# NAMUN'20

# UNEP

## STUDY GUIDE

#JointheWorldsHeartbeat

**TABLE OF CONTENTS**

## Welcoming Letters

### Letter from Secretary-General

Highly esteemed participants of Nesibe Aydın Model United Nations 2020 Online Conference, NAMUN'20,

I am more than honoured to welcome you all to the 9th annual session of NAMUN. This year, unlike past years' conferences, NAMUN'20 will be held online due to the ongoing pandemic. Our conference has been endeavoring to encourage delegates both socially and academically through an inclusive simulation of the United Nations with unprecedented committees and agendas to enhance our delegates' eagerness and enthusiasm to speak up.

Both our academic and organisation team have been working diligently to give you the NAMUN quality and abate the concerns about NAMUN being online. We did our best to make that online conference similar to face-to-face conferences as much as possible. Therefore; we could not discard some characteristics of MUN such as placards, fun activities in coffee breaks, Q&A sessions with our keynote speakers, et cetera.

This year in NAMUN'20, we have six committees which are UNICEF (United Nations Children's Fund), UNEP (United Nations Environment Programme), IOC (International Olympics Committee), UNCSTD (United Nations Commission on

Science and Technology for Development), NATO (North Atlantic Treaty Organisation) and last but not least our historical crisis committee RUSREV 17' (Russian Revolution 1917). All of our committees' agenda items had been decided according to the original organisation committees' policies. Additionally; all of our committees', except RUSREV 17', agenda items are focusing on debating upon Sustainable Development Goals (SDGs) of the United Nations.

UNEP's agenda items are;

- Promoting the development of nuclear technology as a safe and sustainable energy source of the future
- Protection of the environment in armed conflicts
- The influence of COVID-19 on the environment

The agendas are some of the real world's problems that have a big impact on nature which will get worse each day if it is not stopped. Delegates will be finding solutions to help nature. Also in this committee delegates have to be more attentive since this committee is in the competition of UNHCR's Model UN Global Refugee Challenge. I would like to thank our academic assistants, Melisa Bozyel, Kuzey Özbakır, and Sumru Bekar, and our Under-Secretary-General, Uğur Emin Baynal, who worked simultaneously for this committee.

It is my utmost wish to see all those who attend will reach their aims with remarkable knowledge and memories. Additionally, I would like to thank every participant for supporting MUN conferences with their contribution and determination during the pandemic and staying safe.

We as the NAMUN'20 team are looking forward to meeting all of you!

Secretary-General of NAMUN'20

Nil Hamavioğlu

**Letter from Under-Secretary-General**

Highly esteemed participants,

My name is Uğur Emin Baynal and I am a senior student in Ankara Gazi Anatolian High School and I shall be serving you as the Under-Secretary-General of UNEP, with honour. Though unfortunately, I will not be able to attend the whole conference due to my exam year but an email and a phone number of mine shall I include at the end of this letter below my name for you to contact me freely during, before or after the conference.

As the delegates, you will have discussions upon "Promoting the development of nuclear technologies as a safe and sustainable energy source of the future", "Protection of the environment in armed conflicts" and "The influence of COVID-19 on the environment" which all are focusing on the Sustainable Development Goals (SDGs) of the United Nations. We expect you to debate on all the questions to be covered and answer them accordingly with your countries policies.

I would like to thank our distinguished Secretary-General Nil Hamavioğlu to give me the opportunity of being a part of NAMUN'20 academic team. And also I would love to thank my academic assistants Melisa Bozyel, Sumru Bekar, Kuzey Özbakır for this guide made by their labour and their labour only.

Kindest Regards,

Uğur Emin Baynal

ugurbaynal2003@gmail.com

+905462189162

# 1. Introduction to United Nations Environment Programme (UNEP)

## 1.1 What is UNEP?

The United Nations Environment Programme (UNEP) is the authority that is responsible for organizing the UN's environmental activities and assisting developing countries in adopting eco-friendly policies. It acts as an advocate for the global environment. Its mandate covers a broad range of areas, such as the environment, aquatic and land ecosystems, environmental governance, and green economic development. Since it is a member of the United Nations Development Group, UNEP also aims to help the world meet the 17 Sustainable Development Goals.

## 1.2 History of UNEP

UNEP was established by its first director Canadian businessman and philanthropist Maurice Strong, in June 1972, as a result of the Stockholm Conference on the Human Environment. Over the years UNEP has worked on finding solutions to many environmental problems such as; pollution in the Mediterranean Sea, the threat to aquatic resources posed by human economic activity; deforestation, desertification, and drought; the depletion of the Earth's ozone layer by human-produced chemicals; and global warming. Over the past 30 years, it has mainly focused on climate change, helping the creation of environmental institutions and treaties like the UN Framework Convention on Climate Change. In 1988, it joined the World Meteorological Organization to establish the Intergovernmental Panel on Climate Change (IPCC), a UN body for assessing the science related to climate change. It has achieved many successes, such as the 1987 Montreal Protocol for protecting the stratospheric ozone layer by phasing out the production and consumption of ozone-depleting substances, as well as the 2012 Minamata Convention, a treaty to limit toxic mercury. It has also led the International Environmental Education Programme with UNESCO during the years 1975-1999.

## 1.3. Functions of UNEP

The United Nations Environment Programme (UNEP) is the leading authority in the United Nations System that carries a lot of responsibilities. UNEP

uses its expertise mainly to take environmental standards and practices to the next level along with helping implement environmental obligations at the country on regional as well as on global levels. The work programme of UNEP is organized into six areas of concentration that are; Climate Change UNEP, Post Conflict and Disaster Management UNEP, Ecosystem Management, Environmental Governance UNEP, Harmful Substances UNEP, and Resource Efficiency/ Sustainable Consumption and Production UNEP.

### 1.4. Sources of UNEP

The UN Environmental Programme is dependent on voluntary contributions for 95 percent of the income. The resources of UNEP, which are provided by their funding partners, are divided into three main sections: the *UN Regular Budget*, which supports the functions of the Secretariat, including the Governing Bodies, Coordination in the UN system and cooperations with global scientific communities; the *Environment Fund*, which is UNEP's core fund that supports the essential capabilities needed for the balanced and efficient delivery of UNEP's programme of work; and *Earmarked Contributions* which are earmarked funds for specific projects, themes or countries that enable the expansion and replication of the programme of work and its results in more countries with more partners.

## 2. Promoting the Development of Nuclear Technology as a Safe and Sustainable Energy Source of the Future

### 2.1. History of Nuclear Technology

It all started when German physicist Wilhelm Roentgen discovered x-rays in 1895. The following year, in France, Henry Becquerel discovered that uranium salts could produce penetrating radiation on their own, without being excited by any external source. This led to the realization that uranium produces x-rays. Marie and Pierre Curie also studied this phenomenon and discovered two new elements: Polonium and Radium. This led them to coin the word “radioactivity” in 1898. While Ernest Rutherford was studying radioactivity in England, he discovered two new types of radiation: alpha and beta radiation. He also discovered that the majority of the atom’s mass was contained in its nucleus in 1909. He is now considered the father of nuclear physics. He then discovered gamma rays and theorized the existence of neutrons without having any evidence of their existence. Neutrons were discovered later on in 1932. These discoveries made the foundations of the nuclear energy production industry. In 1938, German physicists Otto Han and Fritz Strassman did an experiment where they shot neutrons at uranium atoms and saw that a significant amount of energy was being released. With the help of Lise Meitner and Otto Frisch, they explained what they had observed was the splitting of atoms through fission.

Then, in 1939, Leo Szilard and Enrico Fermi had an idea that fission reactions could be used to create explosions. Szilard and a few other scientists, including Albert Einstein, warned President Roosevelt about the possibility of creating nuclear weapons. The President started the Manhattan Project to begin developing nuclear bombs for the US. In 1942, Enrico Fermi, working as a part of the committee, created the first man-made fission chain reaction in Chicago. This was when the project swung into full development. The team developed two types of bombs, one using uranium and the other using plutonium. The project was top-secret and entire covert cities were built for it. In 1945, by the end of WWII, nuclear weapons were used on people for the first time; atomic bombs were dropped in Japanese cities Hiroshima and Nagasaki. It was at this point that people realized how destructive this technology could be.

In 1951, the first nuclear reactor called Experimental Breeder Reactor 1 that produced electricity was made. Then, the first nuclear-powered submarine, the USS Nautilus, was completed in 1954. In the same year, the Soviets completed their first nuclear power plant. The construction of many more commercial nuclear reactors for electricity generation was made during the 1960s and 70s. In 1974, France started developing 75% of its power through nuclear reactors, meanwhile, 20% of the energy in the US was generated by nuclear power plants. However, in 1979, the future of nuclear power was starting to be questioned when an accident occurred on Three Mile Island. And then, when the Chernobyl

disaster happened in 1986, releasing a cloud of radiation that affected a big part of northern Europe, global opinion began to shift against nuclear power.

After the disaster in Chernobyl, in the late 90s and early 2000s, there was a high degree of safety in nuclear power plants and no deaths caused by them in the US. The global opinion began shifting back to positive as the industry demonstrated high safety measures. However, the Fukushima disaster happened in 2011 when an earthquake and tsunami led to a partial meltdown and the release of a large amount of radiation in Japan, reminding people that nuclear technology wasn't completely safe.

Currently, the United States is the world's largest producer of nuclear power. In 2017, it generated 805 billion kilowatt-hours of electricity using nuclear power, which makes up 32% of the 2.5 trillion kWh of nuclear power produced worldwide. In 2017, the top ten producers were:

| **Country** | **Billion kWh produced** |
|---|---|
| United States | 805.3 |
| France | 384.0 |
| China | 210.5 |
| Russia | 179.7 |
| South Korea | 154.2 |
| Canada | 97.4 |
| Ukraine | 81.0 |

| | |
|---|---|
| Germany | 80.1 |
| United Kingdom | 65.1 |
| Sweden | 60.6 |

### 2.2. Effects of Nuclear Technology

Nuclear energy is clean, efficient, and cheap. Around 10% of the world's electricity today is produced by nuclear power from about 440 nuclear reactors. It is the world's second-largest source of low-carbon power and there seems to be many advantages to it. But there are still disadvantages, if something goes wrong it can create a nuclear meltdown, causing a huge catastrophe. But for many countries, the benefits outweigh its risks.

#### i. Effects of Nuclear Technology on Human Health

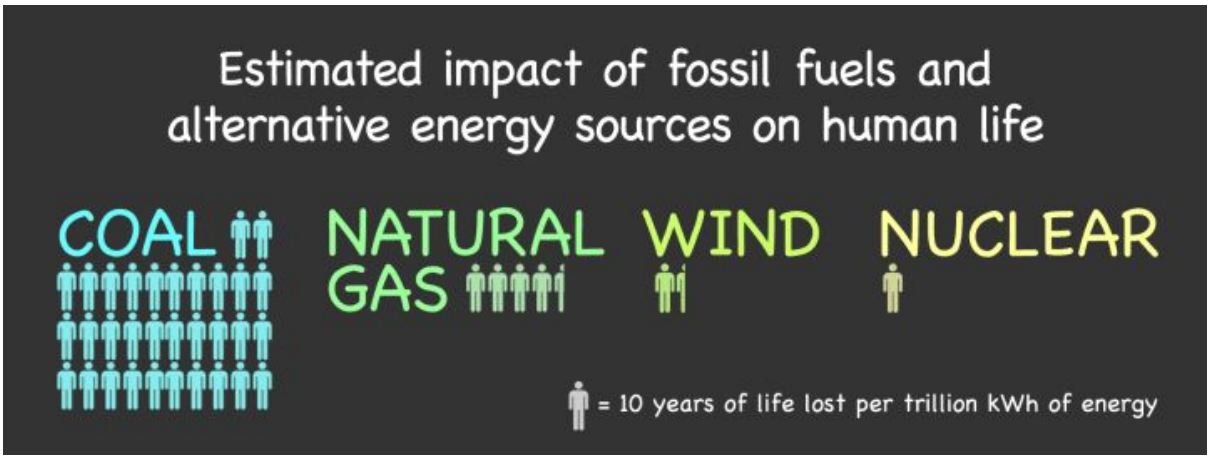
Many health risks arise from the presence of nuclear materials that emit radiation. Depending on factors like dosage, whole-body vs. partial body irradiation, internal vs. external exposure, age at exposure, etc., various kinds of health problems may arise such as thyroid disease, numerous types of cancer, other long-term health problems, genetic effects that can also appear in further generations and death. Apart from the radiological risks, many activities throughout the nuclear cycle require the use of heavy machinery and equipment and hazardous chemicals, which pose health risks similar to those now refueling might expect to find

associated with any other large-scale industrial endeavor. Fuel cycle operations may cause physical injury from faulty machinery or fires and explosions, and physical injury, illness, or cancer may arise from exposure to hazardous chemicals. These effects may all be seen in workers. The radioactive waste produced may also cause such effects on humans.

There may also be cases in which an accident happens in a nuclear power plant, resulting in dreadful catastrophes. As demonstrated in the 1986 Chernobyl accident, nuclear power plant accidents can result in the release and dispersion of huge amounts of nuclear materials into the environment. Members of the public and workers may be exposed to high levels of radiation, causing many serious health problems that may even affect further generations and death.

On the positive side, using nuclear technology can also have positive effects on human health. Fossil fuels produce many toxic by-products which are often released into the air, soil, and water, causing pollution and threatening our health. The World Health Organization has stated that urban air pollution causes 7 million deaths annually or about 1/8 of all deaths. Furthermore, coal power plants release more radioactive waste per kWh into the environment in the form of coal ash compared to nuclear power plants. Additionally, the European Union and the Paul Scherrer

Institute found that nuclear power is the least deadly major energy resource, outranking coal, oil, gas, and even wind by a slight difference.




**ii. Effects of Nuclear Technology on the Environment**

An uncontrolled nuclear reaction in a nuclear reactor could result in huge pollution and contamination of air and water. But the risk of this happening is very small because of the high safety measures taken in nuclear power plants.

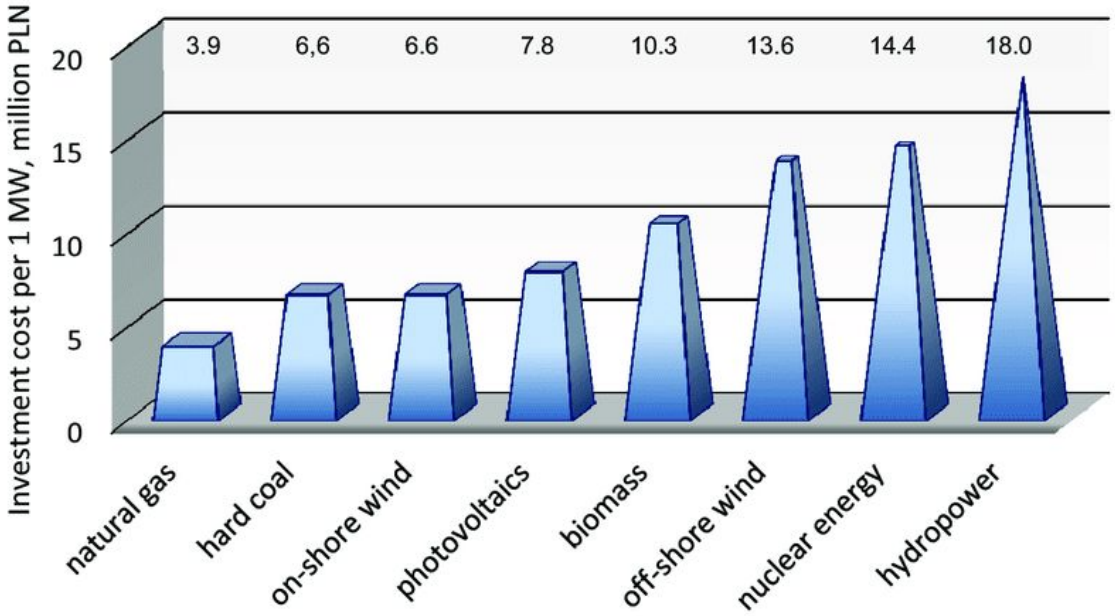
The biggest environmental concern related to nuclear technology is radioactive wastes such as uranium mill tailings and used reactor fuels. These materials can remain radioactive for thousands of years, causing a threat to the environment and human health. If not handled properly, it can cause genetic problems for many generations of animals and plants and cause harm to many animal species, therefore also harming the ecosystem and the balance of nature. It also requires large amounts of

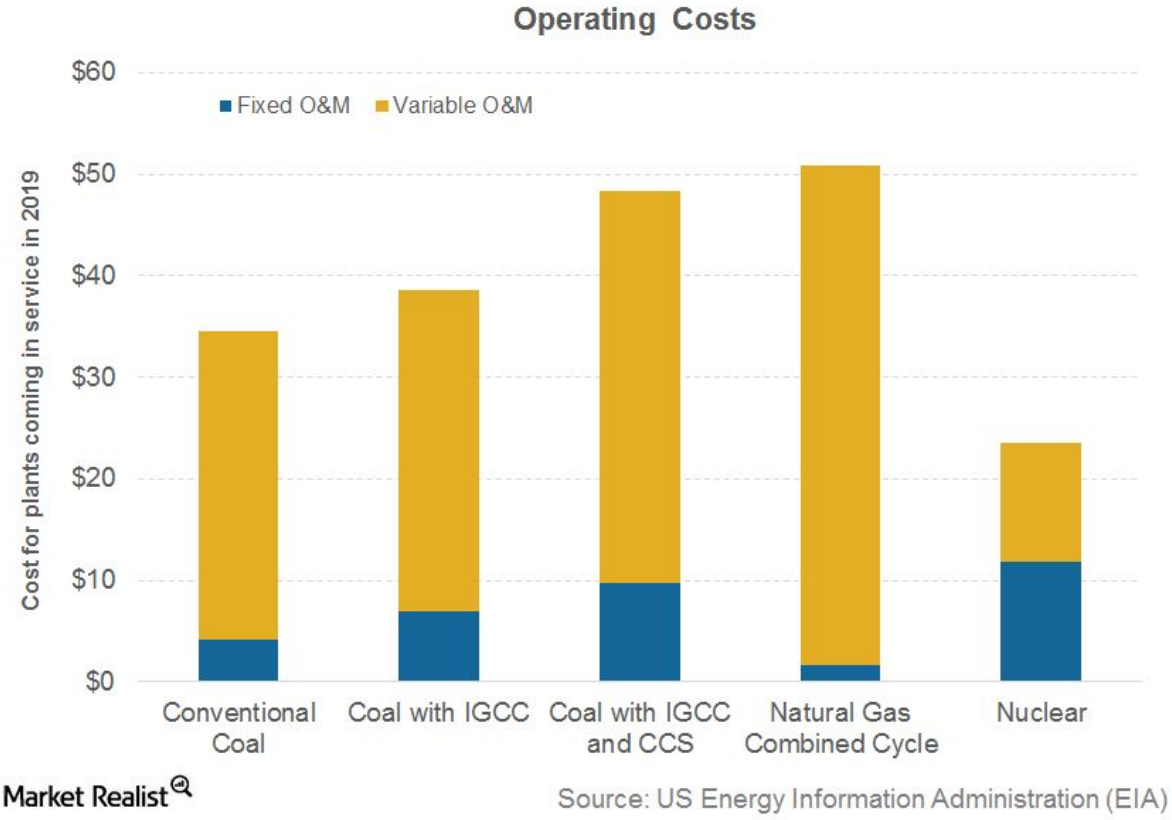
energy for the process of mining and refining uranium to produce reactor fuel.

It also has huge benefits for the environment. Unlike fossil fuel-fired plants, it does not pollute the air or produce carbon dioxide while operating and it has one of the smallest carbon footprints amongst energy sources. It is a good response to major climate change problems and global warming our world is facing right now refueling since it doesn't emit greenhouse gases.

**iii. Effects of Nuclear Technology on the Economy**

Nuclear power plants are very expensive to build compared to other types of power plants. The capital cost – the building and financing of a nuclear power plant- makes up a large percentage of the cost of nuclear energy. In 2014, the US Energy Information Administration estimated that capital costs of new nuclear plants will make up %74 percent of the levelized cost of electricity; higher than the capital percentages for fossil fuels (63% for coal and 22% for natural gas), but lower than some of the renewable energy resources (80% for wind, 88% for solar PV). Here are nuclear energy's investment costs compared with some other energy sources:


Investment cost per 1 MW, million PLN
20
15
10
5
0
3.9
6,6
6.6
7.8
10.3
13.6
14.4
18.0
natural gas
hard coal
on-shore wind
photovoltaics
biomass
off-shore wind
nuclear energy
hydropower


Operating Costs
$60
$50
$40
$30
$20
$10
$0
Fixed O&M
Variable O&M
Cost for plants coming in service in 2019
Conventional Coal
Coal with IGCC
Coal with IGCC and CCS
Natural Gas Combined Cycle
Nuclear
Market Realist
Source: US Energy Information Administration (EIA)

On the other side, the operating cost of these plants is lower than almost all fossil fuel competitors.

And they're expected to operate for at least 60 years or even longer in the future. They are currently the most reliable and stable source of energy: they run 24 hours a day, 7 days a week, and they only need refueling to depend importantly every 1.5-2 years. In 2018, a study showed that nuclear plants operated at full power at least 93% of the time. The nuclear industry also supports nearly half a million jobs in just the US and contributes on average 60 billion dollars annually to the US economy. Up to 700 people can be employed in one nuclear power plant with worker salaries that are 30% higher than the local average.

The costs and the efficiency of nuclear power plants have still room for improvement. For example, in the USA, operating costs per kWh shrank by 44% between 1990 and 2003, and the construction costs have also fallen considerably over time due to standardized design, shorter construction time, and more efficient generating technologies.

### 2.3. Security Threats of Nuclear Power

There is a big possibility of nuclear energy facilities being targets to terrorism; the principal attraction of these facilities as terrorist targets lies in the fact that they have the potential of creating a release of radioactivity big enough to cause a significant number of casualties and many long terms effects such as

land, air and water pollution, and health problems that will soon start appearing in people. Destruction of depending important energy supply in the targeted country and the possible shutdown of other nuclear energy facilities because of this threat would also be seen as a huge success by terrorists. Attacking a nuclear energy facility would be very hard for terrorists to achieve, but would have dreadful consequences; hundreds or even thousands of immediate fatalities and thousands of delayed deaths from radiation-induced cancer could occur, and there would be very big economic damage from the contamination of the area.

### 2.4. Nuclear Weapons and Warfare

Nuclear weapons are unarguably the most dangerous weapons on earth. They can destroy whole cities, potentially killing millions, and jeopardizing the natural environment and the lives of future generations. Although they have been used only twice in warfare until now – in the bombings of Hiroshima and Nagasaki in 1945- there are still around 14500 reported nuclear weapons in our world today and over 2000 nuclear tests have been conducted to date. Here are all of the world's current nuclear weapons:

| **Country** | **Stockpiled** | **Deployed** | **Retired** | **Total** |
|---|---|---|---|---|
| Russia | 4490 | 1461 | 2000 | 6490 |
| United States | 3800 | 1365 | 2385 | 6185 |
| France | 300 | 10 | ? | 300 |
| China | 290 | 0 | 0 | 290 |

| | | | | |
|---|---|---|---|---|
| United Kingdom | 200 | At least 40 | ? | 200 |
| Pakistan | 150-160 | 0 | 0 | 150-160 |
| India | 130-140 | 0 | 0 | 130-140 |
| Israel | 80-90 | 0 | 0 | 80-90 |
| North Korea | 20-30 | ? | 0 | 20-30 |

The impacts of a nuclear explosion depend on many factors, such as the design of the weapon and its yield, whether the explosion happens in the air, on the surface, underground or underwater, the meteorological and environmental conditions, and whether the target is urban or rural. These factors affect the blast, thermal radiation, initial radiation, residual radiation, fallout, and electromagnetic pulse caused by the explosion.

**2.5. Nuclear Safety**

Nuclear safety, by the definition of the International Atomic Energy Agency, is “the achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards”. It is also defined by the IAEA as “the prevention and detection of and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities”. This

covers all nuclear facilities, the transportation of nuclear materials, and the use and storage of nuclear materials for the medical, power industry, and military uses. It is very important and very serious measures must be taken in all of these facilities and processes.

**i. Nuclear Power Plant Safety and Security**

There are three primary objectives of nuclear safety. The first one is to protect individuals, society, and the environment by establishing and maintaining effective defense labor against radiological hazards in nuclear power plants. The second one is to ensure that radiation exposure in normal operation within the plant or released from the plant is as low as reasonably achievable and below prescribed limits. The last one is to prevent accidents in nuclear plants and ensure that all probabilities are taken into account, even if they are extremely unlikely. Safety must be ensured in all stages of the nuclear fuel cycle.

The structure of the nuclear power plant must be made out of materials that have the capacity of shielding the outside environment during both normal operations and emergencies. Appropriate measures must be taken in the power plant to maintain ideal conditions. Multiple barriers must be built in the power plant for different purposes, including the containment of radioactive materials, radiation protection, fire protection, physical

protection, etc. The design of the power plant must ensure that accidents will cause no harm or minimal harm.

### ii. Storage and Disposal of Nuclear Waste

The most challenging part of the nuclear fuel cycle is the proper disposal of waste materials. These materials come in different forms such as solid, liquid, and gaseous. All types of waste have their method of disposal, and they should be disposed of in a way that does minimal harm to humans, flora, fauna, and the natural environment. The liquid wastes are segregated, filtered, and conditioned; and after adequate dilution, they are disposed of to the environment water body. Solid wastes are disposed of in brick-lined earthen trenches, reinforced cement concrete vaults, or tile holes, depending on their level of radioactivity. They can also be stored in steel cylinders along with inert gas and water to be completely sealed. This acts as a radiation shield for nuclear waste and is a relatively cheap way to store radioactive waste. But there are many concerns about some methods of disposal used for radiological waste because there is a risk of the waste leaking into the environment if a huge geological change occurs (e. g. earthquakes).

### iii. Nuclear Emergency Preparedness and Response

Although the likelihood of a nuclear emergency happening is very small because of all the safety measures taken, there should be an emergency preparedness plan for every power plant and all the personnel in the plant must be properly trained. According to a report published by the NRC and the U.S. Environmental Protection Agency, a nuclear plant accident would be experienced in the 10-mile radius area of the plant; at greater distances, the concern would be about food and water contamination. Therefore, there should be plans prepared for 2 different zones: the 10-mile radius and the 50-mile radius. There should be full-scale emergency response exercises made in every power plant 2 times a year. In the case of an emergency, the power plant and the surrounding area must be immediately evacuated and the power plant should be shut down and sheltered to protect the public and the environment.

### iv. Protecting the Health of Nuclear Workers

People working inside nuclear facilities need to be constantly monitored for the exposure of radiation as a result of their job operations. The standards laid down in this regard should be strictly followed and the working environment should be regularly checked. Workers can be

exposed to a maximum of 30 mSv of radiation in a year and the average exposure over 5 consecutive years should not exceed 20 mSv/year.

Unfortunately, many labour issues remain in the industry, impacting the lives of many workers and their families. A subculture of frequently undocumented workers does the dirty and potentially dangerous work in many nuclear facilities. And, when these workers exceed their radiation exposure limit at a facility, they often migrate to another one. The World Nuclear Association stated that the workforce of these “nuclear gypsies” has been a part of the industry for at least four decades. Existing labor laws protecting workers’ health rights aren’t always properly implemented as well. Records are required to be kept, but they often aren’t.

**v. Nuclear Peace and Disarmament**

Nuclear disarmament is the process of reducing or eliminating nuclear weapons. It’s also often referred to as “denuclearization”. Many experts on this topic see nuclear weapons as one of the biggest threats in front of us and urge complete disarmament. It is predicted that the next nuclear explosion could wipe out the earth. Although many people defend nuclear weapons by saying they have helped maintain peace on earth, their existence causes a huge threat: a misconception or miscommunication between world leaders could lead to a horrible disaster when nuclear weapons are present.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is an international treaty whose objective is to prevent the spread of nuclear warfare and to promote the peaceful uses of nuclear energy. The treaty was negotiated between 1965 and 1968, by the Eighteen Nation Committee on Disarmament which is an UN-sponsored organization based in Switzerland. The treaty entered into force in 1970. As required by text, in 1995, NPT parties came together again and agreed to extend the treaty indefinitely. As of August 2016, 191 states have become parties to the treaty, though North Korea announced its withdrawal in 2003.

### 2.6. Sustainability of Nuclear Energy

Overall nuclear energy can be considered a sustainable energy source because it has no carbon footprint, it's very efficient, it produces minimal waste and it has a small land footprint (a typical 1000-megawatt nuclear power plant requires just a little more than 1 square mile). It could become even more sustainable if the source of uranium changed from mined ore to seawater, making it completely renewable. The amount of uranium in seawater is just 3.3 micrograms/liter, but that makes up a total amount of 4.5 billion tons of uranium. Just because it isn't renewable right now doesn't mean it's not sustainable either. Even renewable energy resources become unsustainable when they're used faster than they regenerate; on the other hand, a non-renewable energy source

can be sustainable if it's used for a slow enough rate that supplies the last thousands of years.

## 3. The Effect of War Preparations on the Environment

We can examine the effects of preparation for war on the environment in three main groups.

### 3.1. Military Based Effects

Human Security becomes more and more important as the war continues which leads to significant impacts on the environment.

Military activities consume a lot of fossil fuels for weapon ammo and tactical trials before the war, which leads to the secretion of unwanted amounts of greenhouse gases. Also at the creation of hazardous weapons like gas bombs, the environment gets even more polluted as the need for more hazardous materials increases. Armed forces from around the world were responsible for the emission of two-thirds of chlorofluorocarbons (CFCs) that were banned in 1987 for causing damage to the ozone layers. Also, naval accidents during the Cold War have dropped at a minimum of 50 nuclear warheads and 11 nuclear reactors into the ocean; they remain on the ocean floor which cannot be taken.

### 3.2. Social Effects

It requires the establishment of arms and ammo warehouses and bases of military airports on large lands. Millions of acres of land devoted to the production, storage, and testing of weapons (chemical, biological, nuclear, conventional) are highly polluted today, and even if military use is stopped, it is virtually impossible to reintroduce to natural life. Large pieces of land are also needed for military exercises. During these exercises, the entire natural structure is destroyed due to various reasons such as land and air bombings, tank, and armored vehicle movements. As a result, environmental impacts such as soil pollution, pollution of groundwater and groundwater resources, air pollution, and damage to wildlife in that area occur. Nevertheless, military bases require a huge landscape too, which causes some unwanted villages to get redesigned. It forces the villagers to migrate, which affects the social lives of people.

**3.3. Political Effects:**

Political Effects occur mostly after huge wars. Wars that wrote their names in history like Vietnam, Africa, and World Wars affected the environment with chemical and nuclear weapons which led the landscape to lose its mold. Natural ecosystems collapsed at lands. Chemical bombs blasted seas and destroyed their balance. As a result, countries that were affected by these changes encountered drought, deforestation, deterioration of territorial integrity, and food and nutrient loss. These after-effects made countries break their bonds with others.

### 3.4. Effects of War on the Environment

Different types of effects begin to occur as the war goes on. Some effects even last longer than expected which causes huge damages for countries. We group these effects as the process and the after-effects.

### 3.5. Effects in the process of the War

The wars have become even more devastating with the weapon technologies developing in the 20th century. Chemical, biological and nuclear weapons, long-range missiles, air bombings have both targeted civilians and have caused more and long-term environmental damage. As an example, the modern weapons used in the Kosovo and Gulf Wars have been lethal with their explosive effects, toxic chemicals, and radiation they contain, and have had a devastating effect on the environment. During the First Gulf War, millions of barrels of crude oil spread to the Persian Gulf, thousands of seabirds died and the oil wells in the desert were destroyed, animals and plants suffered ecological deterioration and disappeared. Also, the spread of tons of polluted gas into the atmosphere caused black snowfalls in Kashmir and oily black rains in Iran and Saudi Arabia. The gain in the use of illegal resources, usually in the war zones, allowed a handful of people to prosper, such as local dictators, and various groups to buy plenty of weapons. But for most indigenous peoples, these conflicts led to human rights violations, humanitarian disasters, and

environmental devastation, and eventually pulled these countries down to the minimum of human development criteria.

### 3.6. Effects that resume after the War

Today, the long-term negative effects of modern weapons on the environment have caused people to struggle with the enormous environmental destruction that occurred after the war. Infrastructure rendered unusable by bombings, forests destroyed, inefficient soils, radioactive pollution, groundwater, and groundwater resources that have been rendered unusable have caused human losses and even large migrations in the post-war period. While these migrations often caused excessive population movements in the migrated region, they also caused environmental problems. Also, the fact that people change countries may cause conflicts or instabilities in the abandoned country, destination country, or region. Land mines laid during the war also cause serious civilian casualties after the war. The collection of landmines aren't easy but the price of them is cheap. For this reason, thousands of acres of land, especially agricultural areas, are closed to use in the old conflict areas.

### 3.7. Conclusion and Offers

Wars have a lot of harsh results for the environment. To minimize the damage caused, the necessity of minimizing threats to human life and the environment during the war with preparedness and protection of civilians is one

of the most important lessons to be learned. Appropriate evaluation and cleaning work should also be done as soon as the war is over. Efforts should be made to bring the post-war country into an international and regional cooperation environment, especially when it comes to natural resources such as water. We need more solutions that do not contain more violence.

## 4. The Influence of Covid-19 pandemic on the environment

### 4.1. Effects on the Air Quality

Since the Corona Virus has become a threat to human health which forced everyone to stay at home for months, there were remarkable changes in the air quality. Scientists have stated that the lockdowns had worldwide benefits in terms of air quality such as;

**i.** Since the use of vehicles has almost completely stopped during the pandemic, the air quality has improved significantly, which minimized the release of dangerous toxins and possible harm to human health as well as the planet in general.

**ii.** Aviation emissions which are accounted for around 2.4% of global $CO_2$ emissions have also dropped during this time.

**iii.** Air pollution has lethal effects on plants and plays an important role in their growth which can be very harmful to their health and also have

negative effects on the economy. The better our air quality gets, the closer we get to the elimination of this problem.

**iv.** If we find a way to keep air pollution on a lower level, it can benefit the life of humans and animals in the long term.

However, scientists have stated that the benefits of air pollution reduction will be erased once the pandemic is over. There won't be any permanent environmental effects which means that we still need to work on comprehending the mechanics of environmental sustainability, societal consumption patterns and it will also force us to find ways of reducing environmental degradation for a future crisis-free world. To achieve these goals, governments are expected to be open to forward-thinking investments.

### 4.2. Decreased Concentrations of $NO_2$

**What is $NO_2$?**

Nitrogen dioxide is part of a group of gaseous air pollutants created as a result of street activity and other fossil fuel combustion processes. Its presence in air leads to the formation and modification of other air pollutants, such as ozone and particulate matter, and acid rain.

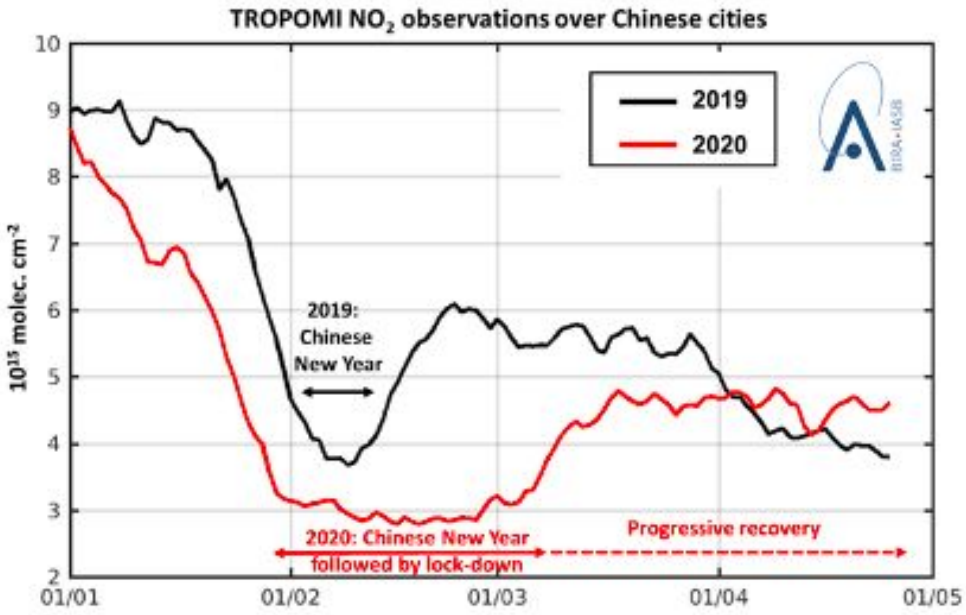
$NO_2$ has many impacts on human health such as:

**i.** Long-term exposure to $NO_2$ could decrease lung function and increase the risk of respiratory problems, especially for children.

**ii.** $NO_2$ alone has been observed to cause intense well-being impacts in controlled human exposure studies. Studies on human populations have not been able to confine potential impacts of $NO_2$, because of the complex link between concentrations in ambient air of $NO_2$, particulate matter, and ozone.

**iii.** Several studies have also shown that people who face $NO_2$ exposure increase their allergic responses to inhaled pollen.

Due to the Coronavirus, social activities have been restricted worldwide to reduce their spread. This has led to an outstanding decrease in industrial activity and traffic which are the two main sources of nitrogen dioxide ($NO_2$) in urban areas. $NO_2$ pollution has therefore decreased significantly all over the world.




The increase of $NO_2$ concentration over Chinese cities during 2020 (red) and 2019 (black).

According to scientific researches, the positive effects that Covid-19 has on the decreasing concentration level of nitrogen dioxide won't be long-lasting. However, there are discussions about possible ways of retaining the lowered level of $NO_2$ for a healthier environment such as:

**i.** Reducing the usage of nitrogen fertilizers for pastures and crops.

**ii.** Using split applications of nitrogen fertilizers since it increases the efficiency of use by plants, allowing less nitrogen dioxide to be lost to the atmosphere.

**iii.** Legume crops or pastures in the rotation should be preferred instead of nitrogen fertilizer since more of the nitrogen is in the form of organic matter which is released more slowly and is used more effectively by growing plants.

**iv.** It would be also beneficial if waterlogging was prevented since nitrate can be denitrified by soil bacteria to form nitrous oxide and nitrogen gas under waterlogged conditions.

### 4.3. Reduced Carbon Emissions and Global Warming

Before the Covid-19 pandemic, $CO_2$ emissions were rising approximately 1% per year over the last decade. However, since the Covid-19 virus was declared as a global pandemic, people were mostly forced to stay at home and reduce all of their outside activities. These restrictions led to people commuting less, which had direct effects on greenhouse gas emissions. According to research, greenhouse gas emissions, as well as $CO_2$ emissions, have fallen by 40% - 50% in some countries. Although scientists have stated that the pandemic won't have any long-lasting effects regarding the environment; the reduction of

travel, personal consumption, and food waste could be long-lasting since people have faced scarcity during this period of time.

Although Covid-19 had mainly positive effects on the environment, there are also possible side effects such as governments relaxing emission controls to ease their economic pressure as well as burning more and cheaper fossil fuels which could reverse the positive effects that were achieved during the Covid-19 restriction period.

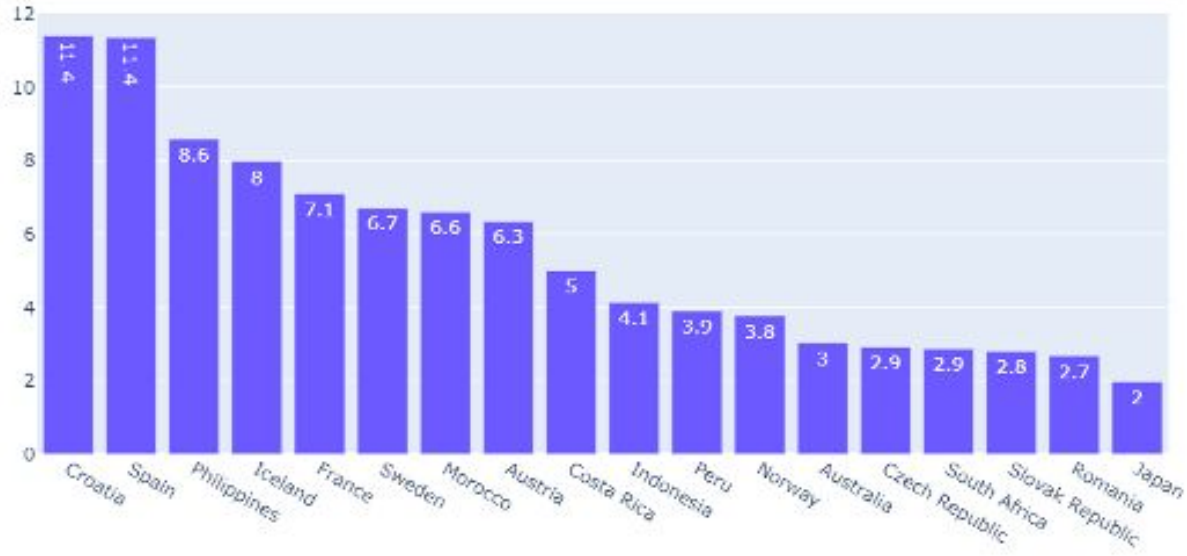
Even though this pandemic has led humanity to find alternative ways to live a life with outrages restrictions in terms of travel and food consumption that led to less air pollution, compared to all the damage that has been done to the environment, these changes will not have permanent effects unless they are well integrated into the general idea of protecting the environment.

### 4.4. Impacts of Covid-19 on the travel industry

The Covid-19 pandemic has resulted in national quarantines and global travel bans, which means that any kind of trips had to be canceled. The strict travel restrictions affected hotels, camping sites as well as other types of accommodation, restaurants, museums, etc.

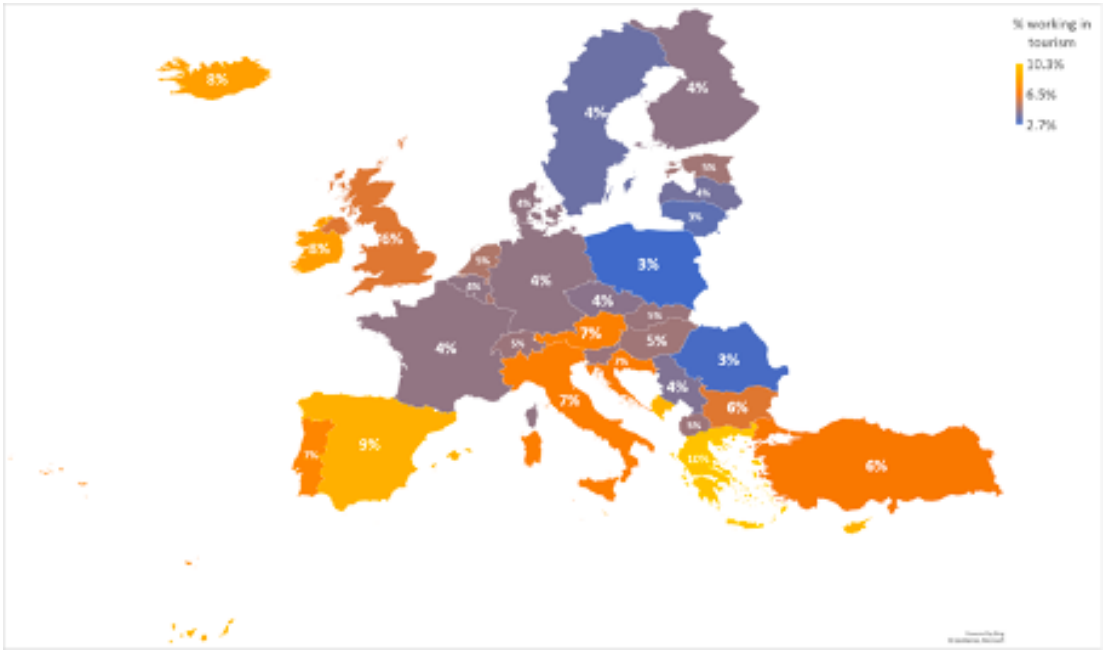
The tourism industry is a big part of the national economy that generates 10.3% of global GDP (Gross Domestic Product), which makes it an important driver of

the global economy. For some countries such as Spain and Italy, the contribution of tourism to their GDP is even higher than the global average of their GDP.




(**Figure 1**: Chart on the percentage of GDP contributed by tourism, source: OECD)

Travel restrictions have also caused the unemployment of numerous people and have been a barrier for several business associations.




**(Figure 2:** European overview of the percentage of the population employed in tourism-related sectors, source: Eurostat)

The Covid-19 pandemic also had negative effects on several small airlines. Flights were almost completely canceled due to the travel restrictions and national quarantines and even when they reopened, people were worried about their health and didn't want to take the risks.

Smaller airlines, which usually provided cheaper flights, had to shut down because of their extremely low incomes. Therefore, people are now forced to choose bigger airlines which can be too expensive for a lot of people but leaves them with no other option.

### 4.5. Negative effects of Covid-19 on the environment

The COVID-19 pandemic had several positive effects on the environment, however, there were also a lot of effects that are or could be damaging in the future. For example, the income of governments has been decreased significantly due to reduced reproduction, which leads to governments not being able to prioritize investing in the environment. Also, the control over certain areas could be cut back because most companies as well as the government itself are not able to send workers and it gets harder for the government to help disaster areas due to the same reason. Another side effect is the colossal production of disinfectants and masks which leads to increased pollution and chemical waste. The effects of Covid-19 also led to restrictions of NGOs that were helping to improve the environment all around the world.

## 5. Questions to be covered

- ➔ What are the positive and negative effects that the COVID-19 pandemic has on the environment?
- ➔ What are possible ways of retaining the improved air quality?
- ➔ What steps should governments follow to improve their economic state that was damaged during the Covid-19 pandemic?
- ➔ What could be done to maintain the lowered levels of $NO_2$?

- ➔ Do Covid-19 and the restrictions brought have good or bad effects on global warming in the long term?
- ➔ What are the effects of producing chemical waste such as disinfectants, solutions used in laboratories, etc. during the Covid-19 period on the environment? How does it affect climate change?
- ➔ How do travel restrictions during the pandemic affect travel companies such as airlines, the shipping sector, cruise tourism, etc. ?
- ➔ How were NGOs that worked for the environment affected by the pandemic?
- ➔ What are the pros and cons of using nuclear power?
- ➔ How can nuclear power become more sustainable?
- ➔ Which measures should be taken to make nuclear power safer?
- ➔ How should nuclear emergencies be handled?

## 6. References


- https://interestingengineering.com/the-history-of-nuclear-energy
- https://www.thebalance.com/nuclear-power-how-it-works-pros-cons-impact-3306336
- https://evatt.org.au/papers/nuclear-power-public-health.html
- http://sitn.hms.harvard.edu/flash/2016/reconsidering-risks-nuclear-power/
- https://www.eolss.net/Sample-Chapters/C09/E4-23-05-03.pdf
- https://www.conserve-energy-future.com/dangers-and-effects-of-nuclear-waste-disposal.php
- https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php#:~:text=Nuclear%20energy%20produces%20radioactive%20waste,health%20for%20thousands%20of%20years.
- https://www.world-nuclear.org/information-library/economic-aspects/economics-of-nuclear-power.aspx#:~:text=On%20a%20levelised%20(i.e.%20lifetime,very%20low%20greenhouse%20gas%20emissions.&text=The%20political%20risk%20of%20higher,taxation%20adds%20to%20these%20risks.
- https://www.nrc.gov/docs/ML1000/ML100050089.pdf
- https://www.nap.edu/read/11848/chapter/8#62
- https://www.un.org/disarmament/wmd/nuclear/
- https://www.britannica.com/technology/nuclear-weapon/The-effects-of-nuclear-weapons

- https://en.wikipedia.org/wiki/Nuclear_safety_and_security#:~:text=Nuclear%20safety%20is%20defined%20by,environment%20from%20undue%20radiation%20hazards%22.
- https://www-pub.iaea.org/MTCD/Publications/PDF/P082_scr.pdf
- https://www.agric.wa.gov.au/climate-change/reducing-nitrous-oxide-emissions-agricultural-soils
- https://www.greenfacts.org/en/nitrogen-dioxide-no2/index.htm#4
- https://www.eea.europa.eu/highlights/air-pollution-goes-down-as
- https://www.bbc.com/future/article/20200326-covid-19-the-impact-of-coronavirus-on-the-environment
- https://www.sciencedirect.com/science/article/abs/pii/S0301421511006987
- https://www.europeandataportal.eu/nl/covid-19/stories/impact-covid-19-international-tourism-industry
- https://inhabitat.com/covid-19-and-its-effects-on-the-environment/
- https://www.nature.com/articles/s41558-020-0797-x
- https://www.oneyoungworld.com/blog/what-effect-covid-19-climate-change