Background Guide

International Civil Aviation Organization

Sustainable Aviation and Climate Change Mitigation

JACKRABBIT MUN VIII

L.B. Poly - May 23rd, 2026

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CO-HEAD CHAIR LETTERS

Hello Delegates!

Welcome to Jackrabbit MUN VIII! My name is Nicole McCance, and I will be serving as your co-chair in ICAO this year. I am currently a junior at Poly High School in the PACE program. My co-chair is Zaheen Chowdhury and Vice is Remi Underwood for this committee

My MUN journey began in my Sophomore year of high school and I enjoy MUN because it is a wonderful opportunity to practice sharing solutions coherently and collaborating with others. It is also fun to meet people who share the same interests and I am excited to meet all of you this year!

As your chair, I will be moderating the committee sessions and I look forward to seeing what all of you will come up with throughout the day. I hope this will be a memorable learning experience for all and I'm more than happy to answer your questions before, during, or after the conference. If you have any questions, please do not hesitate to contact me and I'd be happy to help you out. Looking forward to an awesome Jackrabbit MUN with all of you!

Sincerely,

Nicole McCance

ICAO | Co-Head Chair

Nicole27mc@gmail.com

CO-HEAD CHAIR LETTERS

Hello Delegates!

My name is Zaheen and I'm going to be your co-chair for this ICAO Sustainable Aviation committee. I'm a junior here at Poly, and I've very much enjoyed my time in MUN since the beginning of sophomore year. From going to different conferences to researching for committees like this behind the scenes, MUN has taught me collaboration in large group settings and allowed me to make so many incredible friends.

Aside from MUN, I'm involved with Poly's SOS club through which we send essential living supplies to people in need domestically and internationally. I also love playing badminton whether it's tournaments or just with my friends.

I'm absolutely thrilled for this committee and hope you guys are too! Make sure to do your research for the best conference experience. I'm excited to see what creative resolutions you can come up with.

Sincerely,
Zaheen Chowdhury
ICAO | Co-Head Chair
chowdhury.zaheen@gmail.com

POSITION PAPER GUIDELINES

- Position Papers are due at 11:59 PM on **Sunday, May 17th**.
- Delegates **must** submit position papers to be eligible for **research AND committee awards.**
- Position Papers can be submitted through a Google form:
    - **https://forms.gle/H3ruhahP2SQuEPs38**

- At the top of each paper, include your character/country name, first and last name, school name, and appropriate committee.

  United States
  First Last
  School Name
  ICAO

- Papers should be emailed as a PDF file
    - Paper content should also be copied and pasted into the body of the email so it can still be graded in the event of any technical difficulties
    - Please name the file and subject line of the email [Committee_Country]
        - Ex. **ICAO_United States**
- Papers should be 1-2 pages in length with an additional Works Cited page in MLA format
- Papers should be single-spaced in Times New Roman 12 pt. font and include no pictures or graphics
- Please include the following sections for each committee topic:
    - Background & UN Involvement
    - Position of your Country
    - Possible Solutions

If you have any questions or concerns, please email one of your chairs.

TOPIC SYNOPSIS

Ever since the Wright Brothers first took flight in 1903, the use of airplanes and aviation has grown exponentially in the modern world. From serving as long-distance transportation of mail and cargo, to proving pivotal in WW2 in reinforcing troops, aviation has become a cornerstone of global economies. However, historically, environmental consequences of pollutant emissions have been overlooked, resulting in a thinning ozone layer and declining air quality in large, metropolitan regions. We're left with the arduous task to coordinate globally to mitigate further damage to the Earth's climate while adapting to the current environmental conditions.

Today, international aviation accounts for a major share of global greenhouse gas emissions, emitting expanding quantities of carbon dioxide, particulate matter and other greenhouse pollutants. Cities with high air traffic - London, New York City, Shanghai, and more heavy industrial hubs - see most of the harmful impacts, with waning biodiversity from noise pollution and high rates of respiratory illness. Rapidly industrializing developing economies also experience similar consequences, as cities like Jakarta and Lagos have excessive amounts of air pollutants but currently lack the infrastructure to mitigate such toxins. It's imperative that certain measures be implemented collectively worldwide to stop the planet from further accelerating in the wrong direction and to preserve the precious resources at risk because of aviation emissions.

Delegates will be presented the opportunity to collaborate with other delegates to propose solutions balancing economical demands with environmental preservation.

COMMITTEE DESCRIPTION

The United Nations International Civil Aviation Organization (ICAO) is the agency of the UN responsible for regulating and coordinating aviation affairs. Established in 1944, ICAO was created to ensure sustainable development of rapidly expanding international air transportation. ICAO's headquarters are in Montreal, Canada, where they set global standards and recommend sustainable air travel policies.

Today, with the continuing expansion of aviation, ICAO plays a crucial role addressing environmental concerns, especially the contributions to climate change and global warming. ICAO works to balance economic benefits with the urgent need for sustainability. By fostering international cooperation and at the same time supporting innovation that's resource-efficient, ICAO supports the 193 member states in implementing environmental conservation standards while maintaining the growth of their economies. This collaboration also works towards broader UN goals in the 21st century such as climate change mitigation and the Sustainable Development Goals. ICAO's responsibilities in balancing economic growth with safeguarding the planet has never been more imperative.

BACKGROUND

Historical Background

Aviation's origins date back to 1903 when for the first time, the Wright Brothers launched the first successful airplane flight. Initially, aviation was extremely limited in terms of its global reach and thus also had minimal environmental impacts. However, as aircraft technology improved gradually, and as aviation was increasingly integrated not only militarily but also commercially, the emissions and environmental outcomes began to show.

World War 1 marked the first use of aviation militarily for purposes such as bombing missions, where countries such as Italy conducted military flights in as early as 1911. This marked aviation's beginnings as a strategic tool in warfare. In the 1920s and 30s, aviation's use expanded to include long-distance flights, commercial passenger services, and international mail and posting.

Aircraft use saw rapid acceleration during World War II. During this time, military aircrafts became faster and more powerful, not to mention the first ever turbojet engines were created and employed, increasing their speed and overall expanding the use and operations of aircrafts.

Following World War II, aviation saw a period of rapid commercialization. Aircraft jets, like the Boeing 707, introduced in 1958, revolutionized air travel by making it faster and serving passengers as a more efficient mode of transportation. The Concorde was also a new innovation of the time, and the supersonic aircraft demonstrated the sophistication the industry had achieved in such a short span of

time, highlighting the rapid technological advancements of aviation.

By the modern era, aviation had already become a fundamental aspect of global transportation, tourism, trade, and much more. In 2019, an estimated 4.56 billion passengers were using aviation. This expansion also came with increasing environmental impacts as well. A 2021 analysis in *Atmospheric Environment* (journal) stated that in 2011, aviation was accountable for 3.5% of the total anthropogenic global warming. Statistics in 2018 showed the same data and trends, showing a lack of emission reduction in a continuously expanding industry. Aircraft emissions primarily consist of carbon dioxide, roughly 70% of total exhaust emissions, and also nitrogen oxides and other atmospheric pollutants.

Current Situation

Currently, the global aviation industry has been working toward getting zero-net emissions. Beginning in 2025, the industry had a turning point of scaling towards Sustainable Aviation Fuels (SAF). However, this year they are focusing on increased production, stronger regulatory protections, and the implementation of AI. There have also been regulatory policies imposed globally, such as ReFuelEU Aviation and the UK Mandate, which have both been in full force. There have also been emerging technologies for the use of hydrogen refueling and hybrid/electric planes, but only for short routes. In addition, Artificial Intelligence is being integrated to optimize flight routes, reduce fuel burn, and manage predictive maintenance.

Economic Impacts

Aviation possesses a critical role in the global economy, supporting not only international tourism and employment, but also cargo transport and the economic integration of island nations/economies. Many economies like those rely extensively on aviation for trade stability and networks. Many economies like that of Grenada's rely heavily on aviation for their robust tourism industry.

However, to effectively transition to sustainable aviation currently requires significant financial investment. These include: expansion of SAF production, mainly through specialized facilities/infrastructure, airport infrastructure modernization, and the replacement of older, less fuel-efficient and environmentally friendly aircrafts. However, these goals are huge challenges to achieve, especially given the existing financial strain many economies are still recovering from after the Covid-19 pandemic. As of right now, sustainable fuel alone costs 3-5 times more than conventional jet fuel.

Additionally, stricter emissions regulation and aviation taxes have the potential to create trade imbalances, route restrictions due to those taxes, overall creating heavy global disputes.

Political Tensions

Currently, significant political disagreements have arisen regarding how quickly aviation emissions should be reduced. Developed countries often advocate for stronger emissions standards due to their increased technological capacity and access to sustainable fuel production. In contrast, many developing countries argue that aviation growth is essential for expanding their trade and transportation networks, prioritizing economic development.

Critics of CORSIA argue that its implementation relies too heavily on carbon

offset markets, rather than the direct reduction of emissions. Concerns have also been raised regarding the environmental integrity of some offset programs, and its role in limiting emissions growth through carbon offsets rather than working towards solutions to reduce total emissions.

Meanwhile, global competition regarding the leadership of sustainable aviation technology is emerging. Countries and companies investing in SAF production, hydrogen-powered aircraft, and low-emissions aviation technologies may gain strategic economic advantages in the global aviation market in the future.

Social Consequences

Aviation emissions also have consequential impacts on local environments and human health. Communities situated near major airports often experience increased concentrations of harmful gases like nitrogen oxides and particulate matter, which have been linked to various respiratory illnesses such as asthma. The persistent noise associated with aircrafts may also disrupt ecosystems and reduce the biodiversity of surrounding areas.

Climate change also poses a risk to aviation infrastructure. Rising sea levels pose a threat to airports located in coastal regions, and extreme heat and storms can disrupt flight operations and reduce aircraft performance.

Finally, concerns surrounding the accessibility of and fairness of aviation climate policies have also arisen. Increased fuel costs and the impacts of environmental regulations may raise ticket prices. This limits the accessibility of travel for lower-income populations, and may affect economies that depend heavily on tourism and international mobility.

UNITED NATIONS INVOLVEMENT

International Agreements & Major Turning Points

Arguably one of the most significant events in the international aviation community was the 1944 Chicago convention, which established the International Civil Aviation Organization (ICAO). The convention created the primary framework for the regulation of international aviation and the sustainable development of air travel/transportation. Article 44 of the convention defined the objectives of ICAO as planning and promoting the sustainable development of international air transport. However, at the time, originally, environmental concerns were not addressed, which created challenges in the future regarding climate change as it was an impending concern.

A major development occurred with the adoption of the Kyoto Protocol in 1997 under the United Nations Framework Convention on Climate Change (UNFCCC). The protocol recognized international aviation as a contributor to greenhouse gas emissions and assigned ICAO responsibility for addressing aviation-related emissions. However, regulating aviation emissions proved difficult due to the international nature of flights and the difficulty of assigning emissions to individual states.

Tensions of aviation emissions intensified in magnitude from 2010 to 2013, which was right after the European Union (EU) decided to include aviation in its list of top emission generators through Directive 2008/101/EC. Their policy required all flights landing and departing from EU airports to surrender emission allowances for their flights. THis generated backlash from countries - including the United States, China, India, and Russia - arguing for its violations of national sovereignty. To address

these concerns, ICAO adopted Resolution A8-18 (2013), encouraging states to avoid unilateral measures and instead pursue a multilateral solution

In 2016, ICAO adopted Resolution A39-3, which established CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation). CORSIA represents the first global mechanism implemented to limit emissions from an entire industry, in this case, aviation. The program required airlines to offset emission growth and prevent it from growing beyond a baseline level (originally 2020 level, but adjusted after the pandemic) through distinct phases of carbon offsets. The first was a pilot phase from 2021-23. Next came a voluntary participation phase by member states from 2024-26. The mandatory phase for most states was set for 2027 - 35, with exemptions to Least Developed Countries (LDCs), Small Island Developing States (SIDS), and Landlocked Developing Countries (LLDCs).

In 2017, ICAO adopted their first aircraft CO_2 emissions standard, establishing standards for fuel efficiency. Under Annex 16 of the Chicago Convention, newly designed aircrafts beginning in 2020, as well as aircrafts in production by 2023, would be required to abide by these new fuel-efficiency standards.

Aviation policy was further changed after the adoption of the Paris Agreement in 2025, which aimed to prevent the further increase of global temperatures to greater than 2°C above pre-industrial levels. With increased pressure to align aviation with global climate goals, ICAO adopted a Long-Term Aspiration Goal (LTAG) at its Assembly in 2022, committing the international aviation sector to reaching net-zero carbon emissions by 2050.

The strategy emphasizes several technological pathways, including Sustainable Aviation Fuels (SAFs), hydrogen-powered aircraft, electric and hybrid propulsion

systems, and more efficient air traffic management systems.

Although these enacted policies and efforts highlighted ICAO's role as the leader of global aviation climate governance, challenges regarding the implementation of these policies, financing them, and balancing them with economic growth, leaving the long term effectiveness of the policies a major subject of debate.

BLOC POSITIONS

African Bloc

The African Bloc has shown deep commitment to sustainable aviation, with South Africa, Kenya, Ethiopia, Rwanda, and Zambia establishing the African Civil Aviation Commission (AFCAC) in 1969. In particular, the AFCAC has implemented the Single African Air Transport Market (SAATM), an open skies policy for routes based on market demand instead of restrictive agreements. By doing so, SAATM has succeeded in promoting economic growth while also helping the environment, as SAATM has created more efficient flight paths, reducing emissions.

Asia-Pacific Bloc

These are the nations that face some of the most direct consequences (often severe) of climate change. Many, especially Small Island Developing States (SIDS), face threats including rapidly rising sea levels, extreme weather events, and overall environmental decline. Simultaneously, many of their economies depend on aviation to grow tourism, one of their main industries.

As a result of all these risks, these nations usually advocate for the strengthening of strict global commitments in mitigating and reducing aviation emissions. They may emphasize the need for faster progress towards net-zero emissions standards and may call for more financial support to develop better infrastructure suited for their sometimes harsh climates - for example, airports that will be able to withstand the rising sea level and at times severe storms.

Middle Eastern Bloc

Often heavily immersed in global energy markets and are interested in hydrocarbon production, many of these nations have and/or currently are investing in diversifying their economies - the primary method of which is by exploring renewable energy - they're still quite cautious about certain policies that could plummet demand for fossil fuels as they still rely on those industries quite a bit. Additionally, crude petroleum used in jet fuel is often sourced from the Middle East.

These countries are fairly in favor of energy security and global economic stability being critical prioritizations in new policies related to climate change. They caution that hasty transitions from fossil fuels are bound to disrupt markets around the world that rely on them extensively, ultimately impacting aviation industries negatively themselves.

Western Bloc

Countries representing the Western bloc typically prioritize the balance between climate change mitigation and economic stability within any given industry. So logically, that pattern extends to aviation. These nations have already adopted their own domestic policies for net-zero emissions and are currently investing heavily in Sustainable Aviation Fuels (SAFs), emissions-efficient technology, and improved regulations.

These states are the ones to advocate for environmental standards from ICAO. They support the strengthening of CORSIA, and also for SAFs to be adopted globally for aviation. Western states also value international cooperation alongside technological innovation as key solution blueprints.

These nations are the most ambitious regarding climate policies to be put in place and will typically argue for stronger, and often stricter, environmental standards to be implemented internationally. They prioritize responsibility of all nations in environmental and climate agreements, and they often can suggest rather aggressive strategies to reduce emissions.

These nations regularly emphasize the need for stricter regulation, including caps on aviation emissions, supervision of carbon offset programs, and sustainability standards for SAFs. They may also advocate for incorporating aviation emissions directly into broader international climate agreements/frameworks.

Latin American and Caribbean Bloc

Countries in this region are often focused primarily on economic growth and expanding their current access to air transportation for their growing populations. As their middle-class populations are skyrocketing, these countries have seen a rapid increase in demand for domestic and international air travel. As a result, the development of the aviation sector is viewed as a critical component of the economy and infrastructure.

These states typically lean towards advocating for plans emphasizing gradual reduction of emissions as opposed to immediate strictly imposed regulations. They will often highlight their need for financial assistance and technology transfer to effectively embrace SAFs.

QUESTIONS TO CONSIDER

1. What responsibilities do each bloc of states have in regulating emissions from aviation while maintaining the productivity of the global economy as it is? How is this put into action?
2. What role does the ICAO specifically need to play in order to balance economic development with environmental protection/preservation?
3. What policies can be implemented to hold airlines and manufacturing companies accountable for their environmental impacts? How to implement these policies without disrupting the aviation industry?
4. How can nations/economies dependent on aviation work towards sustainability without sacrificing their economic security?
5. How can we ensure that policies of climate change in aviation do not disproportionately affect lower-income travelers or developing nations relying extensively on aviation?
6. How can ICAO effectively implement global climate change mitigation commitments while respecting the needs and differences of each state? How can the ICAO strengthen global cooperation to meet climate change policies?

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