United Nations Development Programme

Topics:

Development of Alternative Energy Sources

Development of Sustainable Agriculture
Topic 1: Development of Alternative Energy Sources

Background:

In the midst of an energy crisis because of factories, power plants, and other demanding facilities, the world has been thrown into a frenzy to find more economically and environmentally efficient forms of energy. As climate change continues to pose more of a threat to society and natural resources are being depleted at an alarming rate, nations across the globe have begun programs to discover efficient alternative energy sources using the wind, the sun, the ocean, and many other ways. Alternative energy sources are sources that create energy without the need of fossil fuels, in its production. The main purpose of developing these alternate energy sources is to combat climate change. Climate change has increasingly become a threat to ecosystems such as the Great Barrier reef due to coral bleaching, melting away of ice caps, and to deteriorating our ozone layer.

One of the most prevalent alternative energy sources is wind energy, first seen in 1888. Although wind energy has been around for thousands of years, Bush was the first to create wind turbines that created electricity through their movement. The energy is harnessed through wind turbines. As the wind turns the wind turbines, they are able turn the kinetic energy from the wind into electricity for other uses. The incorporation of wind turbines has increased greatly in just the past decade. The U.S. in the past 5 years has invested on average $15 billion in wind turbine production. The Global Wind Council in 2014 released their prediction that by 2050, up to 30% of global power will be potentially harnessed from the wind. This increase in the wind industry could create thousands of needed jobs in nations on every continent. The use of wind energy is
also very green, seeing that it can reduce hundreds of million tons of CO2 emissions each year. This alternate form of energy has created a gateway for economically efficient and clean energy.

Another alternative source of energy is that harnessed from underwater currents. First discovered in the United States, in 1882. Hydroelectricity has remained prevalent in today's age, seen in rivers, in oceans, and as dams. Some of the largest dams to this day are the Three Gorges Dam, in Hubei and the Hoover Dam, in Nevada. These dams and other forms of hydroelectricity, use the flowing water and convert its mechanical energy into electricity. Modern hydropower has become arguably the most efficient technique of generating electricity, converting roughly 90% of the possible energy into electricity. The World Energy Council released that in 2016, hydropower made up 16.4% of the amount of electricity used in the entire world that year.

The concept of solar energy was first grasped by Alexandre Becquerel in 1839, but it was until over a hundred years later that Bell’s Lab revealed the first ever solar panel, in the United States. Solar panels use photons to release atoms of electrons, ultimately creating electricity. Solar panels are one of the very few forms of alternative energy that are seen being used on a household level. Solar power has seen an incredible boom in just the past five years. In 2016 alone, solar power added globally increased by roughly 50%. This was due to the combined efforts of both the United States and China. This now totals 305 GW of solar power capacity worldwide, compared to the 50 GW capacity in 2010. Just 1 GW can power over 1.4 million homes a year. Since 2013, solar energy has made up over 22% of electricity generated globally.

The last substantial form of alternative energy used in today’s society is nuclear energy. Nuclear energy has been seen as very controversial in the past 50 years due to how dangerous it can be if it is not processed and handled correctly. Nuclear energy progress has remained steady
to this day, besides the few hiccups, such as the tragedies that occurred at Chernobyl and Fukushima. These were the results of nuclear meltdowns, dispensing mass amounts of radiation in a large radius. This lead to 28 deaths, hundreds of thousands of people evacuated, and billions of dollars spent to rebuild and compensate the people affected by this meltdown. Despite these two major meltdowns, there are a total of 444 working nuclear plants today, in 31 different countries and contribute 14% of the world’s electricity used each year. Nuclear power is on the verge of being spread to all nations, with 100 orders for the construction of nuclear plants in many nations.

Our world has seen a great increase in alternate sources of energy in the last decade. This is summed up to climate change’s impending effects and the depleting stockpile of fossil fuels. This chain reaction of events, has sent nations into a frenzy to remain electrically stable and create a cleaner tomorrow. Nations must model themselves from countries like Denmark that reached 39.1% of their overall energy coming from clean sources. Nations must also bring aid and formulate plans to help third world nations develop energy sources seeing that 79% of people living in third world nations don’t have access to electricity. As nations continue to push towards more renewable sources of energy, they must ensure effectiveness and their safety towards the general public, to truly beat climate change and allow our earth to return to a more stable state.

UN Involvement

As this race to grow more dependent on alternate energy sources has grown, the UN has come to assist in this intricate problem. The International Renewable Energy Agency (IRENA), is the first multinational agency started in 1981, that is steered towards distributing clean energy
globally. There are 75 nations a part of this agency and each plan to help governments and private industry spread renewable energy into all industrialized nations. Their combined efforts has lead to nations having easier access to efficiently generating clean energy. The most recent global initiative plan to confront this issue was The World Summit on Sustainable Development (WSSD) of 2002. The World Summit on Sustainable Development was a combination of State and Government leaders, national delegates, business, NGOs, and tens of thousands of participants. The focus of this World Summit was to conserve natural resources, spread renewable energy throughout all nations, and bettering the lives of people. Since this Summit, the ozone layer has stopped decreasing and NASA officials predict it will begin increase once again. This is due to nations cutting back on emissions because of terms agreed upon at the World Summit of 2002.

In December of 2014, the General Assembly passed resolution A/69/225 focusing on the promotion of new and renewable sources of energy. This resolution was passed without a vote. The point of this resolution was to create applicable plans for the distribution of renewable energy for all nations. This resolution also focused on how to begin renewable energy programs in lesser developed nations. This resolution and many others passed has worked towards the common goal to help achieve a cleaner earth while still generating enough energy for the world’s needs, through alternative energy sources.

The UK created the Carbon Trust NGO to help companies create a low carbon economy. The Carbon Trust is based out of five different continents. They go into companies and present commercial low carbon technologies to substitute for their harmful means of production.
Questions to Consider

● How can third world nations begin their own alternative energy sources?

● What do nations not boarding water, with little wind do to harness alternative energy sources?

● What incentives can nations be given to convert to alternative energy?

● Why would nations with vast amounts of fossil fuels convert to alternative energy sources?

● How can nations avoid breaking cultural beliefs and still convert to cleaner energy sources?
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Topic 2: Development of Sustainable Agriculture

Background:

The practice of sustainable agriculture encompases the three main ideas of environmental health, economic profitability, and social and economic equity. Sustainable agriculture is the practice of utilizing non-GMO crops; decreased or absolute no usage of pesticides, herbicides or insecticides; and implementing sustainable farming techniques such as rotational crop farming, cover crops, and regenerating old farming techniques for modern usage. The overall goal of this practice is to productively farm while preserving the environment, community’s health, and financial well-being of farmers. However, agricultural output must increase by 70% in order to feed the growing population by 2050. Large scale farming practices, such as monocultures, focus on the production of one crop, commonly using Monsanto produced GMO, genetically modified, seeds along with harsh herbicides such as Roundup, which in effect harm the environment and socioeconomic conditions of small farmers.

Chemically induced farming practices progressively cause harm to the environment. Practices such as over fertilization, the usage of pesticides and herbicides, and monoculture contribute damage to coastal and local water sources and the loss of nutrients such as nitrogen and potassium in topsoil. In addition, 40% of synthetically produced fertilizers are directly converted to ammonia and released into the atmosphere. Pesticide contamination of water sources can deplete the communities of beneficial microorganisms in the soil, harm the animals that minimize pest populations, and contribute to human health problems.

The use of GMO seeds does not cause direct harm to the environment but rather to the social and economic status of small farmers. Monsanto directly sells farmers their genetically produced seeds, which have been engineered from seeds of specific regions of America or India.
A farmer, who agrees to grow GMO crops, is upheld to the following conditions: that they will not resell the seeds, will not save and replant the seeds the following year, and will abide by the terms and conditions, which includes accommodating to price changes and only utilizing tools that are permitted by the Monsanto until the contract has expired. In addition, organic farmers who are near those using Monsanto produced seeds are also in financial jeopardy. Due to Monsanto having international patent laws, if any seeds have been physically or environmentally carried over to a farmer’s land, that does not have a contract with Monsanto for that year, the farmer can be sued for “stealing” the patent for profit and can also be under investigation for regenerating the genetically modified seed. These cases can go into effect if it is found that Monsanto seeds have contaminated over one percent of a non-Monsanto contractor’s crop. Organic farmers are threatened by the fact that Monsanto has taken 144 small farmers to court and settled 700 cases out of court. With these threats, organic farmers must take costly precautions, such as installing physical barriers, to avoid seed contamination and maintain their integrity as organic farmers. Another biological infringement of genetically modified seeds is the loss of plant genetic diversity. Due to the fact that since 1900, 75% of plant genetic diversity had been lost and food security is threatened seeing as preserving plant diversity ensures that under certain stresses an agroecosystem can maintain productivity.

The practice of sustainable agriculture encompasses the use of locally produced and generated seeds. Benefits include resistance for local pests, and in effect, a decreased urgency for the usage of pesticides. Although GMO seeds do not directly cause harm to the environment, the effects of technological advancements of Bt technology, or Bacillus Thuringiensis, counteract naturally occurring bacterium in the soil. Due to this resistance, herbicide resistance increases
because once successful pesticides become irrelevant to resistant plants. For example, in 2001 only 1.5 million pounds of pesticides were used globally, but in 2011, close to 90 million pounds of pesticides.

During the 1980’s Cuba was one of the most agriculturally mechanized and commercialized nations in Latin America with one of the largest produce outputs. However, in 1991 with the “Special Period in Peacetime”, Cuba did not have access to imports, and as a result, imports of fertilizers and pesticides dropped by 80%. During this crisis, the Cuban government set forth a national initiative to restore self-reliant techniques. This initiative encouraged the use of biofertilizers, earthworms, compost, crop-rotation, and the practice of integrated animal grazing. As a result, small-farmers reverted to these practices and food production rapidly increased for small farmers whose average output rose when compared to the mechanized and chemical era of Cuban farming. In addition, in 1993, the Cuban government initiated a program of “linking people with the land”. As a result, those, who felt more responsibility for the outcomes of their land and were not merely daily paid farmers, inputted greater efforts into sustainable practices and productivity. In order to incorporate this increased productivity with sustainable methods, the Cuban government created the Basic Units of Cooperation Program (UBPC). As a result, 80% of state land was turned over to workers to lease, rent free, but farmers had to meet yearly quotas and also follow the guidelines for specific practices and crops selected by the state. If farmers were able to produce greater yields than their determined quotas, all remaining products were able to be sold for personal profit. The Cuban case has displayed that integrated farming techniques and abolishing alienation set forth by the
economics of modern agriculture results in greater yields all while serving the environment and socioeconomic status of farmers.

**UN Involvement**

As a part of the Sustainable Developmental Goals, the United Nations has incorporated the development of sustainable agriculture while providing resources to member nations. Through an intergovernmental platform, the Food and Agriculture Organization, FAO, leads sustainable development for farmers worldwide. The FAO negotiates with Members and works to provide services and trainings to educate farmers about pollination management, integrated pest management, advice about conservation of soil and water, and promotion of mixed agricultural systems. In 2015, the UN passed resolution A/Res/70/478, which encourages increased cooperation amongst UN organizations such as the FAO along with the Committee on World Food Security in order to ensure adoption of sustainable agricultural techniques in developing nations. This includes registration of pesticides, integrated pest management, increased access to diverse and local seeds, educating small farmers in local schools and community centers. In addition, resolution A/Res/70/223, passed in February 2016, focuses on adapting sustainable agricultural techniques regionally rather than creating a universal platform. In order to optimally aid farmers with food production, this resolution takes into consideration the specific regional economics and trade stand points of the specific Member state. As a part of these resolutions, the World Seed Project, a program created with partnerships between the FAO and ECOSOC, enhances seed diversity by increasing access to quality seeds. The World Seeds Project proposes the following main objectives of seed regulation, plant variety protection, seed quality in order to ensure successful in-field performance, an international standard for seed
certification, and an establishment of local seed sectors and vendors. As a part of the Sustainable Developmental Goals, the UN has integrated the preceding resolutions and initiatives into international programs in order to increase the practice of sustainable agricultural techniques.
Questions to Consider:

1. How will nations implement laws and continue law enforcement in order to ensure the practices of sustainable farming?

2. What are the downfalls of using GMO seeds and how do nations plan to encourage the use of locally produced seeds?

3. How does trade influence farming methods and how will nations promote sustainable agriculture while maintaining economic well-being of their nations and people?

4. What measures will nations take to combat competitive product values, which drive many farmers to utilize unconventional methods?

5. In accordance with your nation’s economic status and position, what initiatives and programs will be in placed to further educate and incorporate sustainable farming techniques?
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