

Forum: Environmental Committee

Issue: Adapting to new energy sources and integrating them to natural consumption

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Introduction

According to the World Bank, the world's current population is 7.53 billion and the growth rate is 1.07%. As the population grows the energy need of humankind also increases. Today, most of the energy consumption depends on fossil fuels such as oil and coal which are not renewable resources therefore soon to be consumed away. In order not to experience energy shortage, countries should adapt new renewable sources. With the developing technology it may not be that arduous to find new resources; however, adapting them and integrating them to natural consumption may be more challenging since countries should consider whether the new methods are cost-effective, sustainable and environmentally friendly.

In this year's RCIMUN under the theme Political Innovation: Strengthening Diplomacy in an Evolving World, the delegates of Environmental Committee will investigate the possible new sources and how to adapt to them with the least environmental damage. The fact that technology develops doesn't mean that environment can be disregarded during the search for new energy sources. On the contrary, it means as technology evolves, environment friendly and more comprehensive technologies should also develop.

Definition of Key Terms

Carbon footprint: "The amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community" (google dictionary).

Renewable energy: Also called "clean energy", renewable energy is the energy coming from natural resources that are replenished. Wind energy, solar energy, geothermal energy and hydropower are examples of renewable energy.

Nonrenewable energy: Also referred to as "dirty energy", nonrenewable energy sources are limited resources that take a lot of time to replenish. They mostly include fossil fuels such as oil, coal and gas.

Greenhouse gases: "A gas that contributes to the greenhouse effect by absorbing infrared radiation. Carbon dioxide and chlorofluorocarbons are examples of greenhouse gases" (Google)

Dictionary).

General Overview

Currently, the world uses three types of energy: fossil fuels, nuclear energy and renewable energy. Even though the consumption and demand for fossil fuels have been reduced in the recent decades, the energy needs of the world still depends mainly on unrenowable sources. In fact, "80 percent of the world's energy comes from fossil fuels"(white horse) and energy need of countries such as Oman, Qatar, Kuwait, Saudi Arabia, and Brunei Darussalam fully depend on fossil fuels. Fossil fuels are used to heat homes, power the manufacturing facilities, and fuel the vehicles. Also, they contribute to economies of countries who are exporters of oil, gas and coal. However, according to the predictions of scientists, by 2052 oil resources, by 2060 gas resources, and by 2088 coal resources will run out which proves that fossil fuels may not be the best resource to rely on. Aside from being finite, they also have adverse effects on the environment during their extraction, transportation and consumption. Extracting fossil fuels is done by either mining(for solids) or drilling (for liquids and gases). While underground mining may contaminate the water resources by mixing mine into them and making it acidic, surface mining requires "stripping all trees and other vegetation from peaks and hilltops, and then blasting away hundreds of feet of the earth below with explosives"(The). Likewise, oil and gas drilling brings water located deep below the surface containing heavy metals, hydrocarbons and radioactive materials. Furthermore, methane emissions from drilling wells are also common. Transportation of these materials are usually done by pipes and any leakage from these pipes may threaten the environment as well as the human life. For example, oil leaks damages the wetlands that humans use to harvest crops and causes the death of ocean animals such as sea otters, dolphins. As they are exposed to oil, they can't maintain their body temperatures and also sea animals that are affected by the oil spills may threaten human health since they are also nutrition sources for the humans. Consumption of the fossil fuels on the other hand has a common impact: air pollution. They have high levels of carbon emissions therefore also cause global warming. In conclusion, there are sufficient evidence showing that the world should adopt alternative energy resources.

Renewable energy resources were seen as the best alternatives; however, there are also unique methods to get energy. Algae for instance, may be potential energy producers considering the fact that they carry a energy rich oil. Since algae can be found in almost any type of water supply this will not benefit a specific area instead broad areas. However, to extract liquid from algae, laboratory conditions and biofuel refinery are needed which challenge the adoption of this method because of its cost and lacking scientific facilities as well as scientists. Another alternative may be tidal power which, according to a report done in the UK, can meet 20% of UK's electricity demands (Desjardins). Especially the countries which have long coastlines to oceans will be able to benefit more. However, this also requires facilities called Tidal Stream Generators and government investment. Countries such as France, South Korea, Canada, United Kingdom and Scotland already have the world's biggest tidal power plants. On the other hand, countries such as Iceland started the process of magma drilling with a project

called Iceland Deep Drilling Project. They will be able to extract geothermal energy which according to National Energy Authority of Iceland fulfills 25% of Iceland's electricity, heats 90% of houses in Iceland creates boost tourism sector. While the information "Geothermal Energy Association (GEA) found that only 6 to 7 percent of global geothermal power potential has been tapped" encourages the drilling there are some disadvantages such as expensive costs of geothermal plants, sulfur dioxide and silica emission that pollute the air and the possibility that introduced hot water may harm the environment. Hydrogen gas power is also an alternative source since it is a clean burning fuel. Instead of greenhouse gases it only emits water vapor and warm air. However, the main problem is that this energy is mostly derived from the use of fossil fuels or natural gas. It can also be derived from electrolysis of water in laboratory conditions but this method is less likely to be used. Another high technology energy source is space-based solar energy. Since most solar energy can't make it into the Earth's atmosphere, higher amounts of solar energy can be derived when solar energy is directly taken in space. The challenges include cost in getting a satellite to orbit, and the conversion of electricity into microwaves that can be beamed down to the planet's surface. Lastly, nuclear power is a method that has been discussed a lot since its pros and cons are equally insignificant. While the huge amount of energy that can be obtained arouse interest, risk of explosion or environmental harm to nearby species and harm to health through nuclear wastes makes it harder to decide.

There are alternative sources such as fusion power but the main problem with these techniques is that sufficient technology to integrate them into natural use is not found yet. Considering the fact that energy is a trade material, it is very probable that MEDCs who can afford the facilities and support scientific research will make energy derived from these sources more expensive when LEDCs purchase therefore most LEDCs will continue to use fossil fuels. So, in addition to researches about high technology methods, more feasible yet not commonly used energy extraction methods such as human power, biofuel, wind power and solar energy should be integrated to natural consumption.

Major Parties Involved and Their Views

Sweden

Sweden is the leader in the European Union in terms of using renewable resources. In fact, 54% of the energy used is coming from renewable sources, mainly hydropower for electricity and biofuel for heating. One reason for the widespread use of renewable resources may be the promotion by Swedish government and laws. For instance, there is a green electricity policy and electricity retailers are required to buy a portion of green electricity coming from wind, solar, geothermal or wave power; biofuels or small-scale hydroelectric plants in addition to their normal supply (Energy). Also, the free market with 140 companies, allows Swedes to choose their power suppliers. Only resources that raise question in Sweden are nuclear energy and ethanol power since it is not clear whether are safe to use or environment friendly. Aside from these conventional renewable resources, body heat is a also an energy source in Sweden: commuters passing through the central station was used to heat a nearby building.

France

As the world's largest net exporter of electricity due to its very low cost of generation, France derives 75% of its electricity from nuclear energy. There are 58 nuclear reactors across the country and nuclear technologies continue to develop. France also has a very low carbon emission per capita since its energy sources are mainly nuclear and hydro. French government has decided that renewables can't replace nuclear power. While seeming economically advantageous, benefit of nuclear power is up to discussion considering the fact that there have been radioactive leaks due to broken pipes and blasts such as the one happened at Flamanville Station. Aside from nuclear energy, French scientists are currently working on fusion power with a complex scientific and engineering project, ITER (International Thermonuclear Experimental Reactor), in order to reach a new source of energy from the sun.

China

As a single country, China is quite influential on world's energy consumption due to its high population and huge export market. Unfortunately, China also ranks first in the list of countries with top carbon emission. That signifies that most of the energy sources used are not renewable fossil fuels. Ironically, it also has the world's largest capacity for hydro, wind and solar power. However, due to high population these can only fulfill 24% of the population's need. Even though China has reduced usage of dirty energy in last 50 years, it won't be easy to abandon them considering the fact that China is world's largest coal and a major oil exporter. Most of the sector is under the control of government whereas approximately 20% is supported by foreign investors.

India

India is a country that uses renewables and fossil fuels almost equally. It is the third largest producer of coal in the world and its oil imports are increasing each year. Due to its high population its total energy consumption and carbon emission is very high. On the other hand, it has a huge potential in renewable energy and shows a great improvement converting its energy sources in renewables.. Its geographical conditions and climate allow harnessing solar, wind, biomass and hydro energy. In the last decade there are laws promoting renewables. According to Indian Electricity Grid code 2010, it has been made mandatory for each Indian state to generate/ purchase a minimum amount of electricity through Renewable Energy. Also in 2018, India installed rooftop solars that have capacity of 3,855 MW. However, there are also ongoing problems regarding the environment. The poor quality of Indian coal and the lack of infrastructure to clean it when it is used in power sector may lead to environment especially to air pollution. Furthermore, "45% of rural households do not have access to electricity and over 1 million households have no access to any form of modern energy or lighting"(India) so it is certain that India should adapt to new energy policies.

Timeline of Events

1954	The world's first nuclear power station to generate electricity for a power grid started operations at the Soviet city of Obninsk.
1994	United Nations Framework Convention on Climate Change (UNFCCC) entered into force.
2011	Fukushima Daiichi nuclear disaster happened in Japan.
2015	The Ministerial Conference on the International Energy Charter was held in The Hague. International Energy Charter is a treaty that establishes a framework for energy, regarding the areas trade, transit, investment and energy efficiency.

UN Involvement

UN Energy is one of the few entities in the UN, dedicated to energy. Its mandate is to promote system-wide collaboration in the area of energy through developing policies in the energy area and focusing on their implementations, promoting interactions between stakeholders and ensuring that implementations are in coherence with UN standards.

Goal 7 of Sustainable Development Goals is about affordable and clean energy. It aims “to ensure universal access to affordable, reliable and modern energy services, increase substantially the share of renewable energy in the global energy mix, double the global rate of improvement in energy efficiency, enhance international cooperation to facilitate access to clean energy research and technology, and promote investment in energy infrastructure and clean energy technology, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries”(Energy)

United Nations Framework Convention on Climate Change (UNFCCC), which entered into force on 21 March 1994, “seeks to stabilize atmospheric greenhouse gas (GHG) concentrations at levels that would prevent dangerous anthropogenic interference with global climate”(United) Since this requires the use of renewable sources convention also has clauses about clean energy use. The convention offers three paths to combat the high level of greenhouse gas emissions. Considering the greenhouse emissions when fossil fuels are burnt regulating this is a significant step.

Relevant UN Documents

The Secretary General's Advisory Group on Energy and Climate Change
[http://www.un.org/millenniumgoals/pdf/AGECCsummaryreport\[1\].pdf](http://www.un.org/millenniumgoals/pdf/AGECCsummaryreport[1].pdf)

United Nations Framework Convention on Climate Change (UNFCCC)
<https://unfccc.int/resource/docs/convkp/conveng.pdf>

Possible Solutions

First step of changing the current energy sources to new ones should be making sure that governments accept the current sources are both finite and harmful to the environment. Therefore government officials from the Ministries of Environment should be updated about the new technology that may lead to alternative sources. This can be done through summits with the help of NGOs and UN Energy. Also, citizens who prefer to use fossil fuels should be informed about the health and environmental consequences. Promotion by government is also a major issue and policies similar to “green electricity” policy in Sweden may reduce the consumption of dirty energy. Energy used in factories should be inspected and stakeholders should be informed. Furthermore, scientific research should be encouraged by the governments since most of the new energy sources are found by scientific research. Since these researches and facilities require a budget countries should spare a budget and if they can't make it loans should be available. Lastly, governments should be responsible of making the energy from these sources affordable for the society. The solution proposals should ensure the reduction of carbon emissions.

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