INTERNATIONAL COUNCIL FOR SCIENCE

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DIRECTOR'S LETTER

Dear Delegates,

Welcome to Pacific Model United Nations 2019 and the International Council of Scientific Unions (ICSU)! My name is Nihar Bodicherla, and I am honored to be serving as your director for this conference. Currently a senior at the International Community School, I have been to a multitude of conferences in the Northwest region and am ecstatic for this opportunity. This year, I am joined by my Chair, Maya Nair, a sophomore from Inglemoor High School, and my Assistant Director, Isabella Wang, a sophomore who attends Newport High School.

The International Council of Scientific Unions is an incredibly distinct committee that acts as the principal scientific advisor to the United Nations, being the forefront of world scientific research and the strengthening of science in developing countries. The committee has placed heavy emphasis on the flow of ideas between national boundaries in favor of furthering scientific innovation. The council works at the crossroads between science and international policy, ensuring that UN procedure effectively, and safely dictates rules for research and technological use between member states.

As your dais, the two topics we have selected are the Ethicality/Use of Weather Modification, and the Government Regulation of Scientific Research, both invaluably pertinent topics that have recently been on the rise. Both Weather Modification and Government Regulation of Scientific Research have less legislation relating to their effects, so delegates are advised to pursue much more academic sources.

Weather modification has been on the watchlist for potentially dangerous means of warfare for a long time. After Operation Popeye, the US's campaign on Vietnam to destroy their economy by prolonging monsoons, the potential of weather modification became evident – both in its destructive and instructive capabilities. As such, the only legislation that the UN has come to consensus on has been the ENMOD, banning the use of Weather Modification in conventional warfare, and even then, it is reviewed on a case-by-case basis. It is imperative that member-states work together to construct the guidelines for the use of this volatile technology.

Furthermore, the Government Regulation of Scientific Research is another crucial topic to the progression of scientific innovation. The contrast between free public research, and research that could potentially harm the nation has always been adjudicated by the member state's government. Therein lies the difficulty, in that the guidelines for the development of certain technologies has never been set in stone. Even national bodies such as the FDA and the European EMA have incredibly vague guidelines that often do not dictate what can and cannot be

developed (e.g. superdrugs, Dirty Bombs, etc.) Member states are able to develop technology haphazardly, with little to no care in how they affect the global scale. The goal for delegates should be to outline the criterion to which is the baseline for scientific research regulation.

Delegates, this background guide is intended to provide you with the framework and surrounding knowledge to assist you in your research, contrive elaborate and detailed solutions, and have tense, focused debate. Feel free to email us with any questions, and good luck in your research.

Best,
Nihar Bodicherla
Director | International Council for Science
Pacific Model United Nations 2019

COMMITTEE OVERVIEW

Welcome to the International Council of Scientific Unions at PACMUN 2019. The ICSU acts as a catalyst for scientific policy in the UN and stimulates international scientific research on issues of major global concern. Though the ICSU is not an official committee of the United Nations, they are still a subsidiary of the organization, and work closely with them to form policies on scientific freedom, responsibility and regulation. The ICSU's member states should aim to form the groundwork for scientific policy that will be enforced by each government, remembering to adhere strongly to their country positions, even in critical situations. It is of the utmost gravity that delegates work well together and adapt to the fast-paced, intellectually rich style of debate that this committee proposes. Being a science-based committee, the Council of Science's debate will be distinctly research and ethics-oriented; delegates are strongly advised to study their topics with assiduous rigor.

Member states should work cohesively with each other; collegiality and cooperation are an absolute necessity to draft a robust resolution. The solutions devised should address the key tenets that the ICSU seeks in all of its endeavors. Specifically, the Planning, Outreach and Engagement, Finance and Fundraising, as well as the Safety and Ethics aspects of each issue should be thoroughly confronted,

leaving little to no room for doubt. It is important to consider each, and every detail brought up by each delegate to effectively and persuasively move debate in your favor.

Position papers are strongly encouraged for the ICSU as they will help delegates to narrow their focus and zero-in on specific facets of the issues and will provide the guidelines for their stance in debate. They are required to be eligible for awards, and the dais will use them to assess the preparation of each delegate, and their comprehension of the subject. The papers will be comprised of an introduction, the history concerning the topic and committee, the member states' stance, the impact of the issue on your country, and an exhaustive, elaborate solution. Position papers should not exceed the length of one page per topic. A bibliography of sources used is also required but will not count towards the one page limit.

Position papers should be turned in to the committee email address, icsu@pacificmun.com, no later than the time listed on the website, unless an extension has been granted by the dais.

TOPIC A

Ethicality and Use of Weather Modification

TOPIC INTRODUCTION

Despite the endless possibilities that weather modification provides, the dangers of improper use of this powerful tool has proven to be a major concern and obstacle in the advancement of its progress. Weather modification has many different forms such as cloud seeding, fog dissipation, precipitation alteration, hail suppression, severe storms and natural disasters, and electricity in clouds. It generally involves releasing various nuclei into the atmosphere that can accumulate and eventually alter the climate. With this basic knowledge openly available, nations all over the world can easily begin their own research into the opportunities that arise from having control of weather systems. Whether this process is ethical has

divided opinions throughout many governments that have chosen to or not to use this power to their advantage. The use of these methods to help society avoid conflicts such as catastrophic natural disasters and weather patterns aid nations that would have originally suffered from economic damage from the impacts of these events. Fog dissipation is mainly used to clear skies for commercial airplanes and air force fighting, a necessity during wars. Cloud seeding, precipitation alteration, and hail suppression are used to either lower or increase the rates of rain and hail to promote agricultural economies by interfering with the destruction of farmland and crops, originally caused by a multitude weather events, such as droughts. Although there are many benefits to using weather modification, many countries have been able to undermine others and use them in secret. These weather modificators applied with the modern scientific advancements are able to accelerate and worsen disastrous events, enabling nations to target others for violence through environmental terrorism. With the limits being unknown, alterations can be sent into the atmosphere by any nation with sufficient development in the field. These devices, in the wrong hands, can destroy entire economies and existing political structures. Countries' relations can intensify as more activities are done without approval from the international community, leading to increased tension and possibility for conflict. The advancement into this topic can not only be imperative to the success of countries, but also the safety of its own people.

HISTORY

Weather modification is a complex idea relevant in contemporary society, fulfilling the needs and wants of nations in crisis. The earliest documentation of humans attempting to gain control of the weather dates back to the medieval period when archers shot arrows into the sky in hopes of producing rain. However, the technological advancements and increasing environmental pressures (growing population and global warming) have allowed for these ideas to become a reality.

In 1946, Vincent Shaefer, an American chemist, first modified clouds in the Berkshire Mountains by using dry ice to seed them. He became the developer of

cloud seeding, which remains a critical practice that provided a foundation for many weather modification efforts in the following decades. Shortly after, the National Oceanic & Administration (NOAA) began supporting the continuation of cloud seeding research; this research has led to the further usage of seeding technology in several countries. Though other weather altering mechanisms such as hail or lightning suppression exist alone from cloud seeding, these methods tend to be less universally common and have had a smaller global effect. However, cloud seeding contributes to the main types of weather alterations such as hurricane modification, fog dispersal, and change in precipitation.

China, for example, has used large-scale cloud seeding in an effort to combat its severe water shortages. They have already built and implemented the usage of furnaces on the Tibetan Plateau, which emit silver iodide into the clouds. Assuming the results from the furnaces are as successful as predicted, nearly 10 billion tons of rain could be produced in the next few decades. Similarly, India, Thailand, and many other countries have started to use cloud seeding to increase rainfall and precipitation in drought-prone areas. Thailand has enforced the Royal Rainmaking Project to propose a solution to farmers who had repeatedly suffered the detrimental effects of drought. This project has also been set to increase Thailand's overall economy by being more consistent in producing exports.

The idea of weather modification has also brought up the prospect of weather warfare. In combat, countries have found it beneficial to alter the environment to their benefit. During the Vietnam War, the United States' Operation Popeye was set in motion to increase rainfall and add to the destruction of the monsoons over the Ho Chi Minh trail. This effort to gain the upper hand in the war was often publicly criticized and deemed "immoral". The amount of control given to countries with the freedom to "play God" and control the weather is seemingly unlimited in situations such as this one.

Additionally, the relatively recent discovery of weather modification in general has led many to be hesitant towards its usage. Blindly using weather modification to address immediate economic or agricultural needs only to experience its undiscovered long-term effects in the future is a risk few are willing to take. In the process of altering the weather patterns, changes in climatic patterns may occur. For

example, when altering precipitation, moisture from the clouds is taken faster than the humidity can be restored, thus exacerbating droughts and dry spells. Many concerns also arise from the chemicals used to seed the clouds, which may cause devastating effects on the environment and well-being of the people. Additionally, the experiments with cloud seeding may result in extreme weather. Project Cumulus, a UK effort to investigate weather manipulation, has often been speculated to be the cause of the Lynmouth Flood that took the lives of 35 civilians.

Overall, the creation of weather modification has had profound impacts on individual countries. While some have fully embraced the idea, others remain skeptical of its possible negative long-term impacts. Several organizations have been created in support of the further exploration and research of weather modification as they all strive for greater human control of the natural world.

PAST ACTION

Weather modification has only been practically tested and used in the late 20th century. Due to its recent emergence, the benefits of weather modification also come with the unfamiliarities that make it difficult for the UN to take any significant and concrete action.

Currently, the UN has passed the 31/72 resolution to create an Environmental Modification Convention, which was created in the 1970s. This convention establishes that the member states, including the U.S., Russia, China, and many others, cannot use environmental modification in war due to its “widespread, long-lasting [and] severe effects”. The conference has effectively banned weather warfare, in part due to the active membership of global superpowers. Even with the continual development of more advanced weather modification technology, the agreement continues to prevent members from participating in weather warfare. Another instance of weather modification being addressed is through the North American Weather Modification Council (NAWMC), which promotes further research and education on the issue to prevent potential negative effects. The NAWMC

advocates the sharing of scientific knowledge regarding this topic, ensuring countries' safety if or when they decide to use weather modification.

As weather modification continues to develop and more is discovered about its potential side effects and other uses, UN action on a moral or ethical front may continue to grow as well.

CURRENT SITUATION

Although weather modification has been used in warfare before, current utilization of weather controlling technology relies mainly on cloud seeding, an effective coaxing of the existing water vapor in the atmosphere to form clouds, and subsequently, rain. Many countries have taken severe advantage of this technology, especially in the case of China, who had previously poured over $30 million USD into their Beijing Meteorological Bureau in order to create 10 billion tons of water over the Tibetan plateau -- a feat that could cover the country of Spain in floods nearly three times over. After the United States' discreet use of cloud seeding and landslide induction during the Vietnam War and World War II, the technology has spread to over 50 countries, where it aims to create clouds in dry weather.

This is especially true in the example of India, Mali and Puerto Rico, all countries that suffer from constant drought. In 2017, the state of Maharashtra in India spend over $45 million on cloud seeding alone, in attempts to reduce the drought over their country. Though it is crucial to note, cloud seeding is currently unable to be effective in extreme heat or drought conditions where *there is no water vapor* left in the atmosphere above the target area. Other forms of weather modification technology include Dyno-Gel, an advanced silica gel that the company Dyno-Mat claims can absorb moisture up to 2000 times its volume. In meteorological tests in 2008, Dyno-Mat was able to successfully diffuse a thunderstorm off the coast of Florida with their gel, but spent over $90 million dollars in sortie transportation, Dyno-Gel production, and weather diagnostics.

CASE STUDIES

CASE STUDY 1: CHINA

With the crippling weather conditions in one of the most polluted countries in the world, the weather engineers in Beijing, China have utilized the Beijing Meteorological Bureau's resources to effectively nullify any and all malignant weather that would impede their activities. China has been known to be a trailblazer in weather modification technology, and according to the Urban Meteorological Research Center (UMRC), the Bureau produces approximately 10 billion tons of rain, just on the Tibetan Plateau. The practice is used not only to make the land more arable, but also as a means to "wash the air" around heavily polluted urban areas like Beijing or Shanghai.

One of the biggest motivations for China's frequent weather controlling schemes is the aforementioned pollution in heavily urbanized locales. This pollution is so extreme that in just 2015, Berkeley Earth estimated around 1.6 million smog-related deaths occur every year, just in China. The Associated Press has reported that the fine dust concentration levels were as high as 136 micrograms per cubic meter, with 75 micrograms considered dangerous by the Beijing Weather Modification Office. The particles in question are smaller than 2.5 micrometers in diameter, whereas the World Health Organization (WHO) strictly advises pollution levels for particles with a diameter of 2.5 micrometers specific size to be under 25 micrograms, which is nearly ⅕ of the level of pollution shown in China. To counteract the heavy smog, China actively seeds clouds with silver iodide pellets over densely populated metropolitan areas to collect the fine dust particles that could cause harm to the human respiratory system. Partnering with South Korea, China aims to constantly suppress large areas of pollution by covering the Yellow Sea in silver iodide pellets, to slow the updraft of polluted air.

Although cloud seeding can be used to clear pollution, China also uses the technology to solve water shortages, droughts and even inauspicious weather. A particularly memorable use of the technology was in the case of the 2008 Summer Olympics in Beijing. In order to prevent rain during the events of the Olympics, China

spend $30 million dollars in order to seed the clouds away from the city of Beijing, and artificially induce a dry spell. Additionally, there were reported uses of silver iodide pellets with liquid nitrogen, used during the Chinese New Year to artificially create blizzards, as a snow-covered city during that specific time of year was considered auspicious.

BLOC POSITIONS

Experienced with Weather Modification: **Australia, Bosnia-Herzegovina, Canada, China, France, Germany, India, Iran, Japan, Macedonia, Pakistan, Philippines, Russian Federation, Saudi Arabia, South Korea, Thailand, United States of America, Zimbabwe**

Nations within this bloc have experimented with weather modification in some form. Ranging from use in military to preventative measures from droughts, flooding, or any other various weather patterns. These countries have different views on the ethicality of extreme weather modification but are similar in their belief that it can be used for good. All nations listed have formally announced their exploration into the field of weather modification.

Within this bloc, each government has a fairly high socio-economic status, giving them the opportunity to expand into this field of scientific work faster than others around the world. Working side by side with other countries, government organizations are able to capitalize on shared information to expand their knowledge. While this would be a useful tactic to initiate only safe uses of weather modification, many nations find this to be an infringement on their privacy. This lack of cooperation is a large contributor to unethical use of weather modification tools. The United States of America and Canada attempted to form a connection amongst this group of secrecy. They vowed to alert the other if any of their weather modification tactics were to affect any piece of the others land. Although this was a positive step forward that many others in this bloc should be taking, it still lacks the sharing of how and what types of weather modification is being used.

The goal of the nations within this bloc, if their governments are compliant, is to form networks that work together to regulate and look into the weather modification being used, without infringing on the sovereignty of each country. Countries may want to look into helping others expand their research that may not have already.

Little to No Previous Use of Weather Modification: **Brazil, Iraq, Mexico, Vietnam**

Countries within this bloc are inexperienced with the use of weather modification devices. They may either not agree with the use of weather modification or are not financially capable expand into the scientific field. Some of these nations may be examples for the negative effects of weather modification or why it may not be necessary at all. Others may disagree by speaking on the possible positive opportunities that could arise if they were able to participate in this practice. Some of the nations within this bloc have also announced that they are requesting advice on weather modification programs from more experienced nations.

Vietnam is an example of a nation that was adversely impacted by the use of weather devices in warfare. During the Vietnam War, The United States had used cloud seeding in Vietnam to extend the monsoon season and increase the intensity of flooding, destroying many cities and halting the military. This type of use was frowned upon by many nations and is now considered illegal under a United Nations treaty signed by both the United States and the Soviet Union. This agreement must be upheld in order to sustain proper exploration into the positive uses of weather modification. Vietnam will want to work to ensure safety in the alteration of weather whether it be inside or outside of its country, establishing safety precautions to protect themselves from repeating history.

Countries such as Mexico, Iraq, and Brazil are within the Team, (a group that is considered experts on weather modification) and have requested assistance from other members of the assembly to further their research on weather devices. These nations are open to the idea of using this skill in a preventative and progressive manner, including prevention of flooding, droughts, and natural disasters. With the help of the other bloc, these nations can excel in the field and find ways to protect

and preserve their land properly. Both blocs, although different in experience, must work together to ensure safety and prosperity in the field of weather modification.

GUIDING QUESTIONS

1. What forms of weather modification should be considered acceptable? And for what reasons?

2. What threats can the use of weather modification pose to your country? What are some benefits?

3. What incentivizes nations experienced with the use of weather modification to assist in helping those who are not as advanced in the field?

4. How can the current uses of weather alteration be globally available? How would you motivate nations to share this information?

5. Should countries be able to apply their own restrictions on weather modification use and research? If not, who should?

FURTHER RESEARCH

HTTPS://WWW.NSF.GOV/NSB/PUBLICATIONS/1965/NSB1265.PDF

This is a report written by the National Science Foundation which includes an overview of the internal impacts of weather modification on a country as well as the necessary global interactions among developing and developed nations.

HTTPS://WWW.WMO.INT/PAGES/PROG/AREP/WWRP/NEW/DOCUMENTS/WMO_WEATHERMOD_2015-2017.PDF

This source is written by the National Center for Atmospheric Research, which has recent research regarding weather modification and its development and progress in various countries.

HTTPS://WWW.AMETSOC.ORG/AMS/INDEX.CFM/ABOUT-AMS/AMS-STATEMENTS/STATEMENTS-OF-THE-AMS-IN-FORCE/INADVERTENT-WEATHER-MODIFICATION/

This link is from the American Meteorological Society, which provides information on direct environmental and political impacts of weather modification. The website explains how different societies will adapt to social and economic changes brought about from weather modification.

HTTPS://PDFS.SEMANTICSCHOLAR.ORG/3E48/0D1AEAD3577506DEBB88B324E859575FA1FF.PDF

This link is from a research lab in South Dakota and specifically details the economic effects of weather modification. The specific example can be used to generalize how the economy has and will react.

HTTPS://IHL-DATABASES.ICRC.ORG/IHL/INTRO/460?OPENDOCUMENT

This link leads to a website on the Internation Committee of the Red Cross; in full, it details the agreements made among the member nations of the Environmental Modification Convention.

TOPIC B

Governmental Regulation Over Scientific Research

TOPIC INTRODUCTION

As humans progress in their knowledge of modern science, the accompanying risk factors associated with this advancement begin to rapidly increase. The severity of many of the issues scientists are dealing with have grown immensely over the years. Current devices, medicines, and antibody testing methods are becoming outdated and unreliable. Governments are in strong support to update their research centers but are varied in their opinions on how to do so. And more recently, there are many controversial opinions surrounding emerging research, beginning with the introduction of human testing. Many believe that the only solution to curing some of the world's most toxic diseases would require the medicine or vaccine being tested on humans, in order to make the time period between sickness and the curing process faster. Although many believe human testing to be a more efficient method, it has received substantial backlash for being ethically questionable or inhumane. Another conflict arises on the topic of secrecy within scientific research. Many feel that it is imperative to the success of science that information is shared between organizations, communities, and even governments, in order to capitalize on the possibilities for success. Working together could make the entire process of finding solutions more effective and possible. But the counter argument stands strong, upholding the right to privacy for the sake of security and individuals' safety. Often times nations worry that promoting transparency within their scientific research centers is infringing upon their opportunity to take credit of intellectual property and negatively affecting their ability to protect the confidentiality of participants and priority research. Additionally, while antibodies are continually being created and adjusted, many are requesting updated and new drugs to be added to the cycle. With this demand needing to be met, the discussion on how these new tests will be regulated still remains unknown. Governments are reluctant to oversee all scientific research in fear of being blamed

for corrupt data, but still believe it is necessary to find a balance in regulation in order to ensure safety and proper research. The guidelines in which research may be carried out needs to be defined and thought through until further research can be conducted properly. While scientists work on developing new ideas and solutions, many of this work is conducted through various mechanized devices. In more developed nations, they have regulations in place regarding which devices are recognized in government research, hoping to strengthen the reliability of the results. Soon, as many new devices are invented to speed up the process, restrictions need to be in place as soon as possible to identify themselves as government approved research devices. Without the approval, the scientific advancements made with those technologies would not be trusted in the international community. In order to promote the success of the scientific field, the representatives of the public must work collaboratively to implicate restrictions and regulations that can not only help the development of ideas continue, but also ensure safety and order in the research that is conducted.

HISTORY

From the beginning of time, man has always wanted to discover more--asking how and why things are the way they are. As we continue to explore science in the 21st century, however, humans begin to discover limits regarding research and the sensitive topics that come with it. Though wide public support for scientific research initially skyrocketed after World War II, the public soon became more concerned in the way the science was being practiced and the ethics behind it. When these complaints are ineffectively dealt with among the scientific community, the idea of government regulation over science is introduced. Through the implementation of laws and other regulations, the government is allowed to control and restrict scientists from performing certain acts in the realm of research.

The government plays a key role in providing the safety and well-being of humans and animals during scientific research. When experimentation and studying first garnered mass public support, people all over the world were willing to make extreme sacrifices in the name of science. Especially during World War II in

Germany, people were held responsible for research that violated ethical standards of practice. The Nuremberg trials tried several German physicians who worked in concentration camps, along with those who participated in or contributed to the sterilizations of Germany. This trial led to the Nuremberg Code, which clearly states the guidelines to perform scientific research. Rights such as the "voluntary consent of human subjects," were enforced through this code, and when these rights are disregarded, scientists face serious consequences. Since the trials, the Council for International Organizations of Medical Sciences has been formed to create a global standard for the ethicality of research and the safety of humans. Now, more prominently than ever, animal rights and welfare have become a priority along with human safety regarding scientific research and investigation. The Laboratory Animal Welfare Act of 1966 was the first law to ensure the fair treatment of animals. Acts such as these have created and inspired other countries to adopt similar regulations. Organizations across the world supporting the safety of animals continue to grow in size, as they target scientific organizations that breach the moral law codes set by the state. However, scientists who use animal experimentation are largely unable to find a more effective and efficient replacement. They insist that without test animals, new medical innovations to tackle more advanced growing viruses could not be created. A great divide and barrier has formed between those who prioritize the human race over animal welfare and those who do not, presenting an opportunity for international governments to clarify, revise, or rewrite existing regulations.

Furthermore, the privacy of conducted research is largely controversial in the eyes of the government, researchers, and masses. Though many scientists continue to insist that their research should remain only accessible to themselves, others see the benefit in sharing information amongst not only the scientific community, but also to the government. When information is made public to all, efficiency is increased regarding discovery and innovation. This long-term issue is divided into two sides: those who prioritize security and those who prioritize openness. In September 2018, the idea of Plan S, a proposal to require absolute transparency in scientific research, was launched. Since then, several countries such as China, the United States, Norway, and many others have shown support. Amongst these countries, many scientists feel that Plan S will limit their research capability, while

others see it as an advantage in leveraging greater brainpower to enforce an innovative research style.

As more innovative research begins to surface in the scientific community, the restrictions on science regarding ethicality may continue to grow, as might the relationship between government, science, and the common people.

PAST ACTION

As scientific research has progressed over time, one aspect of it regarding the relationship between science, scientists, and the government has been repeatedly raised as a concern. Whether a country has made an ill-conceived attempt at regulating science or just has an absence of regulation as a whole, the ineffectiveness of regulation can often lead to stifled discovery and learning, which will continue to affect the economy and social state of a country.

Under the United Nations, both the International Science Council (ISC) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) have promoted government regulation on science to ensure the ethicality and safety of all scientific research. In 2014, ISC hosted a workshop in Beijing to stress the importance of incentivizing ethical research. The council also encourages scientists to be aware of their own freedoms and responsibilities. UNESCO specifically targets bioethics and continues to support nations who establish their own bioethics committee. As a committee, UNESCO has created the Universal Declaration on Bioethics and Human Rights, which outlines what moral research looks like, and the societal impacts that can derive from immoral research. Additionally, UNESCO has effectively implemented the Recommendation on Science and Scientific Researchers. Prioritizing scientific innovation under moral terms, the recommendation aims to financially support scientists to be ethical in their practices. Both ISC and UNESCO strongly emphasize that member states should share scientific information to increase innovation and help develop third world countries.

The UN itself has promoted safe science through government regulation through its recognition of the Nuremberg Laws, which set the standard in

conducting humane scientific research. The UN focuses much on the discovery of new scientific findings, but never at the expense of the environment. This attitude is reflected in Resolution 70/213, which uses the 2030 Agenda for Sustainable Development 70/1 Resolution as a baseline to encourage governments to invest in environmentally sound research facilities for scientists. Similarly, Resolution 29-1 advocates for the safety of the environment--especially the ocean--when conducting research. It also refers to the 2030 Agenda for Sustainable Development 70/1 Resolution; Resolution 29-1 encourages marine scientists to implement the agenda as well as to be aware of the impact they can have on the environment when they use unsustainable research methods. Both Resolution 70/213 and Resolution 29-1 have been reasonably effective due to the active participation of bigger countries.

The UN and the committees under it have made significant progress in ensuring the safety of the environment as well as addressing moral and ethical issues regarding scientific research and innovation.

CURRENT SITUATION

Historically, the regulation of scientific research has often become a matter that conflicts with the fundamental ideals of the country. For example, the United States has often struggled with the advancement of scientific research due solely to its citizens' beliefs, tied often to the Butler Act of 1925. Though currently, the regulation of scientific research has been quite minimal, with the last major federal laws enacted in the United States being the Animal Welfare Act of 1966, and just as it applies to vertebrate mammals. Additionally, there are multiple petitions for the UN to completely ban cosmetic animal testing or the use of animals in harmful chemical processes. Several countries have taken action on these petitions, including the European Union, Colombia, Guatemala, and the United States – all of which have ended animal testing in relation to cosmetic products.

Moreover, the United Nations has consistently regulated research on potentially harmful weapons, especially in the UNSC 1540 Committee, which dealt with the non-proliferation of nuclear, chemical, and biological weapons. This

regulation is now handled by the UN Office for Disarmament Affairs, who have established nuclear-weapon free zones, multilateral treaties governing the specific development of nuclear weapons, and test bans on nuclear weapons. Comprehensively, it seems though the regulation of scientific research is country-specific, unless there is a large disagreement on the development of said research. This can be seen in the case of chemical and biological weapons, like mustard gas that spawned the Nuremburg Code during the Second World War.

CASE STUDIES

CASE STUDY 1: NIGERIA

Nigeria, along with several other countries that are part of the African Union, disregard the rules of the Declaration of Helsinki, and the Nuremburg Code, both incredibly important documents to the fields of ethical biomedical research. As a result, scant funding, and increasing corruption lead to scientific practices that violated Articles 11-17 of the Declaration of Helsinki, with disease/biomedical research often happening without an oversight committee and lacking any form of approved protocol or independent ethical review. This was seen in 1994, when the AIDS Clinical Trial Group (ACTG) reported the findings of their study in which a specific experimental drug was used on pregnant women, causing multiple outbreaks of HIV.

Additionally, since the African Union does not have a specific definition for the 'standard of care' outlined in the Declaration of Helsinki, disclosure of information to research participants is not a legal requirement in the countries under the Union's Jurisdiction. This leads to neglect for local research ethics committees, informed consent procedures, or even remedies for injuries caused by malignant research practice. Furthermore, the National Bioethics Advisory Committee has discovered that the information relating to risk, research design and practice, and diagnosis was not consistently presented in countries under the African Union's policies.

Another specific case is the results from the trials of trovafloxacin mesylate, also known as Trovan, or the trials of Abdullahi v Pfizer, which dictated that Pfizer

violated customary international law which prohibited involuntary medical experimentation on humans – which was done with an experimental antibiotic on children in Nigeria, without their consent or knowledge. The government refused to take action, though the parents of the children took the case to the Supreme court. In fact, the government officials worked in tandem with the physicians, recruiting 200 sick children, and giving half the experimental drug Trovan, and the other half was given Geftriaxone, an FDA approved antibiotic. The children in the experimental group experienced significant joint disease, abnormal cartilage growth, and degenerative bone conditions. Overall, Nigeria has consistently disregarded international law, often encouraging human experimentation for an organization's benefit, or simply due to corruption.

BLOC POSITIONS

Nations with impacts on scientific regulation based upon religion or external influences: **Egypt, India, Namibia, Pakistan, Philippines, Saudi Arabia, Thailand**

The nations within this bloc either have a high concentration of religious citizens or have failed to prove a proper separation between religion and science. These nations being religiously inclined, have all created biases that impact scientific views and further research into topics. A main controversial topic is the theory of evolution. Many religious citizens do not believe in this process and their ideas find impact in the scientific field either through government restriction or scientists themselves. The public, being highly religious, would show strong disapproval for specific forms of testing or medicinal use. As many scientists within the countries are religious themselves, it can sometimes be hard to form boundaries between their personal and career-based opinions. Due to this inevitable conflict, large sums of the research collected within highly religious nations are not viewed as reliable or unbiased to the rest of the world.

As a result of religious leaders being involved in government, it is very common to find that government run scientific organizations are not being funded

properly and are therefore not able to conduct substantial research. Instead, in nations like Egypt, they rely mainly on educational facilities such as universities to conduct their own studies. Many governments have failed to promote scientific innovations in fear of raising tensions with the religious beliefs of their public. As some of the nations within this bloc fall behind in the scientific community, others are slowly pushing for advancement. They are finding compromises within their own religion and their research that allow them to carry out presumably accurate results.

Countries within this bloc should either look to uphold their governments strong religious views by pushing for placement of more limitations on scientific research or find an understanding and agreement between their views and innovation within their nation.

Nations will less external influence on research: **Australia, China, Germany, Japan, Norway, Sweden, Switzerland, United Kingdom, United States of America, Vietnam**

Nations within this bloc have significantly less external influence in scientific research whether it be religious or ideological. Due to the non-affiliated governments, they usually are able to promote endless opportunities in their scientific fields. With an open mind, most citizens and governments agree on a majority of terms on what scientific research may be morally allowed, rather than religiously. This sparks debate in nations on what is socially acceptable instead of what their religion or belief limits. These countries may have differing opinions on what should be regulated, but they all can find similarities in their focus on scientific progress.

An example of complete scientific freedom lies in China. Due to their less than seven percent religious public, their government has focused on advancements in science in almost any field possible. From their controversial human testing and modification programs to their dangerous virus creations, China has the least limited scientific programs in the world. While they continue to progress in many fields by themselves, other nations look at them as an ethical disgrace in both religious and moral views.

The United States of America and the United Kingdom remain as outliers within this bloc. Although their public is only roughly fifty percent or less religious, their governments have failed to create proper separation between church and state. With their overwhelmingly Christian public and government, their views tend to remain one-sided. The United States and the United Kingdom have passed countless amounts of religiously motivated scientific restrictions that impact their extent of research. These two governments look to settle in the middle of the two blocs ideologies due to their lack of detachment of religion to policy making.

In this bloc's totality, they have little to no scientific restrictions that limit possible progress. Most nations within this bloc find their restrictions to be based upon their moral judgement in result of their disengagement of religion in their government. The goal of this group will be to promote the idea of expanding opportunities of research to its full potential and setting more well-defined limits to research.

GUIDING QUESTIONS

1. What are the most regulated types of research? What makes that type of research different?

2. What role does religion play in the severity of regulation between each nation?

3. How can these restrictions be regulated within nations without infringing on one's sovereignty?

4. What defines morally sound research?

5. What conflicts arise with transparency of scientific research? What happens without transparency?

6. How can government cooperation be incentivized and reliable?

7. How can nations ensure that scientists will abide by the various research regulations that are implemented?

FURTHER RESEARCH

HTTPS://COUNCIL.SCIENCE/WHAT-WE-DO/FREEDOMS-AND-RESPONSIBILITIES-OF-SCIENTISTS

This link leads to the Internation Science Council and includes the specific freedoms it allows for scientists. Notably, it stresses the importance of sharing scientific discoveries amongst the community.

HTTPS://WWW.APA.ORG/ABOUT/POLICY/FREE-RESPONSIBLE-PRACTICE

This resource comes from the American Psychological Association, and it goes into further detail of the freedoms and limitations of scientists.

HTTPS://WWW.NRC.GOV/SECURITY/INFO-SECURITY.HTML

This source is the United States Nuclear Regulatory Commission, which details the key events that have caused tighter restrictions on science. The website also includes research on nuclear weapons that have affected other countries.

HTTP://LEGAL.UN.ORG/ILC/TEXTS/INSTRUMENTS/ENGLISH/DRAFT_ARTICLES/7_1_1950.PDF

This directs to a set of international laws that have resulted from the Nuremberg Trials.

HTTPS://WWW.FDA.GOV/ABOUT-FDA/SCIENCE-RESEARCH-NCTR/GLOBAL-SUMMIT-REGULATORY-SCIENCE

This link explains the Global Summit on Regulatory Science, which has seen attendance from both first and third world countries.

HTTPS://APPS.WHO.INT/IRIS/BITSTREAM/HANDLE/10665/39314/9241560894_ENG.PDF;JSESSIONID=66E86862E7E588686F25B3AB7F03847F?SEQUENCE=1

This resource includes regulations on science in particular to developing countries. This article deals specifically with the development of pharmaceuticals and their policies.

CITATIONS

Topic A

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- https://wildcardweather.com/2013/06/12/cloud-seeding-a-brief-history-and-an-introduction-to-the-science/
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Topic B

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