Study Guide

United Nations Environment Programme

Gimnazija Bežigrad Model United Nations

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UNITED NATIONS ENVIRONMENT PROGRAMME – STUDY GUIDE

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INTRODUCTION

Personal introductions

Ms. Manca Eržen

Dear All,
I'm very happy to welcome you to the UNEP of this year's GimBMun. To say a few words about myself, I am an IB student in the international school, here at Gimnazija Bežigrad. Some of my interests include art, music, and sport. I have been immersed in the world of MUN since my very first year in Bežigrad, when I participated in SMun as a Delegate. Since then, I have become a member of my school's MUN community and this year I'm honoured to be your chair. The thing I love most about MUNs, however, is that I have met a lot of good friends through them, and I am sure I will get to know many great people this year too. See you there.

United Nations Environmental Programme – UNEP

"Since its inception in 1972, the United Nations Environment Programme (UNEP) has been the global authority that sets the environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment." (UNEP. 2022)

UNEP's mission is to provide leadership and encourage partnership among the member states in caring for the environment, to improve people's quality of life without compromising that of future generations. UNEP works on delivering transformational change for people and nature by drilling down on the root causes of the three planetary crises of climate change, nature and biodiversity loss, and pollution and waste.

It eagerly promotes energy efficiency and the use of energy in renewable sources with a mission statement: "Energy drives economies and sustains societies, however the production and use of energy is also the single biggest contributor to global warming."

Introduction and history of the topic

Non-renewable energy sources are usually cheap and available in abundance, which is why we've been using them for decades. Huge amounts of carbon dioxide are released into the atmosphere just by digging coal, but that is nothing in comparison with the amounts of carbon dioxide or methane in such fossil fuels after they are transformed into electrical energy. In the past decades many environmental issues have arisen, and in relation to them energy issues. Scientists proved that the use of energy greatly modifies the state of the environment. With regard to the environment and energy, one of the most important problems, which is also the most well-known, is the problem regarding the decrease in gas emissions that provoke the greenhouse effect, which are caused mainly by the production of energy when burning coal, oil and gas.

Such effects of energy on the environment can be of a local, regional and global nature. In this perspective, such issues are valid on a planetary scale no less than on a national and regional scale. In order to guarantee the future generations, the wellbeing that has been obtained up to now, a type of development that is different from the past is necessary, a development that utilises energy better (rational use), less energy (efficient technologies and less waste) and that uses forms that are substantially different from the present ones.

Renewable energy is energy that is collected from renewable resources that are naturally replenished on a human timescale. It includes sources such as sunlight, wind, the movement of water, and geothermal heat.

Renewable energy technology projects are typically large-scale, but they are also suited to rural and remote areas and developing countries, where energy is often crucial in human development. As most of the renewable energy technologies provide electricity, renewable energy is often deployed together with further electrification, which has several benefits: electricity can move heat or objects efficiently, and is clean at the point of consumption. In addition, electrification with renewable energy is more efficient and therefore leads to significant reductions in primary energy requirements.

Although most renewable energy sources are sustainable, some are not; some biomass sources are considered unsustainable at current rates of exploitation. Therefore, biomass is considered *renewable, but not green*. (Biomass has historically been considered a carbon-neutral energy source, meaning carbon emitted, and carbon removed from the atmosphere are essentially balanced. It is presumed that the carbon captured in trees is the same as carbon released through combustion. But increasingly, research into these claims has shown otherwise.) Even though, currently around half the EU's renewable energy is based on biomass – and that is a figure that is likely to rise. "The benefit of biomass is that it can be implemented rapidly and uses the current energy infrastructure," says Niclas Scott Bentsen, an expert on energy systems based at the University of Copenhagen in Denmark. However, the majority of biomass-generated energy is not carbon neutral; this fact causes a great division amongst countries, politicians and scientists, asking a question, whether biomass should be put in the same renewable category as wind and solar.

Environment problems and climate change have drastically improved since the start of usage of renewable sources of energy. There are also huge financial advantages of using renewable and sustainable energy.

PAST ACTION TAKEN BY THE UN (and other authoritative bodies)

To start with, The Clean Air Act is also one of important documents regarding the discussed issue. The Clean Air Act 1956 was an Act of the Parliament of the United Kingdom enacted principally in 1956 in response to London's Great Smog of 1952. The Act introduced several measures to reduce air pollution. Primary among them was mandated movement toward smokeless fuels, especially in high-population 'smoke control areas' to reduce smoke pollution and sulphur dioxide from household fires. The Act also included measures that reduced the emission of gases, grit, and dust from chimneys and smokestacks. The Act was a significant milestone in the development of a legal framework to protect the environment and later acts such as the Paris Agreement for example.

Moving forward, one of the most important past actions taken was the establishment of Sustainable Energy for All (SEforALL). That is an international organisation working in partnership with the United Nations, leaders in government, the private sector, financial institutions and civil society with as goal to drive further, faster action toward the achievement of Sustainable Development Goal 7, which calls for universal access to sustainable energy by 2030, and the Paris Agreement, which calls for reducing greenhouse gas emissions to limit climate warming to below 2° Celsius. All the three documents mentioned above hold a great importance of resolving these issues in a diplomatic way. SEforALL Global Energy Efficiency Accelerator Platform, was launched at the UN Secretary General's Climate Summit 2014 to achieve the goal of doubling the global rate of energy efficiency improvement by 2030. The Accelerator Platform brings together countries, cities, private companies, international organisations, and financial institutions to accelerate improvements in energy efficiency. UNEP co-leads four of SEforAll's Energy Efficiency Accelerators through its projects on efficient lighting, appliances and equipment, transport, and district energy.

Another such project, launched at the G20 Summit, is the International Methane Emissions Observatory (IMEO), a data-driven, action-focused initiative by the UN Environment Programme (UNEP) with support from the European Commission to catalyse dramatic reduction of methane emissions, starting with the energy sector. IMEO is set to revolutionise the approach to methane reduction by interconnecting data with action on research, reporting, and implementation. IMEO will collect and integrate diverse methane emissions data streams to establish a global public record of empirically verified methane emissions at an unprecedented level of accuracy and granularity. By providing near-real time, reliable, and granular data on the locations and quantity of methane emissions that targets strategic mitigation action, IMEO will catalyse strategic mitigation actions that are urgently needed to achieve the Paris agreement goals.

However, the UN is doing much more than just passing resolutions to combat the issues of energy use on the environment. First is digitalization for flexible and resilient energy systems; The energy sector urgently needs to decarbonize and provide wider accessibility for the millions of people that still lack electricity, particularly in low-income communities. Digital technologies can provide benefits for climate and power system resilience and ensure energy is delivered at the lowest possible price. Further on, digitalization is the key to integrating renewables into electricity systems, improving the reliability of power grids, and reducing the cost of access to electricity, therefore contributing to a more just and equitable energy transition. Digitalization offers an opportunity to leverage existing data to put sustainable energy where it needs to be. The theoretical benefits are well understood. However, there is a need for concrete pilots to quantify the impacts of policies aiming at digitising demand and identify technical and behavioural bottlenecks.

Knowing that improving energy efficiency is one of the most cost-effective measures countries can take, UNEP also works with a variety of partners to improve energy efficiency and strengthen the business case for energy efficiency, including at the city level. Energy efficient technologies, such as

lighting based on LEDs, use less energy while providing the same or better light output. Deploying such technologies can substantially reduce greenhouse gas emissions. Energy efficiency also provides other benefits such as economic development, job creation, reduction of pollution, improvement in human health, and alleviation of poverty. According to the IEA's report, Capturing the Multiple Benefits of Energy Efficiency, 2013, the global economy could increase by $18 trillion by 2035 if we adopted energy efficiency as the "first choice" for new energy supplies, which would also achieve the emission reductions required to limit global warming to 2°C.

Some other ways of UNEP fighting the environmental problems because of energy issues are also making it easier for the finance community to invest in renewable energy and energy efficiency by providing technical assistance and targeted financial support and promoting sustainable, low-emission transport and work to reduce the sector's contribution to air pollution and climate change.

THE CURRENT SITUATION

From 2011 to 2021, renewable energy has grown from 20% to 28% of global electricity supply. Fossil energy shrank from 68% to 62%, and nuclear from 12% to 10%. The share of hydropower decreased from 16% to 15% while power from sun and wind increased from 2% to 10%. Biomass and geothermal energy grew from 2% to 3%. There are 3,146 gigawatts installed in 135 countries, while 156 countries implied laws regulating the renewable energy sector. But the International Energy Agency said in 2021 that to reach net zero carbon emissions more effort is needed to increase renewables, and called for generation to increase by about 12% a year to 2030.

Wind and solar energy have experienced remarkable growth and huge cost improvements over the past decade with no signs of slowing down. Prices are declining rapidly, and renewable energy is becoming increasingly competitive with fossil fuels all around the country. In some places, new renewable energy is already cheaper than continuing to operate old, inefficient and dirty fossil fuel-fired or nuclear power plants.

It is estimated that the cost of generating electricity from wind and solar has declined by 58% and 78%, respectively, since 2009. Those cost trends are expected to continue, and coupled with the recent extension of federal tax credits for renewable energy, wind and solar growth is widely expected to accelerate over the next several years, with capacity projected to double from 2015 levels by 2021. With careful planning, renewable energy and clean energy options like increased energy efficiency and storing energy for use later will help pave the way. Renewables could supply four-fifths of the world's electricity by 2050, massively cutting carbon emissions and helping to mitigate climate change. But solar and wind power must be fully integrated, with sustainable bioenergy providing another key part of the mix.

Significant parties involved

Country	Measures taken
The Republic of Albania	The Republic of Albania has one of the highest shares of renewable energy in Southeast Europe. Hydropower accounts for the largest share of the country's electricity generation, representing around 95% of Albania's installed power capacity.
Federative Republic of Brazil	In Brazil almost 84% of the energy generated is renewable energy. Brazil's massive investments play a big role, solar energy reaching 6.9% and wind energy, 10.9% in the Brazilian energy matrix.
People's Republic of China	As of 2017, China's renewable energy consumption accounted for 11.8% of the total energy consumption and it managed to become the world's largest consumer of renewable energy according to the IEA. Renewable energy has become the main driver of China's power generation growth, and clean energy substitution has played an increasingly prominent role in it. According to the NEA report, China's installed renewable generation capacity totalled 1,063 GW in 2021, accounting for 44.8% of the nation's total generation capacity.

Republic of Costa Rica	In Costa Rica, in 2018 renewable energy supplied about 98.53% of the energy output for the entire country. Currently, Costa Rica generates less than 1% of its energy production using solar power. The rest of the production is 79% Hydro, 12% Wind and 8% Geothermal.
Federal Republic of Germany	In Germany the share of renewables in electricity consumption has steadily grown over the last few years, rising from around 6% in 2000 to around 38% in 2018. It is expected that by 2025, 40-45% of electricity consumed in Germany will be derived from renewables.
Republic of Iceland	About 83.7% of Iceland's respective energy is generated from natural resources or sources of energy that are not depleted by use, such as water, wind, or solar power. In 2015 renewable energy provided almost bioenergy 100% of electricity production, with about 73% consuming from hydropower and 27% from geothermal power.
New Zealand	Currently 84% of New Zealand's electricity comes from renewables. They plan to be using 100% renewable electricity by 2035.
The Kingdom of Norway	Although Norway's extensive hydropower resources cover 92% of electricity generation, supporting an almost completely renewable-based power sector, from a global perspective Norway is the seventh-largest natural gas producer in the world, supplying 3% of global gas consumption. It is also a significant oil producer, accounting for 2.3% of global oil production in 2020.
The Kingdom of Sweden	60.1% of Sweden's respective energies are generated from renewables. Sweden's high percentage of renewable energy can be linked to the availability of moving water. As of 2021, 29.47% of Sweden's total energy consumption came from hydropower, of which 42.97% accounted for electricity. In addition, as of 2021, over 4,000 wind turbines were distributed all around Sweden.
United states of America	In 2021, renewable sources in the USA accounted for about 12.2% of total U. U.S. energy consumption and about 20.1% of electricity generation. Around 40% of U.S. renewable energy comes from biomass, 27% from wind power, 19% is hydroelectric, 12% from solar power, and 2% geothermal.
Oriental Republic of Uruguay	Uruguay currently generates over 98% of all electricity from renewable sources, primarily wind and hydropower. It is one of the most electrified countries in the hemisphere, with 99.9 percent of homes connected to the electric grid.

ISSUES TO ADDRESS

Initial cost of installation

Even though the cost for renewables continues to fall, the initial cost of installation is one of the biggest issues to address when talking about renewable energy. Of all energy sources, solar as well as wind are the most affordable. However, there is still a big difference in cost between the installation of a solar power system and the installation of a gas-fired power plant. The installation cost of a large-scale solar power system is around $2,000 per kilowatt. Likewise, for a small-scale residential system, it is around $3,700 per kilowatt and for a new gas-fired plant, it is $1,000 per kilowatt only. The high upfront installation cost makes countries think of renewable energy as not accessible and fossil fuel plants more acceptable due to their low installation costs.

The Ukraine war has changed global energy policies

The growing problems in the global energy market caused by Russia cutting oil and gas supplies to Europe in response to the severe sanctions imposed following the invasion of Ukraine have significantly affected the price of renewable energy. Even 12 months ago, solar and wind power cost about two-thirds the price of coal and gas. And since then, the price of coal and gas has roughly doubled, so now renewable energy is very significantly cheaper.

Since some countries can no longer rely on Russia, countries such as Denmark and Norway, for example, have proposed major wind power developments to provide electricity to themselves and the rest of Europe, while the European Union's Mediterranean Hydrogen Partnership with Egypt is designed to promote investments in renewable electricity generation and the production of low carbon hydrogen.

Besides Europe, Australia has also suffered significant increases in the cost of oil, gas and electricity due to the huge global changes in supply and demand, as well as other countries.

FURTHER READING

The impact of the Ukraine war on global energy markets

Available on the link: https://www.cer.eu/sites/default/files/insight_NB_14.7.22.pdf

''The war in Ukraine is not about oil and gas, but the conflict has further disrupted an already volatile situation, in which energy prices were rising due to post-lockdown energy demand exceeding supply. The consequences of Russia's attack on Ukraine will take years to play out, whatever happens next: the only credible forecast is of uncertainty and further price volatility.

After Russia's attack on Ukraine, oil and gas have continued to flow from Russia to Europe, even through the pipelines which cross Ukraine. Since the invasion, energy prices have risen sharply, significantly benefiting Russia and other oil and gas producers. Only in late June were physical gas supplies cut – not as a result of any Western sanctions but because Russia has chosen to deny supplies to countries such as Poland, Bulgaria and Finland. In each of these cases, the limited supplies which have been cut have been easily replaced. However, on July 11th Russia also shut the major NordStream 1 pipeline for scheduled maintenance, potentially cutting up to 60 per cent of supplies to Germany. If Russia chooses not to reopen the pipeline, those supplies will be harder to replace.

Within a year, almost all European countries may have eliminated most of their oil purchases from Russia, and found alternative supplies from the Middle East and elsewhere. The price they have to pay will depend less on Russia than on the Organization of the Petroleum Exporting Countries (OPEC), the oil exporters' cartel, deciding on oil production levels. Europe will have cut its natural gas imports from Russia by a third to a half. Supplies from the US and Qatar will flow to Europe through existing facilities, supplemented by projects such as the floating terminals being planned around a number of German ports. These imports will help to close the supply gap, but at a price.'' (Butler. 2022)

Nick Butler. (2022, July 14). The impact of the Ukraine war on global energy markets. Centre for European reform. https://www.cer.eu/sites/default/files/insight_NB_14.7.22.pdf

Sustainable use of resources

Available on the link: https://www.eniscuola.net/wp-content/uploads/2013/07/pdf_energy_knowledge_31.pdf

''Generally we can say that a natural resource is used by man in a sustainable manner when, knowing its capacity to reproduce or to maintain a determined quality it is not exploited more than a determined threshold. When use of a resource exceeds the said threshold, it means that there will be a progressive and dangerous impoverishment, in terms of quantity or in terms of quality. Actually the concept of sustainability can only be applied to renewable natural resources that can be reproduced in times that belong to a "human scale". For non-renewable sources, such as fossil fuels, it is best to talk of optimum exploitation.

The development of our society is tied to energy consumption. Without energy, man would not have been able to reach the present level of wellbeing and quality of life. Without the availability of sufficient energy resources future economic development would be jeopardized. Notwithstanding

recent increases in prices, energy is still “cheap”. All of us therefore are used to make use of large amounts of energy without thinking much about it, this is because we are not aware of our actual needs. The world energy panorama shows constant energy reserves, relatively stable prices, which however tend to grow, and a strong increase in the demand, particularly in the developing countries.

This problem also sums with the disparity between nations, with regard to the level of wellbeing that has been obtained. Distribution of energy consumption is greatly anomalous: 20% of the world population (in the richer countries) uses 80% of the energy that is produced. This situation is strongly in contrast with the fundamental principles of equality among peoples, sustainable development and therefore global quality of life.

The energy issues arose in relation to the environmental issues. Use of energy greatly modifies the state of the environment and the effects can be of a local, regional and global nature. In this perspective, that is valid on a planetary scale no less than on a national and regional scale, right up to each one’s home, the protection of the environment becomes a primary objective to be achieved in the development of the different energy systems. In order to guarantee the future generations the wellbeing that has been obtained up to now, a type of development that is different from the past is necessary, a development that utilizes energy better (rational use), less energy (efficient technologies and less waste) and that uses forms that are substantially different from the present ones.

We can act on many fronts. Firstly, the economically developed countries can decrease their emissions from the production of energy, as follows:

- improving the performance of the combustion processes (less combustible burnt in order to obtain the same level of energy) and reducing wastes
- introducing new technologies that “hold back” the polluting substances, avoiding their dispersion in the air
- replacing sources of energy that are highly polluting with others that are less polluting or not polluting at all (among which almost all the renewable sources). In this way the level of economic wellbeing of these countries would not decrease, instead there would be a decrease in the impact on the environment.

Secondly, the developing countries can be helped by supplying them with better technologies that are currently available, those with a low environmental impact and high performance. There however still is the problem of the depletion of fossil fuels in the long term, which is the real challenge for “sustainability” that mankind must face, and its solution can only come from research and large scale utilization of renewable and clean sources of energy.'' (Eni Scuola)

Unknown. *Sustainable use of resources*. Eni Scuola. https://www.eniscuola.net/wp-content/uploads/2013/07/pdf_energy_knowledge_31.pdf

Untapped potential for climate action: Renewable energy in nationally determined contributions

Available on the link: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Nov/IRENA_Untapped_potential_NDCs_2017.pdf

''Nationally Determined Contributions (NDCs) are a cornerstone of the Paris Agreement on climate change. They set out the actions that countries plan to undertake to achieve the agreement's objectives, focused on limiting the rise in average global temperatures to well below 2°C, ideally to 1.5 °C. Renewable energy features prominently in most of these NDCs, confirming that the transition to a renewable energy future has come to be recognised globally as central to addressing climate change.

Governments are well underway with implementing the first set of NDCs and will begin to review them in 2018. This entails taking stock of the adequacy of those NDCs to meet the objectives set out in the historic 2015 climate agreement. NDCs will be revised or updated by 2020, and every five years thereafter – with each revision aimed at being more ambitious than the previous one.

As a contribution to this process, the International Renewable Energy Agency (IRENA) has undertaken an analysis of current NDCs. These were compared with national renewable energy targets, plans, programmes and policies, as well as with current trends in renewable energy deployment.

IRENA's analysis suggests that while renewable energy targets and policies are indeed critical components of NDCs, there is substantial scope for countries to increase their renewable energy ambitions. This is true not only for the purposes of mitigation, but also to build resilience in the face of growing climate change impacts.'' (IRENA. 2017)

Unknown. (2017). *Untapped potential for climate action: Renewable energy in Nationally Determined Contributions*. IRENA. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Nov/IRENA_Untapped_potential_NDCs_2017.pdf

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