COMMITTEE: General Assembly

TOPIC: Harnessing climate engineering

for equitable climate change mitigation.

CHAIR MEMBERS:

- **President:** Luciana Caceres Agueda
- **Moderator:** Bianca Chargoy Barajas
- **Assistant:** Pamela Bojorquez Padrón

"There is one issue that will define the contours of this century more dramatically than any other, and that is the urgent threat of a changing climate"- **Barack Obama, former President of the United States**.

I. Introduction

We are at a time where making a change that benefits and improves the environmental conditions of the earth, today a place called our home, has an outrageous relevance. This topic is a worldwide issue that concerns every single nation and needs to be solved in the present circumstances in order to preserve the environment and avoid alarming consequences that could not only affect the environment but also in a long term, contribute on the living beings' extinction. As a society we have been contributing in a large part to the damages that our planet is facing, and that is why it is our responsibility to find a way to reduce and prevent the consequences that environmental pollution could cause in the next few years.

Due to the fact that current measures for the reduction of contamination are failing, some scientists have proposed a new solution to control this problem: taking more extreme measures by directly manipulating the environment to counteract climate change. This is done by avoiding or reducing the entrance of sunlight reaching the planet surface and getting rid of CO_2 in the air, using technologies that do not affect the environment but control the problematics which are affecting it, this is known as **climate engineering**.

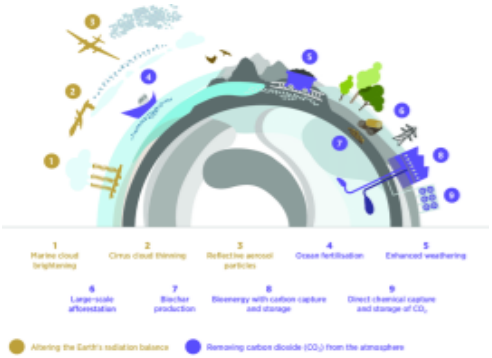

Image 1.1: Climate engineering measures

In order to manipulate the environment there are essentially two ways: The first one is known as Solar Radiation Management (SRM), this is a method that seeks to reflect the solar rays away from Earth and send them back into space. SRM has been a controversial topic since there is a probability that it could not only be a beneficial and helpful solution for the environment, but it also could be damaging. Although the real effects of SRM are unclear, there is not enough evidence which demonstrates if the use of this method would decrease or increase the problems of climate change that we are facing nowadays. However it is known that if this method succeeded, it could be one of the fastest procedure to stop the incrementation of temperatures.

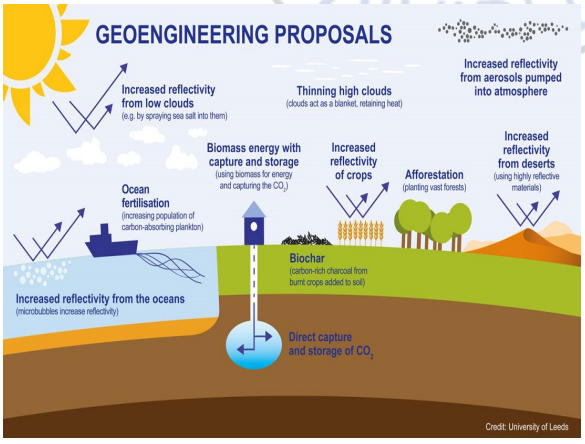

Image 1.2: Geoengineering Process

The second type of climate engineering seeks to remove the CO2 that already exists in the atmosphere. Several ways have been proposed to do so, and they are grouped into

what is called Carbon Dioxide Cleaning (CDR).

Geoengineering as a form of counteracting the environmental impact of climate change is deeply contentious. This matter has been very controversial because of the fact that some countries are not accepting the "unnatural" manage of the environment and strongly believe that getting involved on it could be detrimental instead of beneficial.

At least in name, geoengineering has been rejected in recent climate assessments, however, under close examination, the distinction between geoengineering and other reactions to the CO_2-climate problem proves to be blurry. This method is against the ethic of some countries, it is believed that is not the roll of the human being to get involved in the manipulation of climate because it is outside our limits. The practise of climate engineering involves huge compromise, it is not certain that once the goal of manipulating the climate is reached people in charge will manipulate it correctly and the incorrect use of this method would bring chaos.

Historical perspective is vital to understand the role of geoengineering in human choices about climate. The historical background sketched in the next section shows that proposals to engineer the climate are deeply related with the history of the CO_2-climate problem.

II.- History of the topic

Through the years, human intervention has caused major damages in our environment such as global warming and the ozone depletion, all of this because of environmental problems, mostly caused by contamination, earth is getting closer to becoming more prone to be inhabitable, human life is in danger. Searching for the

disappearance of this problems climate engineering was sorted as a solution, it consists on the manipulation of the environment. Some countries believe that it is a great idea but others think that manipulating the environment at free will would not only be unethical but that would cause a complete disaster, that is the reason why this became such a controversial topic.

The idea of geoengineering started when the 1965 landmark report “restoring the quality of our environment” by the Environmental Pollution Panel of the President Lyndon Baines Johnson´s Science Advisory Committee of the United States warned more than 50 years ago about the harmful effects of fossil fuel emissions, and mentioned "deliberately bringing about countervailing climatic changes," including "raising the albedo, or reflectivity, of the Earth." then it was suggested to research ways to solve this, to reduce incoming solar radiation, and thus to cancel the effects of fossil fuel burning.

Greenhouse gases on the Earth’s atmosphere cause the surface of the planet to be around 30°C rather than what it would normally be the (Stocker, 2003). These gases allow the passage of short-wave radiation (sunlight), but not of the long-wave radiation (heat) and radiate a fraction of it back to earth’s surface (Trenberth et al. 2019).

On the other hand, it is equally clear that human activities are forming part of the greenhouse gases stocks in the earth atmosphere. The burning of fossil fuels, deforestation and agriculture are all practices that have this effect. The global CO_2 emissions are growing, according to the Global Carbon Project (2018) Global carbon dioxide emissions from burning fossil fuels are likely to have increased by about 2.7 percent in 2018, after a 1.6 percent increase in 2017.

Global CO_2 emissions grew four times more quickly between 2000 and 2007 than they did between 1990 and 1999 (Global Carbon Project, 2008).

By now it is also known that almost all countries are contributing to the rise, with emissions; China up 4.7%, the US by 2.5% and in India 6.3% in 2018.

Over the years the emissions of carbon dioxide have been increasing, it is very important that all the countries bear in mind the repercussions, and find a way to stop this records that have been collected through history.

III. Current situatión

According to the secretary general of the United Nations Antonio Guterres (2019) is indispensable to maintain the ecosystems in a good state in order to reach the fundamental goals of sustainable development and deal with Climate change.

Image 1.3: Climate control

Nowadays ecosystems are found in a critical situation due to deforestation and all the contamination we are generating daily. A recent research of the Intergovernmental Scientific-Normative Platform on Biological Diversity and Ecosystem Services prove that nature is being lost faster than the world has ever seen, this causes that the amount of endangered animals to increase and also the lost of different species of flora and fauna. This is the reason why the the secretary General of United Nations urge all civilizations, governments and enterprises to the immediate implementation of sustainable measures in order to preserve our planet.

There are several sustainable measures in order to protect the environment such as solar panels and wind power, but as we have noticed they have not be enough to counteract the Climate change, that is why scientifics are searching for other alternatives in order to solve this alarming problem. Among others, they have propose the use of geoengineering better known as climate engineering , But this has been a controversial topic due to the large amount of uncertainties of its effectiveness.

"We need to have full-on public engagement, full-on societal involvement. The reason is that the risks of climate change are huge, the risks of doing nothing are huge; but the risks of geoengineering are huge as well. We've got to explore those risks, because who knows, we may end up entering a very risky world without understanding it. Geoengineering risks are not well understood and need to be explored."

Dr. Hugh Hunt (2019) Member of the department of Engineering at Cambridge university.

As he said it is of enormous importance to analyse the possible consequences of using climate engineering taking into account the positive and negative sides and the ethical aspects regarding moral reasons for supporting or rejecting this system

In 2016 the Paris agreement was signed and approved by the United nations, this agreement seeks to counteract climate change, improve and accelerate actions in order to have a sustainable low carbon future, it is a viable and visionary framework which encompasses all actions that must be taken in order to reverse the impact of global warming, but unfortunately this has not been ejected as planned and won't be without an initiative action, and that is why The Secretary General of United Nations will host the 2019 Climate Action Summit that aim to promote collective national ambition and

will generate increasing movements in the economy in support of the agenda, this will enhance society's economy since this plans are searching for the full transformation of economies, and the protection for those who could be negatively impacted encouraging equality and success.

Some atmospheric field experiments are in process of being released by some scientists this would be a great aid for having more knowledge about the risks and potential benefits of climate engineering.

"I want to hear about how we are going to stop the increase in emissions by 2020, and dramatically reduce emissions to reach net-zero emissions by mid-century" Guterres (2019).

VI. Key points

- Ethical aspects regarding the implementation of climate engineering
- To decide whether or not to start using geoengineering as a solution to global warming,
- Laws that should be established in order to manage this system
- The possible risks and misuses that could be given to the climate manipulation
- To authorize the multiple methods that nowadays exist
- Argue about the ethical analysis about moral reasons that are in favour or against climate engineering
- Economic resources in order to implement and develop geoengineering

●Develop new solutions that could be viable in case that climate engineering in case the system do not work.

VII. Possible solutions:

●Approve the use of the marine cloud brightening technique

●To endorse the carbon-dioxide removal (CDR) and solar radiation management (SRM)

●Support global and climate change centers or organizations that that are specialized on elaborating extensive and detailed research regarding the situation (GEC, IPCC, AC research)

●Locate specific and strategic places where to expand the forests making sure that are protected

●Develop new researches in order to find additional methods (a clear example is the CO2 storage investigation) Methane reduction portfolio

VIII. List of countries:

1. United Kingdom of Great Britain and Northern Ireland
2. Republic of India
3. Republic of Korea
4. French Republic
5. Arab Republic of Egypt
6. Republic of Italy
7. The Russian Federation
8. Canada
9. Kingdom of the Netherlands
10. State of Qatar
11. Kingdom of Saudi Arabia
12. United Mexican States
13. State of Japan
14. United Arab Emirates
15. Republic of Indonesia
16. Commonwealth Australia
17. United States of America
18. Republic of Turkey
19. Federal Republic of Germany

20. Kingdom of Sweden

21. Republic of Singapore

22. Federative Republic of Brazil

23. Swiss Confederation

24. People's Republic of China

25. Republic of South Africa

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