries have committed to reducing their reliance on coal. India has committed to sourcing 50% of its energy from renewable sources by 2030. Furthermore, new financial commitments for climate change mitigation and adaptation have been announced to alleviate current implications.

- Protection of global climate for present and future generations of mankind, 6th December 1998 **(A/RES/43/53)**
- The Glasgow Climate Pact, 13th November 2021 **(FCCC/PA/CMA/2021/L.16)**
- The Paris Agreement, 12th December 2015 **(FCCC/CP/2015/10/Add.1)**

Possible Solutions

- Increased investment into research and development to have a viable renewable alternative in the long run (eg. nuclear fusion).
- Introducing legislation to penalise energy suppliers that are purposefully holding fuel reserves to further inflate the price.
- Negotiating an export ratio with major fossil fuel exporting countries i.e. OPEC.
- Subsidies provided to firms to invest into the development of renewable energy alternatives.
- Subsidies towards the fossil fuel industries in the short term to alleviate the current shortage.
- A short term decrease in the carbon tax to allow more rapid extraction of fossil fuels and thus helping to alleviate the current energy shortage.
- A strategy where job transformations are highlighted including the provision of retraining for workers in the fossil fuel industry to jobs in the new ‘green energy’ industry.
- A time frame for countries to be carbon neutral.
- An introduction of a non-renewable to renewable ratio by a short term deadline.
- Privatization of renewable energy firms to encourage competitiveness to increase efficiency.
- Investments to help OPEC countries with the change from non-renewable to renewable energy dependent economies.
- Research and development of energy efficient alternatives to existing electrical appliances. These can be subsidised.
- Regular conferences to allow for new technologies and discoveries to be shared between MEDCs and LEDCs.

Bibliography

Useful Links

- https://www.npr.org/2021/11/13/1055542738/cop26-climate-summit-final-decision (A great article summarising the COP26 summit)

- https://www.nationalgeographic.org/encyclopedia/fossil-fuels/ (A summary on fossil fuels)
- https://www.cnbc.com/2021/11/05/energy-crisis-shows-how-world-needs-to-wean-off-fossil-fuels-granholm.html (An informative article talking about the problem as a whole)
- https://www.friendsofeurope.org/insights/the-energy-crisis-short-term-responses-are-fine-but-what-about-long-term-solutions/ (An interesting article tackling the nature of the solutions to this crisis)
- https://www.forbes.com/sites/christopherhelman/2021/10/19/energy-crisis-2021-how-bad-is-it-and-how-long-will-it-last/?sh=5b7cac0e4c63 (Another summary on the issue as a whole)
- https://www.youtube.com/watch?v=3PvNNToJD9s (A short video summarising the issue)

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