

Committee: Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28)

Issue: Keeping global warming to the 1.5 degrees Celsius threshold

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PERSONAL INTRODUCTION

Dear Delegates,

My name is Erietta Kotylia, I am an International Baccalaureate 1 (IB1) student at the Moraitis School, and I am 16 years old. One could call writing a study guide a 'Summer Bummer', when they would much rather be lost at sea, but it really is my honour to be doing that and to serve as a Deputy President of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28) in the 9th Arsakeia-Tositseia Schools Model United Nations (ATSMUN); especially since it is my first time chairing. MUN has been a family to me for these past two years and I would like you to share the same feelings after this conference finishes.

The purpose of this study guide is to help everyone attending as a delegate have all the essentials at their fingertips, for all of us to achieve the most fruitful and entertaining debate possible with well-constructed resolutions, speeches, and POIs. It is challenging to actively participate in a debate without any ideas and arguments and you will most likely feel lost; thus, I advise you all to be adequately prepared beforehand. I would not want anybody to walk out of the door disappointed about anything, which is why I kindly urge you to work hard enough so you are satisfied with your effort once the debate is over. I want you to carefully read this Study Guide as I will make sure all information needed to come up with clauses is provided. Additionally, my tip for you is not to leave everything for last minute and of course do your own research.

Finally, if you come up with any questions while reading or about the topic in general, do not hesitate to reach out to me at eriettakotylia@gmail.com and I will be more than happy to answer to you. I genuinely hope we make the experience unique for all of you. Looking forward to meeting everyone in November!

INTRODUCTION



Figure 1 If the earth's temperature increases by 2 degrees Celsius, it will lead to noxious repercussions. Source: uniteforchange.com

Scientists have spent decades analysing temperature data spanning 2 centuries starting from the 1850s in order to define the changes of the world's climate before and after our contemporary reliance on non-renewable energy resources. They estimated that if the earth's temperature augmented by approximately 2 degrees Celsius, it would lead to noxious repercussions. Sea levels will rise by more than 0.66 feet (0.2 meters) along more than 70% of Earth's coastlines, causing more coastal flooding, beach erosion, salinization of water sources, and other effects on people and biological systems. Risks are projected to be highest in South and Southeast Asia, but sea level rise will significantly impact areas all around the world to varying degrees.

Nonetheless, by 2018 they reconsidered their estimate and concluded that going over 1.5 degrees Celsius would put the world in great jeopardy. They also predict there is high likelihood that our overheating world will break the temperature limits for the very first time in the following years. The chances are rising due to emissions from human activity and an El Niño weather pattern might occur during this years' time. According to researchers, the possibilities of passing the threshold mentioned above between the present time and 2027 are now raised to 66% compared to the 20% and 50% of the previous years, which as claimed

means it is “more likely than not”. However, those past three years the world has been going through a La Niña pattern that has delayed global warming to an extent.

DEFINITION OF KEY TERMS

The 1.5 degrees Celsius thresholdⁱ

The figure is not a direct measure of the world's temperature but an indicator of how much or how little the Earth has warmed or cooled compared to the long-term global average. The 1.5C figure has become a symbol of global climate change negotiations. Countries agreed to "pursue efforts" to limit global temperature rises to 1.5C under the 2015 Paris agreement. Going over 1.5C every year for a decade or two would see far greater impacts of warming, such as longer heatwaves, more intense storms and wildfires.

The “El niño” and “La niña” weather patternⁱⁱ

El Niño is a climate pattern that describes the unusual warming of surface waters in the eastern tropical Pacific Ocean. El Niño is the “warm phase” of a larger phenomenon called the El Niño-Southern Oscillation (ENSO). La Niña, the “cool phase” of ENSO, is a pattern that describes the unusual cooling of the region’s surface waters. El Niño has an impact on ocean temperatures, the speed and strength of ocean currents, the health of coastal fisheries, and local weather from Australia to South America and beyond. El Niño events occur irregularly at two to seven-year intervals. However, El Niño is not a regular cycle, or predictable in the sense that ocean tides are.

The European Green Dealⁱⁱⁱ

The European Green Deal has as a goal to achieve zero net emissions by 2050, which is enshrined in the climate law, being the roadmap for the European Union (EU) to become climate-neutral by 2050. The concrete legislation that will allow Europe to reach the Green Deal targets is laid down in the Fit for 55 package that the Commission presented in July 2021. It will include the revision of existing legislation on emissions reduction and energy, which are explained further below.

Just Transition Mechanism^{iv}

The Just Transition Mechanism (JTM) is a key tool to ensure that the transition towards a climate-neutral economy happens in a fair way, leaving no one behind. It provides targeted support to help mobilize around €55 billion over the period 2021-2027 in the affected regions, to alleviate the socio-economic impact of the transition.

Just Transition Fund^v

Territorial just transition plans define the territories in which the Just Transition Fund will be used. The identification of these territories is carried out through a dialogue with the Commission. These plans set out the challenges in each territory, as well as the development needs and objectives to be met by 2030. They identify the types of operations envisaged and specify governance mechanisms. The approval of the territorial just transition plans open the doors to dedicated financing under the other two pillars of the Just Transition Mechanism.

Green Economy^{vi}

A green economy is defined as low carbon, resource efficient and socially inclusive. In a green economy, growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services.

UN conference on the Human Environment

It was held from June 5th to June 16th 1972 in Stockholm, Sweden and was the first world conference on the environment. Along with multiple resolutions, it contains a series of principles, such as the Stockholm Declaration and the Action plan for the human environment. The Stockholm Declaration consists of 26 principles, which started a dialogue involving industrialised and developing countries about the link between economic growth, air, water and oceans pollution and the well-being of people around the globe. What highlights its importance is the creation of the United Nations Environment Programme (UNEP), a major result of the conference.

BACKGROUND INFORMATION

Constantly rising risk

According to World Health Organisation's (WMO) last year's report, there was a fifty-fifty chance, average global temperature would have reached 1.5 degrees Celsius above post-industrial levels by 2027, while in 2015 the chance was zero. Moreover, the percentage that one year between 2022 and 2026 will be the warmest reported is 93 per cent. The WMO Secretary General, Petteri Taalas, informs us that "This study shows – with a high level of scientific skill – that we are getting measurably closer to temporarily reaching the lower target of the Paris Agreement on Climate Change".

Paris Agreement

The Paris agreement is an international legislative accord on climate change. It was signed by 196 Parties at the UN Climate Change Conference (COP21) in Paris, on December 12th, 2015. It was brought to action on the 4th of November 2016. Its goal was to keep "the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels" and be after efforts "to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels." Nonetheless, recently Governments have emphasised the need to limit global warming to 1.5 degrees Celsius by 2100. This agreement is a key point in the versatile climate change procedures as it gathers all nations together to tackle climate change and fit to its outcomes.

Impact On the Environment

The UN's Intergovernmental Panel on Climate Change (IPCC) shows that crossing the 1.5 degrees Celsius threshold contemplates leading to far more serious impacts which include frequent droughts, heatwaves and rainfall. Oceans along with the atmosphere are heating up and repetitive marine heat waves have put in great danger the Great Barrier Reef turning it into a "ghostly" white colour. With the temperature rise, corals lose their food sources due to expelling the minute algae they hold inside. Even though they sometimes can recover, the vast majority is dying off. Something around 50% of the shallow water corals were killed literally over a couple of months, in some cases over a couple of weeks," Hoegh-Guldberg

states. "If you extend that out into the future, we'll get to a point where the damage overwhelms the ability of corals to bounce back."

In addition, an unconceivable amount of people has died by rushing water and heavy storms. Specialists warn that "a hotter atmosphere is a wetter atmosphere" and they continue to explain that the warmer the air the more water it is able to hold, therefore producing more harmful rainfall. Moreover, hurricanes are becoming more intense at a rapid rate.



Figure 2 Hurricanes are becoming more intense at a rapid rate Source: World Health Organization

The very same pattern is followed by all out of the ordinary heat waves, where a good deal of extreme events follows the slightest shift in average temperature. As a result, buildings and roads designed to stand before the past climate are thought to not survive the upcoming changes in the temperatures.

The proportion of CO₂ emissions taken up by land and ocean carbon sinks is smaller in scenarios with higher cumulative CO₂ emissions

Total cumulative CO₂ emissions taken up by land and ocean (colours) and remaining in the atmosphere (grey) under the five illustrative scenarios from 1850 to 2100

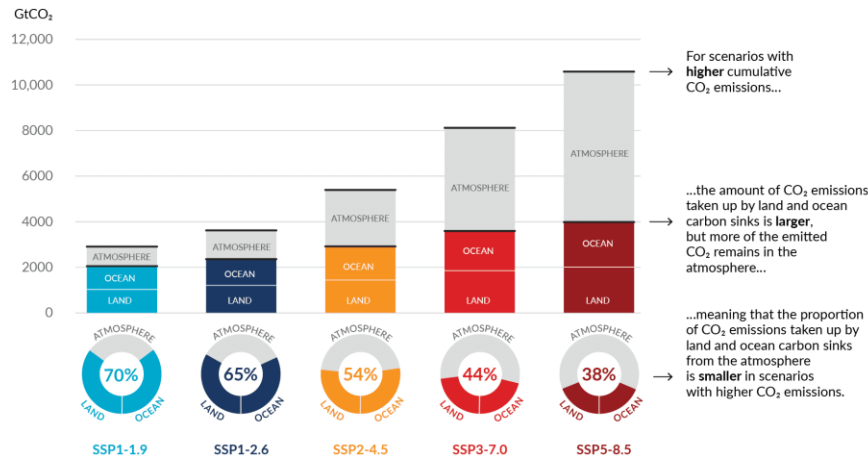


Figure 3 Graph showing the amount of CO₂ emitted as a function of the amount of land and water it takes up

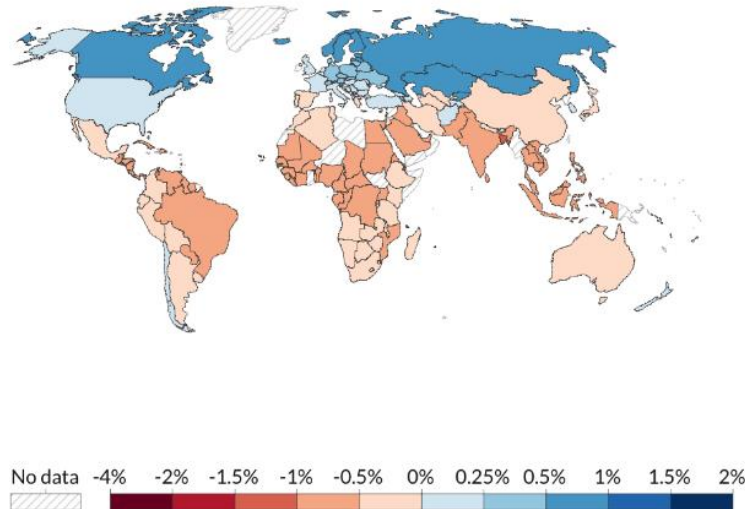
Impact On the Economy

The threshold itself does not impact the global economy as much as the efforts to not cross it will. Staying within the 1.5 digits requires well organised efforts in order to minimise what causes the heating. In this case, that would be reducing greenhouse gas (GHG) emissions. Transitioning to a low-carbon economy demands funding and investment as it has a cost that needs to be covered. Some production sectors will inevitably face losses, which is expected, during the process and will have to undergo adjustments to fit into the new type of economy. Furthermore, by the end of the century, per capita GDP (Gross Domestic Production) would be a median of 8% lower with 1.5C. This increases to a median fall of 13% with 2C of warming. As the map below indicates, the impact of economic development is larger in the southern hemisphere, even though the Northern one is expected to undergo more rapid warming. Felix Pretis, co-director of the Oxford University Climate Econometrics project, says that “In other words, countries that are poor today are expected to become poorer with climate change, and even more so for 2C relative to 1.5C, while countries that are rich today are likely to be impacted less. This implies that future climate change may increase inequality across countries.”

Economic impacts of 1.5°C, 15

Projected change in annual GDP per capita growth under 1.5°C global mean surface temperature increase relative to no additional warming. Projection from Pretis, Schwarz, Tang, Haustein, and Allen (in Phil Trans. 2018).

Our World
in Data



Source: Uncertain impacts of 1.5° or 2°C warming - Pretis et al. 2018, doi: 10.1098/rsta.2016.0460

Note: Map shows median impact on economic growth, bar charts show 97.5% - 2.5% (2SD) and 83% - 17% (1SD) range of likely impacts.

OurWorldInData.org/co2-and-greenhouse-gas-emissions • CC BY

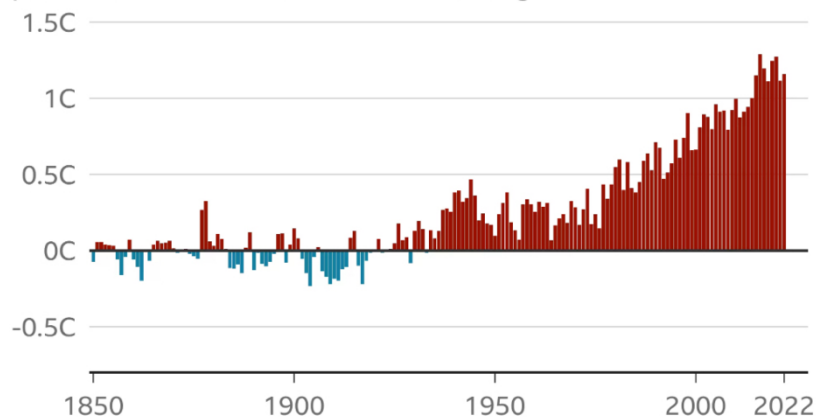
Map which shows how countries will be impacted with each indicator

The vital necessity to maintain to global temperature increase rate below 1.5 degrees Celsius.

According to Met Office experts, one year of going above the 1.5 degrees Celsius target, does not necessarily imply we broke the threshold of the Paris Agreement; however it does mean that we are getting closer than ever to a time period where 1.5 degrees Celsius could be exceeded for way longer than said year. Limiting warming to <1.5 degrees Celsius will avoid harsh repercussions of climate change

The world has been getting warmer

Change in annual average global temperature from pre-industrial levels (1850-1900) in degrees C



Note: Average calculated from HadCRUT5, NOAA GlobalTemp, GISTEMP, ERA5, JRA-55 and Berkeley Earth climate datasets

Source: Met Office

BBC

Figure 4 Graph that shows the change of the global temperature as a function of the years

MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

United States of America

Two years after the Paris agreement, the USA expressed tendencies to withdraw from the agreement under Donald Trump's administration, despite the process requiring multiple years. In 2021 it re-joined the agreement under new government and it has been very active concerning climate debates ever since. The states, though, continue being if not the biggest, one of the biggest greenhouse gas emitters. Last year, the president of the United States signed the Inflation Reduction Act (IRA), the most potentially successful climate policy in the history of the US. It is estimated that the implementation of IRA will move faster the decline in US greenhouse gas emissions, but it will have to pose extra legislation to accomplish its target.

China

It is widely known that without extreme reductions in China's emissions the world cannot succeed in fighting against the climate change. However, the danger of crossing the 1.5

degrees Celsius threshold becomes a threat to China's robustness. Despite being a large emitter as well, China is ready to commit to a so-called greener economy while pursuing its SDGs (Sustainable Development Goals). The World Bank group's Country Climate and Development Report (CCDR) for China calculated that China is to have reached carbon neutrality by 2060. Three years ago, China's president Xi Jinping stated that they aim for emissions to reach the highest point before 2030, which was also China's official statement in the COP26 global climate summit in Glasgow. What the problem appears to be is that China has not announced by which means this goal is to be reached.

Brazil

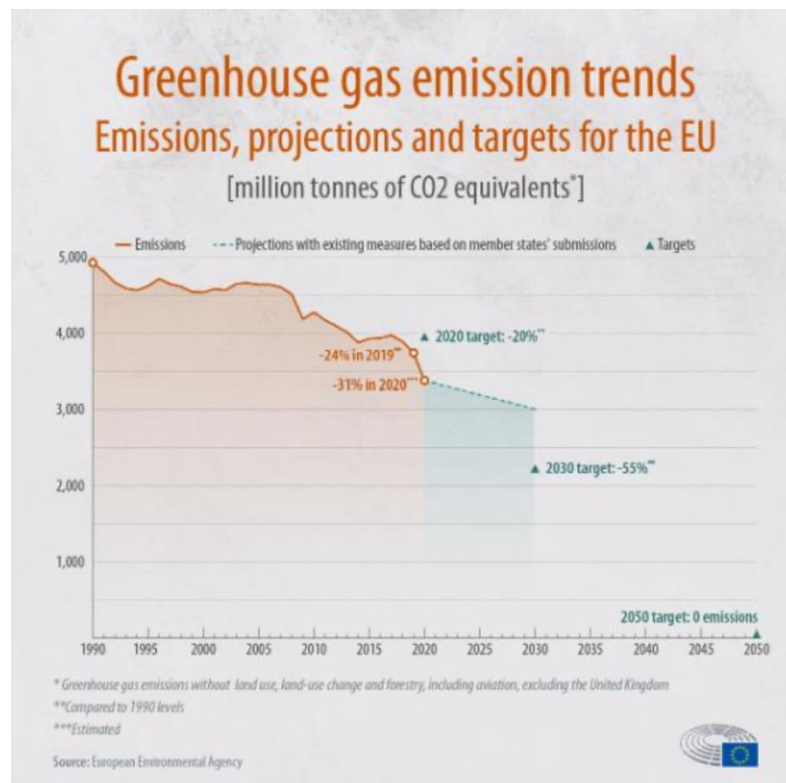
Brazil's emissions factor differs from other countries' since it is directly associated with the deforestation in the Amazon tropical forest and with the release of underground carbon caused by the loss of the savannah ecosystem. The principal energy sources in Brazil are both hydropower generation and oil consumption since it does net oil exports as well. In 2021, Brazil reached almost half a share of renewable energy sources (RES) in primary consumption. "We anticipated, from 2060 to 2050, the goal of achieving climate neutrality. Human and financial resources, destined to the strengthening of environmental agencies, were doubled, with a view to eliminating illegal deforestation," said Brazilian president Jair Bolsonaro. Brazil was introduced as "an example in energy generation" with 83 per cent coming from renewable sources, according to Bolsonaro.

Saudi Arabia

The Kingdom of Saudi Arabia constitutes the bulk of the Arabian Peninsula in Western Asia. The country is arid, and the sand desert renders several regions susceptible to flooding and desertification. Saudi Arabia's economy is heavily dependent on oil and the country is the world's largest petroleum exporter. Despite international pressure on Saudi Arabia at the climate talks to curb its use of fossil fuels, Cop27 followed months of tension between the US president, Joe Biden, and the crown prince, Mohammed bin Salman, over oil production cuts. The decision to cut oil production marks a contrast with years of Saudi Arabian tactics at the Cop talks intended to find collective solutions to the climate crisis.

European Union

In 2008, the EU set the target to cut emissions by 20% compared to 1990 levels by 2020. Emissions had fallen to 24% by 2019 and to 31% by 2020, due partly to the Covid-19 pandemic. They set new goals in 2021. However, according to what the members states have predicted



so far based on existing measures, the net emission reduction would only be about 41% by 2030. The EU emission goal for the end of this decade, set in the EU climate law, is at least a 55% reduction compared to 1990 levels. An upcoming package of new and revised legislation known as “Fit for 55”, aims to deliver the goal of zero net emissions, commonly known as the European Green Deal, criteria and make Europe a climate -neutral continent by 2050.

The evolution of greenhouse gas emissions in the EU

Intergovernmental Panel on Climate Change

The Intergovernmental Panel on Climate Change producing multiple reports with plenty of background information while addressing the current state of the world and its dangerous weather conditions provides policymakers with what they need to take action to reach our common goal. The IPCC also makes recommendations and proposes measures or solutions.

TIMELINE OF EVENTS

1850~	Data collection and analysis
1972	UN Conference on the human environment
1979	World Climate Conference in Geneva
1988	The IPCC is set up
1992	UNFCCC adoption
1997	Kyoto protocol, extension of the UNFCCC
2000s	IPCC first assessment reports
2015	Paris agreement, IPCC report
2016	Paris agreement goes into force
2017	USA government intentions of withdrawal from the agreement
2021	New USA government joins the Paris agreement again

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Countries have debated how to combat climate change since the early 1990s. These negotiations have produced several important accords, including the Kyoto Protocol and the Paris Agreement. Through the Kyoto Protocol and the Paris Agreement, countries agreed to reduce greenhouse gas emissions, but the amount of carbon dioxide in the atmosphere keeps rising, heating the Earth at an alarming rate.

Governments generally agree on the science behind climate change but have diverged on who is most responsible, how to track emissions-reduction goals, and whether to compensate harder-hit countries.

Many of the 195 parties to the Paris Accord have increased their climate commitments after the deal was negotiated in 2015 at the meeting of the Parties (COP), an annual UN climate meeting. However, the UN has issued a warning that states are not on track to reach their

Paris goals and has urged them to implement significantly more ambitious decarbonization plans ahead of this year's COP28 session in Dubai.

The UN Framework Convention on Climate Change (UNFCCC), in 1992, ratified by 197 countries, including the United States, was the first global treaty to explicitly address climate change. It established an annual forum, known as the Conference of the Parties, or COP, for international discussions aimed at stabilizing the concentration of greenhouse gases in the atmosphere. These meetings produced the Kyoto Protocol and the Paris Agreement.

The UN Environmental Programme (UNEP) has also offered a variety of solutions to handle the topic. Primarily it proposes the low/zero carbon emissions transition in significant domains such as energy, agriculture, infrastructure and industry. Moreover, it protects natural ecosystems including both the flora and the fauna of each ecoregion. UNEP ensures that these techniques are embedded into wider national and international policies.

In order to fund the Green Deal, the European Commission presented in January 2020 the sustainable Europe Investment Plan, which aims to collect one trillion euros of public and private investment over the next decade. Along with the investment plan, the Just Transition Fund is designed to enforce regions and communities that are affected the most by a green transition, for member states that still depend vastly on coal or petrol.

POSSIBLE SOLUTIONS

Switching to renewable energy

Carbon interacts the most with Sunrays, which is what causes this phenomenon at the first place; thus, we should reduce certain gases', carbon's for instance, concentration in the atmosphere. To achieve that, we ought to cut down on fossil fuels and turn to renewable and nuclear energy instead. Fossil fuels are what contributed the most to global climate change constituting over seventy five per cent of global greenhouse gas emissions and almost ninety percent of all carbon dioxide emissions. On the other hand, not only are renewable energy sources abundant, they can also be easily accessed, while they emit little to zero greenhouse gases into the atmosphere. Opposed to popular belief, non exhaustible energy is affordable in the majority of the world nowadays. Its dropping cost makes it accessible even to low or middle income countries and as a result they would be provided with affordable electricity. This electricity in question would be able to decarbonise up to ninety per cent of the power

sector by mid-century, largely cutting carbon emissions and making it easy to handle climate change.

Green and Sustainable Economy

The idea of green economy does not replace sustainable development but rather adds to it, focusing more on finance, investment, capital and infrastructure. It advocates a “macro-economic” approach to sustainable economic growth without emitting greenhouse gases through the use of fossil fuels but instead green technology.

Transportation

Automobiles and aircrafts are fairly known as means that emit the most GHG; this occurred because they are the most commonly used ways to commute. To reduce emissions, it would be practical to adopt a Luxembourg model in every country's transportation system, which would consist of completely free or close to free services, as far as traveling and commuting are concerned. We could also embrace the idea of replacing short distance flights with high speed trains and limiting the use of cars as much as it is possible in each country.

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