
F-GA
Global Warming Consequences
Moving to Another Planet
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Dear Delegates,

It is with great excitement that we welcome you to Yeni Yol Model United Nations 2023! Our names are Rana Beril Gülcü and Yağmur Onarlı, and we are humbled by the opportunity to serve as your Secretaries-General for the 2nd Session of YYMUN.

The Secretariat team has been working diligently to ensure that all delegates will be given the opportunity to develop broader perspectives, voice their opinions on current global issues, and cooperate with others to produce effective resolutions. We expect that the topics covered in the committees will appeal to all the delegates' levels or more challenging in Intermediate and Advanced committees so that they may provide challenge, helpful guidance to your needs and assistance to improve your visions. After an eventful weekend full of diplomacy, debate, and delight, we wish you to leave our conference with the potential to become future leaders of our society.

This document will provide you with the Study Guide for your committee, which will enable you to comprehend the issue to be debated more easily. The entire Secretariat and Staff have committed countless hours to ensure that the substance and presentation of this document are of the highest quality, and that you are be supported with the most useful tools to succeed at the conference. Each Chair has worked over the past few months to provide you with the foundation necessary to continue your own exploration of the topic areas. We look forward to working with you to continue YYMUN's substantive excellence.

Apart from this document, you will also be able to access a number of additional documents that will aid in your preparations for the conference. We will provide you with the **Code of Conduct** that reviews some rules, principles and expectations, as well as our updated **Rules of Procedure**, which you can find on our website.

If you have any questions about this document, the other Guides, or your committee in general, please do not hesitate to contact us or your Under-Secretaries-General. We are truly excited to meet you all and are eager to address any concerns you may have before, during, or after the conference. I hope you enjoy reading the following Study Guide, and I cannot wait to see your solutions in YYMUN'23!

Yours in diplomacy,

Secretaries of General
Rana Beril Gülcü I Yağmur Onarlı

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FGA Study Guide

1. Introduction to the Committee

Global warming has become one of the most pressing issues facing humanity today. The Earth's temperature is rising at an alarming rate due to the emission of greenhouse gases caused by human activities. The consequences of global warming are severe, ranging from melting ice caps to more frequent and intense natural disasters. In the face of such dire consequences, some have suggested that moving to another planet may be a solution. However, this proposal raises many questions and challenges that must be addressed.

2. Definition of the Key Terms

2.1. Global Warming

Since the Industrial Revolution, the global annual temperature has increased in total by a little more than 1 degree Celsius, or about 2 degrees Fahrenheit. Between 1880—the year that accurate record keeping began—and 1980, it rose on average by 0.07 degrees Celsius (0.13 degrees Fahrenheit) every 10 years. Since 1981, however, the rate of increase has

more than doubled: For the last 40 years, we've seen the global annual temperature rise by 0.18 degrees Celsius, or 0.32 degrees Fahrenheit, per decade.

As a result of this a planet that has never been hotter, nine of the 10 warmest years since 1880 have occurred since 2005—and the 5 warmest years on record have all occurred since 2015. Climate change deniers have argued that there has been a "pause" or a "slowdown" in rising global temperatures, but numerous studies, including a 2018 paper published in the journal Environmental Research Letters, have disproved this claim. The impacts of global warming are already harming people around the world.

Now climate scientists have concluded that we must limit global warming to 1.5 degrees Celsius by 2040 if we are to avoid a future in which everyday life around the world is marked by its worst, most devastating effects: the extreme droughts, wildfires, floods, tropical storms, and other disasters that we refer to collectively as climate change. These effects are felt by all people in one way or another but are experienced most acutely by the underprivileged, the economically marginalized, and people of color, for whom climate change is often a key driver of poverty, displacement, hunger, and social unrest.

2.2. Climate Change

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional, and global climates. These changes have a broad range of observed effects that are synonymous with the term.

Scientists use observations from the ground, air, and space, along with computer models, to monitor and study past, present, and future climate change. Climate data records provide evidence of climate change key indicators, such as global land and ocean temperature increases; rising sea levels; ice loss at Earth's poles and in mountain glaciers; frequency and

severity changes in extreme weather such as hurricanes, heatwaves, wildfires, droughts, floods, and precipitation; and cloud and vegetation cover changes.

2.3. Habitable Orbit

The habitable zone is the region around a star where an orbiting planet could host liquid water and, therefore, possibly support life.

The habitable zone is also known as the "Goldilocks zone" because planets orbiting at that "just right" distance from a star are not too hot or too cold to host liquid water. If planets are closer to their star, the water turns to steam; if they're farther, it freezes.

Some researchers think the potential for liquid water has too simplified a picture of what it takes to support life. Venus, for example, is technically in the sun's habitable zone; its orbit keeps the planet within the area where liquid water could possibly exist. But in reality, the planet's carbon dioxide-rich atmosphere gives it the hottest surface temperatures of any planet in the solar system, and it's unlikely that life exists on its scorching surface or in its skies.

The zone is different around each star. Bigger, hotter stars like the sun, a G-type star, have a wider habitable zone, while smaller red dwarfs confine habitable planets to a narrower

range, according to NASA(opens in new tab). But G-type stars are shorter-lived (on a galaxy timescale, that is) than some other types of stars. One abundant kind of star, K-type stars, can burn for tens of billions of years and, because of their stability, might have the most promising habitable zones.

But stars are individuals, too; for example, some red dwarfs are unpredictable, sending sterilizing flares toward their planets, while others are steady and reliably calm. So while two stars may have similar habitable zones and similarly sized planets, one star system might contain a much more promising candidate for life.

2.4. Exoplanets

All of the planets in our solar system orbit around the Sun. Planets that orbit around other stars are called exoplanets.
All of the planets in our solar system orbit around the Sun. Planets that orbit around other stars are called exoplanets. Exoplanets are very hard to see directly with telescopes. They are hidden by the bright glare of the stars they orbit.

So, astronomers use other ways to detect and study these distant planets. They search for exoplanets by looking at the effects these planets have on the stars they orbit.

Most of the exoplanets discovered so far are in a relatively small region of our galaxy, the Milky Way. We know from NASA's Kepler Space Telescope that there are more planets than stars in the galaxy.

By measuring exoplanets' sizes (diameters) and masses (weights), we can see compositions ranging from very rocky (like Earth and Venus) to very gas-rich (like Jupiter and Saturn). Exoplanets are made up of elements similar to those of the planets in our solar system, but their mixes of those elements may differ. Some planets may be dominated by

water or ice, while others are dominated by iron or carbon. They've identified lava worlds covered in molten seas, puffy planets the density of Styrofoam, and dense cores of planets still orbiting their stars.

3: Moving to Another Planet

Space exploration allows us to prove or disprove scientific theories developed on Earth. Studying the solar system, for example, has brought us insights into such phenomena as gravity, the magnetosphere, the atmosphere, fluid dynamics, and the geological evolution of other planets.

Scientists today are especially interested in dark matter and dark energy to better understand their role in the hidden mass and accelerating expansion of the Universe. This is the objective of the Euclid1 mission being developed by the European Space Agency (ESA).

Becoming a multi-planetary species could protect the future of the human race and help humanity reach its full potential.
Human habitation across multiple planets will create new hubs of innovation and experimentation leading to advances in science, technology, and commerce.

Significantly increasing government and private sector spending on crewed spaceflight is an investment in national and international security against long-tail risks.

In 2021, a new era of space exploration dawned with the first privately organized flights ferrying civilian passengers across the line that separates our planet from the rest of the universe. Much of the media coverage of the three flights launched by Virgin Galactic, Blue Origin, and SpaceX.

Supporters of space exploration sometimes suggest that sending robotic probes to the remote corners of the solar system and beyond can teach us what we need to know about the universe at less cost and risk than sending people. Yet, for the safety of our descendants and to reach humanity's full potential, we must become a multi-planetary species.

3.1. Reasons to Move to Another Planet

On a more positive note, human habitation in a greater variety of settings will radically expedite science and commerce. While we currently have small-scale experimentation with manufacturing items in micro and zero gravity on the International Space Station, the potential for us to set up large-scale industry in different physics requires us to have a presence in other celestial locations.

Large-scale settlements of people are hubs of innovation and human flourishing. Just think of how many more discoveries and marvels could be created by 80 billion people in the future instead of today's 8 billion. Our current planet has a limited carrying capacity but our solar system can accommodate many more people than any single planet can.

Just as cultural and geographic variety contributes to the richness of our current society, further expanding the diversity of human settings would continue to expand the creativity of our species. Space travel itself has already been an incredible inspiration to numerous

scientists, engineers, and artists with many people citing seeing the moon landing as one of the most formative events of their lives.

Hastening science and technology development:

The technologies we develop on our way to becoming a multi-planetary species will also benefit us here on Earth. Today, satellites are used to monitor carbon and other greenhouse gas emissions to give us a better picture of the causes of global warming and promote accountability. In her first speech devoted to space, US Vice-President Kalama Harris said: "I truly believe space activity is climate action." In a recent report, the World Economic Forum's Global Future Council on Space laid out the many ways satellite data is being used to address climate change and suggests feeding data from space-based assets into an "Earth Operations Centre" to provide a real-time picture of activities and phenomena that contribute to warming.

3. Sustaining Life on Another Planet

The issues of pollution and global warming have a lot of people concerned about Earth. Many people, including scientists, point to the stars. NASA and other space agencies around

the globe put a lot of time and effort into searching for Earth-like planets throughout the galaxy. They also work on technology that may one day be able to produce an artificial atmosphere so that an uninhabitable planet, like our close friend Mars, could become a new colony for humans.

It isn't entirely unreasonable to think that humans could one day live on a different planet like Earth. In fact, scientists have already discovered a near clone of Earth far, far away. 8.2 quadrillion miles, to be exact, meaning it would take humans 26 million years to even reach

it. The planet was named Kepler 452b, and it's been confirmed that the planet has the same makeup as Earth, including an oxygen-rich atmosphere and a molten core. The main problem is that we would need light-speed travel to get there, and the scientific jury is still out on if that could ever be possible.

Many astronomers point to our red neighbor, Mars, which is actually quite dangerous as it is, considering it has no magnetosphere to protect from the sun's radiation and no oxygen in its atmosphere. Some scientists believe Mars is hiding frozen, fresh water deep beneath its surface, but more excavation would be necessary. In fact, a lot of things would have to happen to make Mars livable, including a new atmosphere or constant oxygen tanks/tents for humans, decontaminated soil rich with nutrients from Earth, suits made from radiation protection fabric, and pressurized habitats with individual heating sources.

4. Planets Could Host Life

Across much of Europe and the United States, a distressed and angry working class has begun wielding nationalism as a blunt weapon against the disconnected ruling class. Islamic radicals have stepped up attacks against the West as well as moderate practitioners of their own faith. Then there is humanity's untrammeled use of fossil fuels, worsening water

shortages, and other environmental degradations of the planet—not to mention the proliferating threat of nuclear, biological, and chemical weapons. Finally, we also haven't yet gotten around to tracking every asteroid that might wipe out humankind.

In short, Earth might need a backup plan.
In the midst of chaos here on Earth, scientists are finding hope for life on other planets.

Scientists announced the discovery of some planets that are some of the best candidates so far for habitable worlds both outside and in our own solar system – and some of them are very far away.

4.1. Mars

Mars is the obvious choice. It is close enough for humans to travel to with existing propulsion technologies within about six to nine months. The planet also has soil, surface ice at the poles, and liquid water below ground at lower latitudes. There is enough sunshine to provide solar power. The thin Martian atmosphere provides a modicum of protection from cosmic and solar radiation. All of the above factors suggest that humans could build a somewhat sustainable colony over time on Mars, although it would largely be an indoor existence.

Besides Earth, Mars would be the easiest planet to live on. Mars has liquid water, a habitable temperature, and a bit of an atmosphere that can help protect humans from cosmic and solar radiation. The gravity of Mars is 38% that of the Earth. The length of a Martian day is also very close to the length of an Earth day - lasting 24 hours, 39 minutes, and 35 seconds – which would make human adaptation to Mars' day/night rhythm very simple.

4.2. Titan

Energy, and lots of it. The great lakes of Saturn's moon Titan are filled mostly with pure methane, providing a near-limitless supply of power for human activities. The surface pressure is about 1.4 times that of Earth, too, which means it is one of the few places in the Solar System where humans wouldn't need a pressure suit (aside from an air mask) to walk outside. The nitrogen, methane, and ammonia in Titan's atmosphere could be used as fertilizer to cultivate crops in greenhouses, and there may also be subsurface water. The thick atmosphere would provide good radiation shielding.

4.3. Kepler 62e / Kepler 62f

Two of the planets – Kepler-62e and Kepler-62f. They are part of a five-planet system in which the candidates for life are the farthest from the host star.

Their host star – which corresponds to Earth’s sun, but is smaller and cooler – takes the name Kepler-62. The star’s planets are designated by letters after the star’s name.

These are the smallest planets ever found in the “habitable zone,” the area near a star in which a planet can theoretically hold liquid water. Kepler-69c seems less clearly in the habitable zone than the other two planets, but scientists haven’t ruled it out.

“With all of these discoveries we’re finding, Earth is looking less and less like a special place and more like there are Earth-like things everywhere,” said Thomas Barclay, Kepler scientist at the Bay Area Environmental Research Institute in Sonoma, California.

You won’t be swimming on the planets anytime soon, though. The Kepler-62 star is 1,200 light-years away; Kepler-69 is 2,700 light-years away. A light-year, the distance that light travels in a vacuum in one year, is nearly 6 trillion miles.

The smaller a planet is, the more likely it’s rocky and the less likely it’s made of gas, said William Borucki, Kepler science principal investigator at NASA Ames Research Center.

That makes Kepler-62f, thought to be 40% larger than Earth, potentially the most like our planet out of the new discoveries. It could be rocky, Borucki said, with polar caps, land mass, and water as well. It goes around its star once every 267.3 days (Earth days, that is).

If you were standing on Kepler-62f, the star in the sky would look bigger than our sun does, but “the illumination level would be like walking around on Earth on a cloudy day,” Borucki said at a press briefing. “It drops by a factor of five.”

Kepler-62e appears to be 60% larger than our planet and a little closer to its host star; this one could be a “water world” of mostly deep oceans, he said. It circles its star in 122.4 days.

4.4. Kepler 186f

Kepler-186f (also known by its Kepler object of interest designation KOI-571.05) is an exoplanet orbiting the red dwarf Kepler-186, about 580 light-years (180 parsecs) from Earth.

It was the first planet with a radius similar to Earth's to be discovered in the habitable zone of another star. NASA's Kepler space telescope detected it using the transit method, along with four additional planets orbiting much closer to the star (all modestly larger than Earth).

Analysis of three years of data was required to find its signal. The results were presented initially at a conference on 19 March 2014[9] and some details were reported in the media at the time. The public announcement was on 17 April 2014, followed by publication in Science.

Kepler-186f's location within the habitable zone does not ensure it is habitable; this is also dependent on its atmospheric characteristics, which are unknown. However, Kepler-186f is too distant for its atmosphere to be analyzed by existing telescopes (e.g., NESSI) or next-generation instruments such as the James Webb Space Telescope.

In June 2018, studies suggest that Kepler-186f may have seasons and a climate similar to those on Earth.

5. Concerns About Living On Another Planet

Moving to another planet may seem like a means of escape or salvation, but in this case, too, there can be serious consequences to consider. Some of those;

- Even breathing can be a big problem

In reality, even if we reach the stage of colonizing the galaxy and warping from one planet to the next, we're not exactly going to be dressed for comfort.

The atmosphere on Earth at sea level contains 20.9 percent oxygen. By astounding coincidence, the ideal amount of oxygen in the atmosphere for human survival is also around 20.9 percent. Any less, and we start having problems.

We can't even go everywhere on Earth. Try climbing a large mountain without an oxygen supply. For reference, the U.S. Dept. of Labor's OSHA defines 19.5 percent oxygen content as the minimum safe concentration for humans. So, beyond the very unlikely event that your alien planet has a size and atmosphere practically identical to Earth, you're going to spend your whole holiday in a space suit or tightly controlled habitat.

That definitely applies to Mars, which has a pressure less than 1 percent of that on Earth and an atmosphere that is 95 percent carbon dioxide.

Of course, in Firefly they explain this away by mentioning that all these planets have been terraformed to harbor an Earth-like atmosphere. But that's probably not a likely solution either -- the kind of atmosphere a planet can support is dictated by many factors. In the case of Mars, you could pump all the oxygen you wanted into its atmosphere, but its gravity is so weak that oxygen will just float away into space.

- Living On Multiple Planets Will Create A New Set Of Legal Issues

If interplanetary colonization ever becomes plausible, we're going to have to revise everything we know about land and property law. After all, these laws currently operate on the basis that every inch of available land on the planet is owned by somebody. The moment someone establishes a permanent colony in another part of the universe there will be possible problems.

Human law has yet to establish any rules for what happens beyond the seven known continents, and until Atlantis is discovered, that's pretty much it for the age of exploration.

There are international treaties that address the space issue, and they currently dictate that no nation can claim any land or resources beyond Earth.

- Earth Plants Will Die; Animals Might Survive

If we're going to colonize other planets, then we're inevitably going to have to farm them. And unless we turn entire continents into carefully controlled greenhouses, that presents a smorgasbord of problems. There is a fact that the Martian soil is actually toxic. In reality, Martian farmers would have to heavily rinse the soil to make sure crops would even grow in it, let alone not kill you when you ate them.

We're going to need a variety of plants and animals to make up a healthy human diet. Unfortunately, just like humans, other Earth organisms have difficulty living in conditions they're not accustomed to.

Firefly is one show that addressed this issue, establishing in a few episodes the reality of the interplanetary livestock trade. But they also don't imply that the transported animals have any problem with this. In reality, animals much more than humans rely on senses highly tuned to standard Earth conditions to get by.

For example, there's evidence that chickens orient themselves in part by an internal compass that detects the Earth's magnetic field. And a chicken is an animal that basically has only two modes: Normal and Maximum Panic.

- Living On Moons Means Mega Tsunamis Or Super Volcanoes

When scientists talk about colonizing the solar system, they often look to moons rather than actual planets. For example, Saturn's moon Titan has been cited as one of the most habitable places in our solar system, and that's where humans are said to have retreated. And NASA has considered the possibility of moving to Jupiter's moon Callisto.

However, living on the moon provides an extra dimension of complications. After all, you're not orbiting the sun anymore; you're orbiting a much closer object that has a much larger impact on the physical conditions of your world. For example, tides on Earth are caused by the gravitational pull of our moon on the ocean, but because physics is a two-way street, the Earth's gravity has a much larger pull on the moon, to the point where NASA recently observed a 20-inch bulge in the moon caused by Earth's gravity. Now imagine what the tides

are like on the forest moon of Endor. Presumably, those Ewoks live way the hell away from the coast.

Gravity also plays a larger role in moon conditions thanks to the fact that giant planets like Jupiter tend to have a lot more moons than our pitiful collection of one (in Jupiter's case, 67 and counting). Jupiter's moon Io is another contender for possible human habitation, but thanks to its position, the gravitational forces from its 66 siblings also make it one of the most volcanically active places in the solar system.

- The Concept Of Time Will Be Utterly Gone

There are 24 hours in a day and 365 days in a year, but all that's based on how fast the Earth spins and the length of its orbit. You can throw all that stuff out the window when it comes to other planets.

If you lived on Jupiter, though, you would have to adapt to a 10-hour day. That means you'd see the sun rise and set twice in the course of one Earth day. Or you can try to live on Venus, which hardly spins at all, and not see the sunset for around 243 Earth days, which is longer than the planet's entire year.

Measuring time is one of the most crucial elements of our daily life, and we rely on it to be standard. Our sleep cycle is controlled by our body's circadian rhythm, the internal clock that tells our brain when to get tired, when to get hungry, and when to wake up. Unsurprisingly, it's programmed for a 24-hour day, and messing with that even a little causes big problems -- our health measurably suffers just from dealing with jet lag.

6. Net Zero

Put simply, net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance.

Why is net zero important?

Science shows clearly that in order to avert the worst impacts of climate change and preserve a livable planet, global temperature increase needs to be limited to 1.5°C above pre-industrial levels. Currently, the Earth is already about 1.1°C warmer than it was in the late 1800s, and emissions continue to rise. To keep global warming to no more than 1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050.

How can net zero be achieved?

Transitioning to a net-zero world is one of the greatest challenges humankind has faced. It calls for nothing less than a complete transformation of how we produce, consume, and move about. The energy sector is the source of around three-quarters of greenhouse gas emissions today and holds the key to averting the worst effects of climate change. Replacing polluting coal, gas, and oil-fired power with energy from renewable sources, such as wind or solar, would dramatically reduce carbon emissions.

Is there a global effort to reach net zero?

Yes, a growing coalition of countries, cities, businesses, and other institutions are pledging to get to net-zero emissions. More than 70 countries, including the biggest polluters – China, the United States, and the European Union – have set a net-zero target, covering about 76% of global emissions. More than 3,000 businesses and financial institutions are working with the Science-Based Targets Initiative to reduce their emissions in line with climate science. And more than 1000 cities, over 1000 educational institutions, and over 400 financial institutions have joined the Race to Zero, pledging to take rigorous, immediate action to halve global emissions by 2030.

How do we ensure commitments are turned into action?
The growth in net-zero pledges has been accompanied by a proliferation of criteria with varying levels of robustness. To develop stronger and clearer standards for net-zero emissions pledges by non-State entities such as businesses, investors, cities, and regions, and speed up their implementation, UN Secretary-General António Guterres in March 2022 established a High-Level Expert Group[1] on the Net-Zero Emissions Commitments of Non-State Entities. The Expert Group presented its recommendations[2] at COP27 on 8 November 2022.

[1] https://www.un.org/en/climatechange/high-level-expert-group
[2] https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf

6. Global Warming and Climate Change 6.1. Consequences/ Effects of Global Warming

Climate change and global warming affect all regions around the world. Polar ice shields are melting and the sea is rising. In some regions, extreme weather events and rainfall are becoming more common while others are experiencing more extreme heat waves and droughts. We need climate action now, or these impacts will only intensify.

Climate change is a very serious threat, and its consequences impact many different aspects of our lives.

6.1.1. Natural Consequences

- High Temperatures
The climate crisis has increased the average global temperature and is leading to more frequent high-temperature extremes, such as heat waves. Higher temperatures can cause increased mortality, reduced productivity, and damage to infrastructure. The most vulnerable members of the population, such as the elderly and infants, will be most severely affected.

Higher temperatures are also expected to cause a shift in the geographical distribution of climate zones. These changes are altering the distribution and abundance of many plant and animal species, which are already under pressure from habitat loss and pollution.

Temperature rises are also likely to influence phenology – the behavior and lifecycles of animal and plant species. This could in turn lead to increased numbers of pests and invasive species, and a higher incidence of certain human diseases.

Meanwhile, the yields and viability of agriculture and livestock, or the capacity of ecosystems to provide important services and goods (such as the supply of clean water or cool and clean air) could be diminished.

Higher temperatures increase the evaporation of water, which – together with the lack of precipitation – increases the risks of severe droughts.

[3] https://www.un.org/en/climatechange/all-about-ndcs

- Drought

Due to the changing climate, many European regions are already facing more frequent, severe, and longer-lasting droughts. A drought is an unusual and temporary deficit in water availability caused by the combination of lack of precipitation and more evaporation (due to high temperatures). It differs from water scarcity, which is the structural year-round lack of fresh water resulting from the over-consumption of water.

Droughts often have knock-on effects, for example on transport infrastructure, agriculture, forestry, water, and biodiversity. They reduce water levels in rivers and groundwater, stunt tree and crop growth, increase pest attacks, and fuel wildfires.

- Availability of freshwater

As the climate heats up, rainfall patterns change, evaporation increases, glaciers melt and sea levels rise. All these factors affect the availability of fresh water.

More frequent and severe droughts and rising water temperatures are expected to cause a decrease in water quality. Such conditions encourage the growth of toxic algae and bacteria, which will worsen the problem of water scarcity that has been largely caused by human activity.

The increase in cloudburst events (sudden extreme rainfall) is also likely to influence the quality and quantity of fresh water available, as stormwater can cause uncleaned sewage to enter surface water.

- Floods

Climate change is expected to lead to an increase in precipitation in many areas. Increased rainfall over extended periods will mainly lead to fluvial (river) flooding, while short, intense cloudbursts can cause pluvial floods, where extreme rainfall causes flooding without any body of water overflowing.

River flooding is a common natural disaster in Europe, which has, along with storms, resulted in fatalities, affected millions of people, and incurred massive economic losses in the last three decades.

In some regions, certain risks such as early spring floods could decrease in the short term with less winter snowfall, but the increased risk of flash flooding in mountain areas overloading the river system may offset those effects in the medium term.

- Biodiversity

Climate change is happening so fast that many plants and animal species are struggling to

cope. There is clear evidence to show that biodiversity is already responding to climate change and will continue to do so. Direct impacts include changes in phenology (the behavior and lifecycles of animal and plant species), species abundance and distribution, community composition, habitat structure, and ecosystem processes.

Climate change is also leading to indirect impacts on biodiversity through changes in the use of land and other resources. These may be more damaging than the direct impacts due to

their scale, scope, and speed. The indirect impacts include habitat fragmentation and loss; over-exploitation; pollution of air, water, and soil; and the spread of invasive species. They will further reduce the resilience of ecosystems to climate change and their capacity to deliver essential services; such as climate regulation, food, clean air and water, and the control of floods or erosion.

- Soils

Climate change may aggravate erosion, the decline in organic matter, salinization, soil biodiversity loss, landslides, desertification, and flooding. The effect of climate change on soil carbon storage can be related to changing atmospheric CO2 concentrations, increased

temperatures, and changing precipitation patterns. Extreme precipitation events, fast melting of snow or ice, high river discharges, and increased droughts are all climate-related events that influence soil degradation. Deforestation and other human activities (agriculture, skiing) also play a role. Saline soils are expected to increase in coastal areas as a result of saltwater intrusion from the seaside because of rising sea levels and (periodically) low river discharges.

- Marine Environment

The impacts of climate change, such as increasing sea surface temperatures, ocean acidification, and shifts in currents and wind patterns will significantly alter the physical and biological makeup of the oceans. Changes in temperatures and ocean circulation have the potential to change the geographical fish distribution. An increasing sea temperature might also enable alien species to expand into regions where they previously could not survive. Ocean acidification for example will have an impact on various calcium carbonate-secreting organisms. These changes will have unavoidable impacts on coastal and marine ecosystems, resulting in major socio-economic consequences for many regions.

6.1.2. Social Threats

- Health

Global Warming and climate change are a significant threat not only to human health but also to animal and plant health. While a changing climate might not create many new or unknown health threats, existing effects will be exacerbated and more pronounced than currently seen.

The most important health effects from future climate change are projected to include:

Increases in summer heat-related mortality (deaths) and morbidity (illness);
Decreases in winter cold-related mortality (deaths) and morbidity (illness);
Increases in the risk of accidents and impacts on wider well-being from extreme weather

events (floods, fires, and storms);
Changes in the impact of diseases e.g. from vector-, rodent-, water- or food-borne disease;
Changes in the seasonal distribution of some allergenic pollen species, range of virus, pest, and disease distribution;
Emerging and re-emerging animal diseases increasing challenges to European animal and human health by viral zoonotic diseases and vector-borne diseases;

- Vulnerable Population

People living in low-income urban areas with poor infrastructure, and, generally speaking, population groups with lower incomes and assets, are more exposed to climate impacts but have less capacity to face them.

Women may be disproportionately impacted by climate change and are at a disadvantage when expensive adaptation measures are required. At the same time, women are key actors in adaptation and more generally sustainable practices.

Unemployed and socially marginalized people are among the most vulnerable to climate risks.

The Aging Population, disproportionately affected by reduced mobility or health impediments, will result in a higher share of the population being vulnerable to climate change impacts.

- Employment

The impact of temperature increases, changes in precipitation regimes or sea-level rise will affect – directly or indirectly – the productivity and viability of all economic sectors in labor market implications.

Climate change may affect workforce availability due to a decrease in the health conditions of the population and additional occupational health constraints (higher temperature at work, more frequent and intense natural hazards keeping people from reaching their workplace).

Moreover, several economic sectors are highly vulnerable because of their dependence on regular climate conditions. Sectoral production shifts – in agriculture and tourism for instance – are expected as a consequence of climate change.

Major investments in adaptation could offer employment and income opportunities in activities such as reinforcing coastal defenses, buildings, and (green) infrastructure, water management, and relocation of exposed settlements. Yet, uncertainty remains regarding the possible net job creation effects of such investments. Labor skills upgrading will be necessary to grasp these opportunities.

- Education

Reducing vulnerability and implementing adaptation measures is not only the task and responsibility of governments. The severity of climate change requires public and private actors to work together in reducing vulnerability and adapting to the impacts. However, not

all stakeholders are aware and informed about their vulnerability and the measures they can take to proactively adapt to climate change. Education and awareness-raising is, therefore,

an important component of the adaptation process to manage the impacts of climate change, enhance adaptive capacity, and reduce overall vulnerability.

7 Causes/ Contributors of the Problem

Generating power:

Generating electricity and heat by burning fossil fuels causes a large chunk of global emissions. Most electricity is still generated by burning coal, oil, or gas, which produces carbon dioxide and nitrous oxide – powerful greenhouse gases that blanket the Earth and trap the sun's heat. Globally, a bit more than a quarter of electricity comes from wind, solar,

and other renewable sources which, as opposed to fossil fuels, emit little to no greenhouse gases or pollutants into the air.

Manufacturing goods:

Manufacturing and industry produce emissions, mostly from burning fossil fuels to produce energy for making things like cement, iron, steel, electronics, plastics, clothes, and other goods. Mining and other industrial processes also release gases, as does the construction industry. Machines used in the manufacturing process often run on coal, oil, or gas; and some materials, like plastics, are made from chemicals sourced from fossil fuels. The manufacturing industry is one of the largest contributors to greenhouse gas emissions worldwide.

Cutting down forests:

Cutting down forests to create farms or pastures, or for other reasons, causes emissions, since trees, when they are cut, release the carbon they have been storing. Each year approximately 12 million hectares of forest are destroyed. Since forests absorb carbon dioxide, destroying them also limits nature's ability to keep emissions out of the atmosphere. Deforestation, together with agriculture and other land use changes, is responsible for roughly a quarter of global greenhouse gas emissions.

Using transportation:

Most cars, trucks, ships, and planes run on fossil fuels. That makes transportation a major contributor of greenhouse gases, especially carbon-dioxide emissions. Road vehicles account for the largest part, due to the combustion of petroleum-based products, like gasoline, in internal combustion engines. But emissions from ships and planes continue to grow. Transport accounts for nearly one-quarter of global energy-related carbon-dioxide emissions. And trends point to a significant increase in energy use for transport over the coming years.

Producing food:

Producing food causes emissions of carbon dioxide, methane, and other greenhouse gases in various ways, including through deforestation and clearing of land for agriculture and grazing, digestion by cows and sheep, the production and use of fertilizers and manure for

growing crops, and the use of energy to run farm equipment or fishing boats, usually with fossil fuels. All this makes food production a major contributor to climate change. And greenhouse gas emissions also come from packaging and distributing food.

Powering buildings:

Globally, residential and commercial buildings consume over half of all electricity. As they continue to draw on coal, oil, and natural gas for heating and cooling, they emit significant quantities of greenhouse gas emissions. Growing energy demand for heating and cooling, with rising air-conditioner ownership, as well as increased electricity consumption for lighting, appliances, and connected devices, has contributed to a rise in energy-related carbon-dioxide emissions from buildings in recent years.

Consuming too much:

Your home and use of power, how you move around, what you eat, and how much you throw away all contribute to greenhouse gas emissions. So does the consumption of goods such as clothing, electronics, and plastics. A large chunk of global greenhouse gas emissions are linked to private households. Our lifestyles have a profound impact on our planet. The wealthiest bear the greatest responsibility: the richest 1 percent of the global population combined account for more greenhouse gas emissions than the poorest 50 percent.

8. Vital Signs of the Planet

Global climate change is not a future problem. Changes to Earth's climate driven by increased human emissions of heat-trapping greenhouse gases are already having widespread effects on the environment: glaciers and ice sheets are shrinking, river and lake ice is breaking up earlier, plant and animal geographic ranges are shifting, and plant and trees are blooming sooner.

Effects that scientists had long predicted would result from global climate change are now occurring, such as sea ice loss, accelerated sea level rise, and longer, more intense heat waves.

"Taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time." Says The Intergovernmental Panel on Climate Change.

Some changes (such as droughts, wildfires, and extreme rainfall) are happening faster than scientists previously assessed. In fact, according to the Intergovernmental Panel on Climate Change (IPCC) — the United Nations body established to assess the science related to climate change — modern humans have never before seen the observed changes in our global climate and some of these changes are irreversible over the next hundreds to thousands of years.

"Increasing magnitudes of warming increase the likelihood of severe, pervasive, and irreversible impacts."

9. Past Actions

According to a 2021 report, global carbon dioxide emissions have increased by 50% since 1990.

In 2015, the Paris Agreement set out the goal of preventing global temperatures from rising 2°C above pre-industrial levels. It was signed by the European Union and 195 countries. Each country has approached the goal differently. Morocco, for example, has lifted all subsidies on diesel and gas (to encourage people to use cleaner sources of energy); India is

aiming to generate 40% of its electricity with renewable sources by 2030; and Sweden has built ‘eco-quarters’ in its cities - old industrial sites turned into eco-friendly homes.

The Paris Agreement:

In 2015, 195 countries and the European Union signed the Paris Agreement. It set the target of preventing global temperatures from rising 2°C above pre-industrial levels, with a further goal of limiting the rise to 1.5°C if possible. The World Wide Fund for Nature (WWF)called it ‘the first truly global commitment to fight the climate crisis’.

Countries must set their own targets and dates for when they will fulfill them. For example, France plans to ban all petrol and diesel vehicles by 2040. Every five years, countries have to report back on their progress.

However, there have been some criticisms of the agreement. A 2017 UN report discussed the ‘emissions gap’ - the gap between the targets set out in the Paris Agreement and what countries are actually doing to meet those targets.

10. Country's Actions On Climate Change

10.1. Morocco

According to Climate Action Tracker, Morocco is one of only two countries with a plan to reduce its carbon dioxide (CO_2) emissions to a level consistent with the Paris Agreement’s goal.

Morocco’s Plan Vert (green plan) sets out its plan to tackle the threat of climate change. As part of this, the government has lifted all subsidies on diesel and gas, to encourage consumers to use cleaner energy sources. They’ve also brought in financial incentives to persuade farmers to grow tree crops instead of cereals. This will help to protect biodiversity and reduce the deforestation that often occurs to make space for agriculture.

Morocco has also started new public projects such as the Noor Ouarzazate complex - the largest concentrated solar farm in the world, which covers an area the size of 3,500 football fields. It creates enough electricity to power two cities the size of Marrakesh.

10.2. India

The Indian government has three main goals to tackle climate change:

Generate 40% of India’s electricity using renewables by 2030. India currently invests more in renewables than in fossil fuels, and in 2018 the Environment Minister announced it was due

to meet its 2030 targets ahead of schedule.
Create a ‘carbon sink’ by replanting trees that have been lost to deforestation. The aim is to create enough tree cover to remove 2.5-3 billion tonnes of CO2 from the atmosphere. So far, 15,000 km2 of tree cover has been created under this plan - that’s an area just larger than Northern Ireland.

Cut down the emission intensity of the economy (the amount of greenhouse gases created for every pound or dollar of a nation’s GDP). India has so far reduced its emission intensity

by 25% since 2005, and it aims for a further 8-10% reduction by 2030.
However, Carbon Action Tracker calculates that India’s strategy will only be compatible with a 1.5°C temperature rise if the country abandons its plans to build new coal-fired power plants.

10.3. The European Union

In the Paris climate agreement, the EU set a goal of reducing greenhouse gas emissions by 40% by 2030. According to Climate Action Tracker, the EU’s present policies would exceed that target.

One of the ways the EU plans to meet these targets is by reducing emissions from transport. The European Parliament has introduced financial incentives for cities and countries to switch their public transport systems to green alternatives that use electricity or biofuels.

Individual countries within Europe are also working towards their own targets. In Germany, for example, 26,772 wind turbines have been built since 1995, making it the third-largest producer of wind energy in the world. The Swedish government has been building ‘eco-quarters’ in its cities: old industrial sites turned into eco-friendly homes powered by the biogas produced from food waste.

10.4. United States of America

At the time of signing the Paris Agreement, Carbon Action Tracker ranked the US targets as ‘insufficient’. Since then, they have been demoted to ‘critically insufficient’. This is because, since 2017, the American government has relaxed its environmental regulations, rather than tightening them. Requirements for energy-efficient light bulbs have been scrapped; it’s been proposed that vehicle efficiency standards should be frozen after 2020; and there are plans to relax rules on methane leaks during oil and gas production.

In June 2017, President Donald Trump announced his intention to withdraw the United States from the Paris Agreement, citing concerns that it would hurt the US economy. However, after this announcement, 3,800 leaders from US cities, states, tribes, and organizations formed the Climate Alliance. In doing so, they pledged to stick to the US’s Paris targets, even after it left the agreement.

11. Questions to consider in the resolution paper.

● In case of migration to another planet, will the opportunities of economically weak countries be the same as in the current world or will a new economic order be established?
● What will determine the borders in case of migration to another planet?

● Is it too late to stop global warming and is another planet the only escape route?
● How can we confirm that another planet will not face a problem like the one on our planet right now?
● How can the possible problems we experience there to be resolved?
● Which people should have the priority to go first?

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