Background Guide: FCC

Establishing a Governing Body Regulating the Growing Interests and Capabilities of Interplanetary Settlements.

Introduction to the Futuristic Crisis Committee

1. Letter from the Executive Board

Dear Delegates,
It is our pleasure to welcome you to the United Nations Futuristic Crisis Committee (FCC) at Mayo College Girls' School Model United Nations. The agenda before this committee represents one of the most profound transformations in human history: the expansion of human civilization beyond Earth and the governance of permanent settlements in space.
For centuries, space was regarded as a frontier of exploration. Scientific missions and satellite technologies allowed humanity to observe the universe and improve life on Earth. However, the early decades of the twenty-first century marked a turning point. Rapid advances in aerospace technology, reusable launch systems, robotics, artificial intelligence, and commercial investment dramatically lowered the cost of access to space. What was once the domain of national prestige missions became an arena of large-scale industrial activity.

By the year 2040, human presence in space has evolved far beyond temporary expeditions. Permanent settlements now exist on the Moon and Mars. Industrial operations extract resources from asteroids and the lunar surface. Orbital manufacturing facilities produce advanced materials and pharmaceuticals that cannot be created under Earth's gravity. Satellite constellations and deep-space communication networks form the infrastructure of a rapidly expanding interplanetary economy.
These developments offer extraordinary opportunities. Space resources have the potential to transform global energy systems, support advanced technologies, and enable humanity to expand beyond the ecological limitations of Earth. Many scientists and policymakers believe that the establishment of off-world settlements is essential for the long-term survival of the human species. Yet these opportunities are accompanied by unprecedented challenges. The international institutions that govern space were largely developed during the twentieth century, when space activity was limited to a small number of scientific missions. Treaties such as the Outer Space Treaty of 1967 established important principles regarding the peaceful use of space and the non-appropriation of celestial bodies. However, these frameworks were never designed to regulate permanent human settlements, large-scale resource extraction, or powerful private corporations operating beyond Earth's atmosphere.
As a result, humanity now faces a governance crisis. Questions that once belonged to science fiction have become urgent matters of international politics.

- Who has the right to extract resources from the Moon or Mars?
- Should private corporations control life-support systems that sustain human communities in space?
- How can environmental damage to celestial bodies be prevented?
- What rights should be granted to individuals born on other planets?
- Who governs the expansion of human civilization beyond Earth?

The Futuristic Crisis Committee has been convened to explore these questions.
Unlike traditional committees that focus primarily on drafting policy statements, this crisis committee will simulate the fast-paced and unpredictable nature of global decision-making. Delegates will confront evolving events, technological disruptions, geopolitical rivalries, and ethical dilemmas that require immediate responses. The actions taken within this committee will influence the trajectory of the simulated interplanetary order.

Success in this committee will require more than knowledge of space policy. Delegates must think strategically about power, cooperation, technological change, and the long-term consequences of political decisions. Creativity, adaptability, and diplomatic skill will be essential. We encourage delegates to approach this committee with curiosity and intellectual rigor. The debates you engage in reflect questions that humanity may soon face in reality. The future of the solar system is no longer an abstract concept. It is a political question that must be answered. We wish you the best of luck in navigating the challenges ahead.
Warm regards,
Executive Board
United Nations Futuristic Crisis Committee

2. Understanding the Futuristic Crisis Committee

The Futuristic Crisis Committee is designed to simulate a decision-making body responsible for addressing urgent challenges related to interplanetary governance. Unlike traditional Model United Nations committees, which often emphasize structured debate and formal resolutions, crisis committees operate in a dynamic environment where events evolve rapidly and decisions must be made under uncertainty.

In this simulation, delegates represent a range of actors involved in the governance of space activities. These actors may include national governments, space agencies, international organizations, private corporations, and representatives of off-world settlements. Each actor possesses different resources, capabilities, and political interests that shape how they respond to emerging crises.

The purpose of this committee is not merely to debate abstract ideas but to simulate the real-world complexities of policy-making in an environment characterized by technological change, geopolitical competition, and institutional uncertainty.

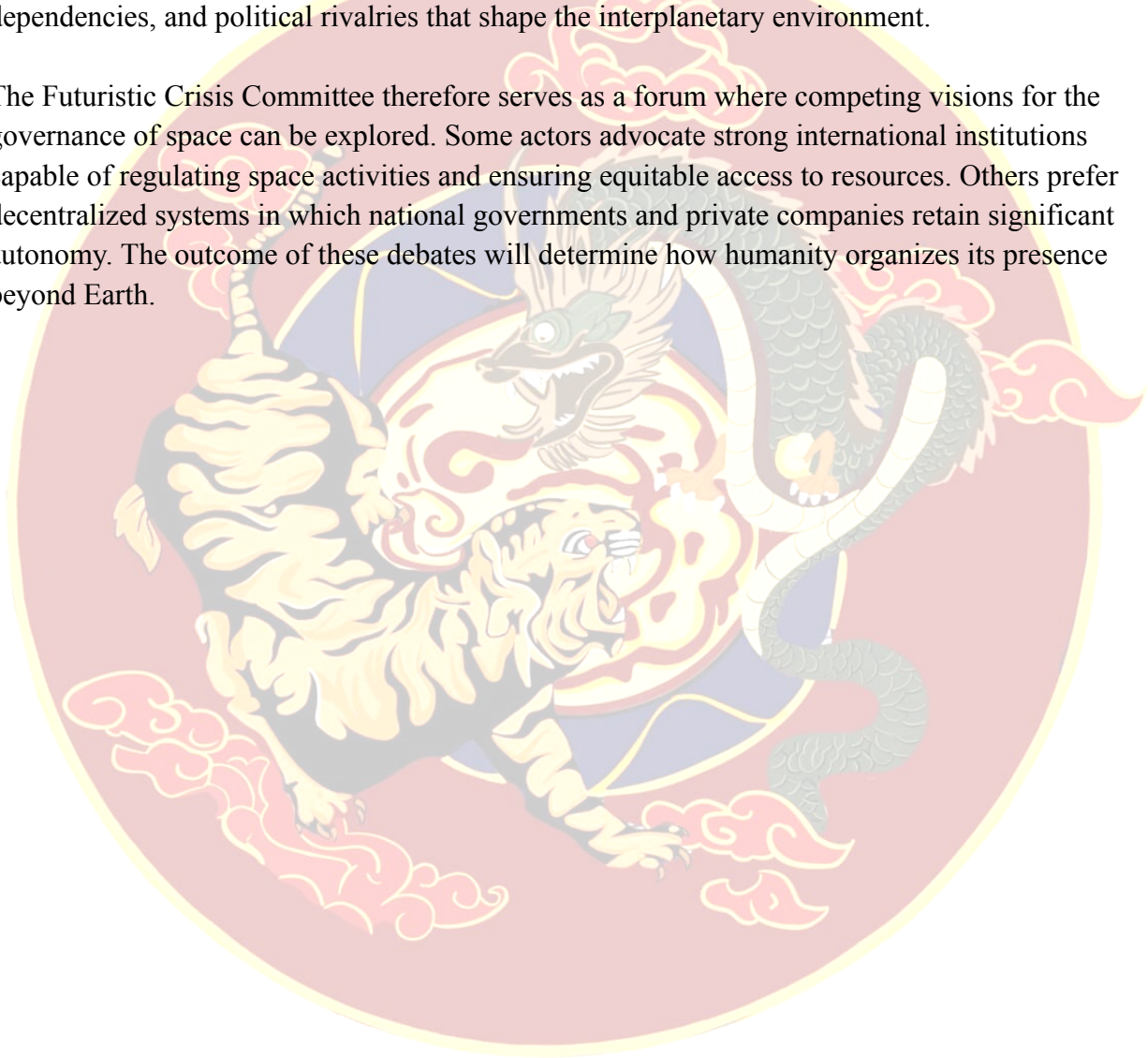
The expansion of human activity into space has transformed space from a purely scientific domain into a strategic arena where economic interests, national security concerns, and technological competition intersect. The rapid growth of commercial space companies and the establishment of permanent settlements have created new forms of power that challenge traditional state-centered governance models.

One of the defining features of this committee is the presence of multiple layers of authority. Governments, corporations, and international organizations all play significant roles in shaping the interplanetary system. No single actor possesses complete control over the infrastructure or resources necessary for space settlement. As a result, governance emerges through negotiation, cooperation, and sometimes conflict among these actors.

Delegates must therefore consider not only the formal rules of international law but also the practical realities of power and influence. Control over launch infrastructure, communication networks, life-support systems, and transportation routes can determine the success or failure of settlements millions of kilometers from Earth. In many ways, the challenges faced by the Futuristic Crisis Committee resemble those encountered during earlier periods of global transformation. The expansion of maritime exploration during the fifteenth and sixteenth centuries created similar questions about sovereignty, trade, environmental stewardship, and the rights of newly established communities. However, the interplanetary frontier introduces additional complexities due to the extreme physical environment of space and the technological systems required for human survival. Space settlements depend on highly sophisticated life-support systems that regulate air, water, temperature, and radiation exposure. A failure in one

of these systems can quickly escalate into a life-threatening emergency. This dependence on technology means that the governance of settlements is closely intertwined with the management of infrastructure. Furthermore, the distances involved in interplanetary travel create significant delays in communication between Earth and Mars. These delays limit the ability of Earth-based authorities to manage settlements directly, raising questions about the autonomy of off-world communities.
For delegates participating in this committee, understanding these structural dynamics is essential. Policy decisions must account for the logistical constraints, technological dependencies, and political rivalries that shape the interplanetary environment.

The Futuristic Crisis Committee therefore serves as a forum where competing visions for the governance of space can be explored. Some actors advocate strong international institutions capable of regulating space activities and ensuring equitable access to resources. Others prefer decentralized systems in which national governments and private companies retain significant autonomy. The outcome of these debates will determine how humanity organizes its presence beyond Earth.



3. Committee Mechanics and Crisis Operations

Crisis committees operate differently from standard Model United Nations committees. Instead of focusing primarily on the drafting of long resolutions, delegates respond to rapidly evolving events through short, actionable directives. The committee environment is divided into two interconnected spaces: the Frontroom and the Backroom.

Frontroom Operations

The Frontroom represents the formal meeting space of the committee. In this environment, delegates engage in debate, negotiate alliances, and draft directives that outline specific actions to address emerging challenges.
Discussion in the Frontroom typically focuses on:

- Strategic responses to crisis updates
- Negotiation of cooperative initiatives
- Allocation of resources
- Coordination between actors.

Rather than debating general principles, delegates are encouraged to develop practical solutions that can be implemented within the simulated environment.

Backroom Operations

The Backroom represents the broader world outside the committee chamber. It is managed by the crisis staff, who simulate the actions and reactions of governments, corporations, settlements, and other actors not directly represented in the committee.
Delegates may communicate with the Backroom through private notes. These notes allow delegates to use the resources and capabilities associated with their roles to influence events beyond the committee.
Examples of backroom actions include:

- Deploying spacecraft or satellites
- Negotiating agreements with private companies

- Conducting scientific missions
- Requesting military or logistical support.

The crisis staff evaluates these actions and determines their consequences within the simulation.

Crisis Updates

Throughout the committee session, the crisis staff will introduce updates that reflect developments in the simulated world. These updates may involve technical failures, political disputes, environmental hazards, or unexpected discoveries.
Examples of potential crisis developments include:

- A malfunction in a lunar life-support system
- A dispute over water extraction rights near the lunar south pole
- The discovery of valuable mineral deposits on an asteroid
- Sabotage of communication satellites
- Political unrest within a Martian settlement.

Delegates must respond quickly to these developments by drafting directives or coordinating responses with other actors.

Directives

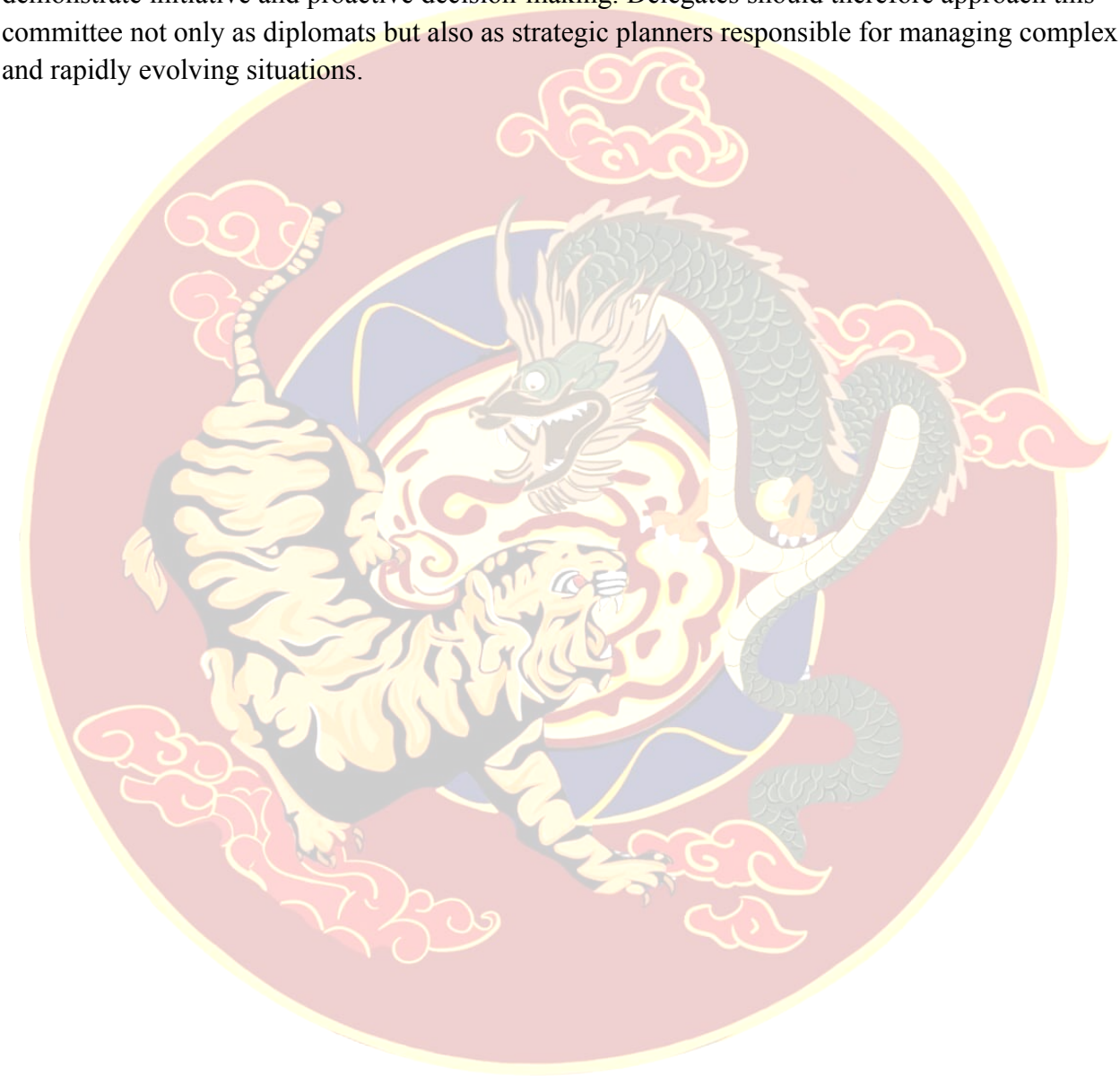
Directives are short documents that propose specific actions to address a crisis. They are designed to be concise and operational rather than descriptive.
A typical directive includes the following elements:

- Actor
- Action
- Resources Used
- Target
- Expected Outcome

For example, a directive might instruct an international agency to deploy emergency supplies to a settlement experiencing a life-support failure, or authorize a joint investigation into a disputed mining operation.
Directives are typically adopted by a simple majority vote of the committee.

Strategic Thinking in Crisis Committees

Success in crisis committees depends on a combination of strategic planning, negotiation, and creativity. Delegates must anticipate potential developments, build alliances with other actors, and adapt their strategies as new information becomes available. Unlike traditional committees where debates may focus primarily on formal procedure, crisis committees reward delegates who demonstrate initiative and proactive decision-making. Delegates should therefore approach this committee not only as diplomats but also as strategic planners responsible for managing complex and rapidly evolving situations.



4. Human Expansion into Space: 2020–2040

The early decades of the twenty-first century marked a decisive turning point in humanity's relationship with space. For most of the twentieth century, space exploration was driven primarily by national prestige, scientific curiosity, and strategic competition during the Cold War. Missions were expensive, technologically complex, and limited to a small number of government space agencies.

However, beginning in the 2010s and accelerating through the 2020s, a series of technological and economic developments dramatically transformed the global space sector. The most significant of these developments was the emergence of reusable launch vehicles, which drastically reduced the cost of sending cargo and personnel into orbit. Companies such as SpaceX, Blue Origin, and other aerospace firms developed rockets capable of landing and being reused multiple times, lowering launch costs by an order of magnitude compared with earlier systems.

At the same time, advances in robotics, artificial intelligence, and autonomous systems made it possible to conduct complex operations in space with minimal human intervention. Satellite constellations providing global internet coverage expanded rapidly, creating a new commercial ecosystem based on space-based infrastructure. Governments around the world recognized the strategic and economic importance of these developments and began investing heavily in national space programs.

By the mid-2020s, the global space economy had grown to more than $500 billion annually, with projections suggesting that it could exceed $1 trillion within two decades. This rapid growth encouraged both governments and private investors to pursue more ambitious space initiatives, including permanent human settlements beyond Earth.

The Return to the Moon

The Moon became the focal point of the next phase of space exploration. Several countries viewed the lunar surface as an ideal location for testing technologies necessary for long-duration missions deeper into the solar system.

The United States led this effort through the Artemis Program, an international partnership involving numerous countries and space agencies. Artemis aimed to establish a sustainable human presence on the Moon, particularly near the lunar south pole, where satellite observations had revealed the presence of water-ice trapped in permanently shadowed craters.

Water on the Moon is an extremely valuable resource. It can be converted into oxygen for breathing and hydrogen for rocket fuel. This capability would allow the Moon to function as a refueling station for missions traveling further into space.

At the same time, China and Russia launched a parallel initiative known as the International Lunar Research Station (ILRS). This project sought to create an alternative framework for lunar exploration and settlement. The existence of two competing lunar programs signaled the emergence of a multipolar space environment, where multiple coalitions pursued independent strategies for exploration and development. By the early 2030s, both programs had succeeded in establishing semi-permanent research facilities on the Moon. These bases initially hosted small crews of scientists and engineers but gradually expanded as infrastructure improved and commercial activity increased.

The Commercialization of Space

One of the most transformative aspects of the new space era was the increasing role of private corporations. Historically, space exploration had been dominated by government agencies such as NASA, Roscosmos, and the European Space Agency. While private contractors played important roles, the overall direction of space programs remained under government control.

This dynamic changed dramatically in the 2020s and 2030s. Private companies began developing their own launch vehicles, satellites, and space stations. Some corporations even proposed plans to establish independent settlements on the Moon and Mars.
Commercial space firms quickly became essential partners in national space programs. Governments relied on private companies for launch services, cargo transportation, and satellite deployment. Over time, the line between public and private space activities became increasingly blurred. The commercialization of space also led to the emergence of new industries, including:

- Orbital tourism
- Asteroid mining
- Microgravity manufacturing
- Satellite-based communications and navigation systems.

These industries generated enormous economic value and further accelerated investment in space infrastructure.

The First Human Mission to Mars

The next major milestone in human space exploration occurred in the early 2030s with the first crewed mission to Mars. Advances in propulsion systems and life-support technologies made it possible to transport astronauts on a months-long journey to the Red Planet.

The initial Mars mission was a joint effort involving multiple space agencies and commercial partners. The crew established a small research outpost designed to study the Martian environment and test technologies for long-term habitation.
Although the mission was initially experimental, it quickly became clear that Mars could support permanent human settlements. Advances in in-situ resource utilization (ISRU) allowed settlers to produce essential materials such as water, oxygen, and fuel directly from the Martian environment.

Over the following decade, the original research station expanded into a larger settlement known as Mars Base Alpha. By the late 2030s, the colony included:

- Greenhouse systems for food production
- Underground habitats protected from radiation
- Small manufacturing facilities.

The birth of the first child on Mars in 2039 marked a historic moment in human civilization. For the first time, a human being had been born on another planet.
This development raised profound questions about citizenship, governance, and the rights of individuals born beyond Earth.

5. The Rise of Lunar and Martian Settlements

The establishment of permanent settlements beyond Earth transformed space exploration into a new form of political and economic activity. Unlike temporary scientific missions, settlements created communities that required stable governance structures, economic systems, and long-term planning.

Lunar Settlements

The Moon became the primary center of human activity in space during the 2030s. Its proximity to Earth made it an ideal location for developing infrastructure that could support deeper space missions.

Several settlements emerged near the lunar south pole, where water-ice deposits were concentrated. These settlements served multiple purposes:

- Scientific research
- Resource extraction
- Transportation hubs for interplanetary missions.

Lunar bases also supported the development of space-based manufacturing industries. Materials produced in microgravity environments could be used to construct large structures such as space stations and solar power satellites.

However, the concentration of valuable resources in specific lunar regions created geopolitical tensions. Control over water-ice deposits became particularly contentious because of their importance for life support and fuel production.

Martian Colonies

Mars presented a more complex challenge for human settlement due to its distance from Earth and harsh environmental conditions. Communication delays between Earth and Mars could reach up to 22 minutes, making real-time control from Earth impossible.

As a result, Martian settlements developed a high degree of autonomy. Colonists were required to make many operational decisions independently, particularly in emergencies where immediate action was necessary. The Martian environment also posed significant biological and psychological challenges. Lower gravity, increased radiation exposure, and extreme isolation required settlers to adapt both physically and socially. Despite these difficulties, the Martian colonies continued to expand throughout the 2030s. The potential for scientific discovery and economic development attracted investment from governments and private companies alike.

6. The Interplanetary Economic System

By 2040, human activity beyond Earth had evolved into a complex economic system involving multiple industries and actors. The interplanetary economy can be divided into three major sectors: resource extraction, orbital manufacturing, and space logistics.

Resource Extraction

Space contains vast quantities of valuable materials that are rare or difficult to obtain on Earth. These include:

- Platinum-group metals
- Rare earth elements
- Helium-3
- Water-ice.

Asteroids in particular contain large concentrations of metals used in advanced electronics and industrial manufacturing. Mining these resources could potentially reduce pressure on Earth's natural ecosystems. Helium-3, a rare isotope embedded in lunar soil, has attracted particular interest because of its potential use in fusion energy systems. Although fusion technology remains under development, some experts believe that Helium-3 could become a key energy source in the future.

Orbital Manufacturing

The microgravity environment of space allows for manufacturing processes that cannot be replicated on Earth. Certain materials crystallize more perfectly in space, leading to the production of higher-quality semiconductors, pharmaceuticals, and fiber optics.
Orbital manufacturing facilities began appearing in the 2030s as private companies sought to take advantage of these unique conditions. These facilities produced specialized materials for both terrestrial industries and space-based infrastructure.

Interplanetary Logistics

The movement of people, equipment, and resources between Earth, the Moon, and Mars requires an extensive transportation network.
Key components of this network include:

- Launch facilities on Earth

- Orbital refueling depots
- Cargo spacecraft
- Communication satellites.

Control over this logistics infrastructure provides enormous strategic influence. Actors that manage transportation networks can shape the flow of goods and resources throughout the interplanetary economy.

7. Strategic Geography of the Solar System

The Lunar South Pole

The lunar south pole is one of the most valuable regions in the solar system. Permanently shadowed craters in this area contain large deposits of water-ice that accumulated over billions of years. These deposits are essential for sustaining human life and fueling spacecraft. As a result, several settlements have been established in close proximity to these craters. Competition for access to these resources has become a major source of geopolitical tension.

Lagrange Points

Lagrange points are locations where the gravitational forces of two large celestial bodies balance each other. These points are ideal locations for space stations and communication relays because spacecraft traveling between planets often pass through these regions, control of Lagrange points can influence interplanetary transportation routes.

Asteroid Belt

The asteroid belt between Mars and Jupiter contains millions of rocky bodies rich in valuable minerals. Mining operations in this region could supply materials for both space-based and Earth-based industries. However, the distances involved and the lack of existing infrastructure make asteroid mining a technologically demanding endeavor.

Power, Law, and Governance in the Interplanetary Age

8. Great Power Competition in Space

The expansion of human activity beyond Earth has intensified geopolitical competition between major powers. While early space exploration was largely motivated by scientific discovery and symbolic prestige, the development of permanent settlements and industrial activity in space has transformed the domain into a critical arena of strategic competition.

By the year 2040, space is widely recognized as the fourth strategic domain, alongside land, sea, and air. Nations view their presence in space as essential to economic development, technological leadership, and national security. Several factors have contributed to the growing geopolitical importance of space.

Strategic Infrastructure

Space-based infrastructure now supports essential services on Earth, including communication, navigation, weather forecasting, and global financial systems. Satellite networks enable everything from international banking transactions to air traffic control and disaster response because modern societies depend heavily on these systems, protecting space infrastructure has become a central concern for governments. Disruptions to satellite networks could have cascading effects on national economies and security systems.

At the same time, the expansion of settlements and resource extraction beyond Earth has introduced new forms of strategic infrastructure. Launch facilities, orbital refueling depots, lunar mining operations, and deep-space communication networks have become vital components of the interplanetary economy control over these assets provides states with significant leverage in international affairs.

Multipolar Competition

Unlike the Cold War era, when space competition was largely dominated by two superpowers, the modern space environment is multipolar. Several countries now possess advanced space capabilities, including:

- The United States

- China
- Russia
- Members of the European Space Agency
- India
- Japan.

These actors pursue different strategies and governance models for space development. Some advocate strong international cooperation and regulatory frameworks, while others emphasize national autonomy and technological independence.

The emergence of competing coalitions has contributed to the fragmentation of space governance. The Artemis Accords, led by the United States and its partners, promote a cooperative framework for lunar exploration and resource utilization. Meanwhile, China and Russia have developed alternative partnerships centered around the International Lunar Research Station. These parallel initiatives reflect broader geopolitical rivalries and differing visions for the future of space governance.

Security Concerns

Military considerations also play a significant role in space competition. Although international treaties prohibit the deployment of weapons of mass destruction in space, many dual-use technologies developed for civilian purposes have potential military applications.

Satellites equipped with robotic arms, for example, can be used for maintenance and debris removal but could also interfere with or disable rival spacecraft. Similarly, systems designed to track space debris can also provide valuable intelligence regarding the activities of other nations.

As a result, the line between civilian and military space activities has become increasingly blurred. Governments invest heavily in space surveillance systems to monitor the activities of other actors and protect their own assets. These developments have created a classic security dilemma. Actions taken by one country to enhance the safety of its infrastructure may be perceived by others as preparations for offensive operations. This dynamic contributes to mistrust and complicates efforts to establish cooperative governance frameworks.

9. Corporate Sovereignty and Private Actors

One of the most significant changes in the modern space environment is the growing influence of private corporations. Unlike earlier periods of space exploration, when governments controlled most space activities, private companies now play a central role in the development of space infrastructure and technology. These corporations operate across multiple sectors of the space economy, including launch services, satellite manufacturing, telecommunications, mining, and space tourism.

The Rise of Commercial Space Companies

Several factors have contributed to the rapid growth of the commercial space sector. Advances in reusable rocket technology dramatically reduced launch costs, making space more accessible to private investors. At the same time, governments began outsourcing many space-related services to private companies in order to reduce costs and accelerate innovation. Private firms quickly demonstrated their ability to develop new technologies at a faster pace than traditional government programs. Competition between companies drove innovation and expanded the range of services available in space. By the 2030s, several corporations had developed the capability to launch their own spacecraft, construct orbital facilities, and operate large satellite constellations. Some companies also began investing in lunar and asteroid mining operations.

Infrastructure Control

As commercial space activities expanded, corporations began controlling critical infrastructure necessary for space operations. These include:

- Launch vehicles and launch sites
- Satellite networks
- Communication systems
- Life-support technologies
- Transportation services between Earth and off-world settlements.

In many cases, governments depend on these companies to carry out essential space missions. This reliance gives corporations significant influence over policy decisions related to space development. For example, a company operating a major satellite network may control the communication systems required for settlements on the Moon or Mars. Similarly, a corporation managing the primary transportation routes between Earth and lunar settlements may determine which actors can access those settlements and at what cost. This concentration of power raises important questions about governance and accountability.

Corporate Governance of Settlements

In some cases, private corporations have become the primary administrators of off-world settlements. These settlements function similarly to company towns, where a single organization provides essential services such as housing, employment, transportation, and life-support infrastructure because the survival of settlers depends on these systems, corporate administrators wield considerable authority over the daily lives of residents. Decisions about work schedules, resource allocation, and safety protocols may be determined by corporate policies rather than public law.

This arrangement creates significant governance challenges. Traditional legal frameworks assume that states exercise authority over their citizens and territories. However, settlements located beyond Earth may operate under corporate charters issued by governments but administered largely by private actors. The resulting system blurs the distinction between public and private authority.

Accountability and Regulation

The growing power of corporations in space raises concerns about accountability and regulation. Critics argue that private companies may prioritize profit over environmental protection, worker safety, and long-term sustainability. At the same time, excessive regulation could discourage investment and slow technological progress. Many governments therefore face a difficult balancing act: encouraging innovation while ensuring that space activities remain safe and responsible. Some policymakers have proposed the creation of international regulatory bodies to oversee commercial activities in space. Others argue that national governments should retain primary responsibility for regulating their own companies. These debates remain unresolved and represent a central issue for the Futuristic Crisis Committee.

10. International Space Law

The legal framework governing space activities was established during the early years of the space age. Several treaties and agreements define the principles that guide international cooperation in space. The most important of these is the Outer Space Treaty (1967).

The Outer Space Treaty

The Outer Space Treaty establishes several fundamental principles for space activities. Among the most significant are:

- Outer space is the province of all humanity
- Celestial bodies cannot be claimed as national territory
- States are responsible for the activities of their citizens in space
- Space must be used for peaceful purposes.

These principles were designed to prevent the militarization of space and to encourage international cooperation. However, the treaty was negotiated during a time when space activities were limited to scientific exploration. It does not address many of the challenges associated with modern space development.

Resource Extraction

One of the most controversial issues in space law concerns the extraction of resources from celestial bodies. The Outer Space Treaty prohibits states from claiming sovereignty over the Moon or other celestial bodies, but it does not explicitly forbid the extraction of resources. Some countries interpret this ambiguity as permitting commercial mining activities, provided that they do not involve territorial claims. Several nations have passed domestic laws granting companies the right to own resources they extract from space. Other countries argue that these policies violate the spirit of the treaty and undermine the principle that space should benefit all humanity.

The Moon Agreement

In 1979, the international community attempted to address these concerns through the Moon Agreement, which proposed that lunar resources should be managed as the common heritage of humankind. However, the agreement failed to gain support from major spacefaring nations. As a result, it has had little practical impact on space governance.

Emerging Legal Challenges

The rapid expansion of space activities has created new legal questions that existing treaties do not adequately address.

These include:

- The legal status of private settlements in space
- Property rights for resources extracted from celestial bodies
- Environmental protection standards for extraterrestrial environments
- Jurisdiction over crimes committed in space.

Because no comprehensive legal framework exists for these issues, states and corporations have developed a patchwork of national laws, bilateral agreements, and voluntary guidelines. This fragmented system increases the risk of disputes and complicates efforts to establish consistent governance structures.

11. The Role of the United Nations System

Despite its limitations, the United Nations remains the primary forum for international dialogue on space governance.
Several UN bodies play important roles in shaping space policy.

United Nations Office for Outer Space Affairs

The United Nations Office for Outer Space Affairs (UNOOSA) coordinates international cooperation in space activities. It also maintains a registry of objects launched into space and provides technical support to member states. UNOOSA serves as the administrative backbone of the international space governance system.

Committee on the Peaceful Uses of Outer Space

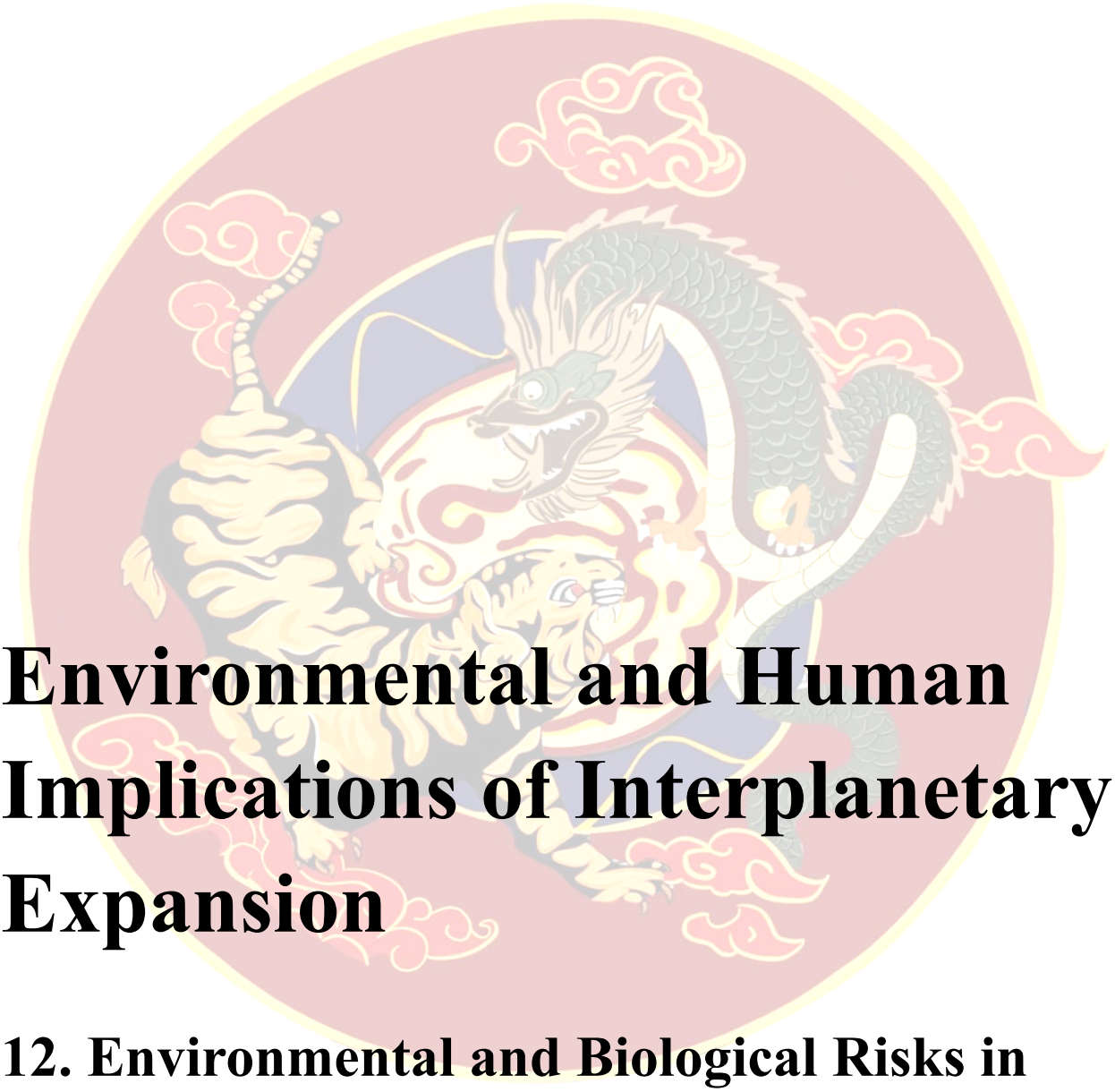
The Committee on the Peaceful Uses of Outer Space (COPUOS) is the main UN body responsible for developing international space law. It provides a forum where states can negotiate agreements and exchange information about their space programs. However, COPUOS operates by consensus, meaning that all member states must agree before new regulations can be adopted. This requirement often makes it difficult to reach agreement on controversial issues.

Soft Law and Norm Development

In recent years, the United Nations has increasingly relied on soft law mechanisms to address emerging challenges in space governance. These include voluntary guidelines and best practices rather than legally binding treaties.
Examples include guidelines for the long-term sustainability of space activities and recommendations for reducing space debris. Although these guidelines are not legally binding, they influence state behavior by establishing shared expectations for responsible conduct in space.

Limitations of the UN System

Despite its importance, the UN system faces several limitations in governing the interplanetary frontier. First, it lacks enforcement mechanisms. The UN cannot compel states or corporations to comply with its guidelines without the cooperation of member states. Second, the rapid pace of technological change often outpaces the ability of international institutions to develop new regulations. Finally, geopolitical rivalries between major powers sometimes hinder efforts to establish common governance frameworks. These limitations mean that the future of space governance will depend not only on international institutions but also on the political choices of states, corporations, and settlements.



Environmental and Human Implications of Interplanetary Expansion

12. Environmental and Biological Risks in the Interplanetary Environment

The expansion of human activity beyond Earth has created unprecedented environmental challenges. While the vastness of space might suggest that human impact would be minimal, the

reality is far more complex. Interplanetary settlements operate within extremely fragile ecosystems where even small disturbances can produce irreversible consequences.
Unlike Earth, where natural cycles can gradually restore damaged environments, celestial bodies such as the Moon and Mars lack atmospheric and geological processes capable of repairing ecological disruption. As a result, environmental damage caused by mining, industrial activity, or biological contamination may persist indefinitely. Understanding these risks is essential for the development of effective governance systems for space settlements.

Planetary Protection and Contamination

One of the most significant environmental concerns associated with space exploration is the risk of planetary contamination. When spacecraft and human missions travel to other celestial bodies, they carry microorganisms from Earth. These microbes can potentially survive in extreme environments and alter the natural conditions of other planets. Planetary contamination is typically divided into two categories:

Forward contamination refers to the transfer of Earth-based organisms to other celestial bodies. **Backward contamination** refers to the potential return of extraterrestrial biological material to Earth. Forward contamination is particularly concerning for scientific research. If microbial life from Earth contaminates environments on Mars or other planets, it could compromise the search for indigenous life forms. Detecting evidence of extraterrestrial life would represent one of the most important scientific discoveries in human history. Contamination could make it impossible to distinguish between Earth-originating organisms and genuine extraterrestrial life.

The international community has attempted to address this issue through planetary protection protocols, which require spacecraft to undergo sterilization procedures before visiting sensitive environments. However, as human settlements expand, maintaining strict contamination controls becomes increasingly difficult.
Large-scale mining operations, agricultural systems, and waste management processes within settlements inevitably introduce biological materials into local environments. Over time, these activities could permanently alter the chemical and biological characteristics of extraterrestrial ecosystems.

Environmental Damage from Resource Extraction

Another major environmental concern is the impact of industrial activity on celestial bodies. Resource extraction on the Moon and asteroids has the potential to generate enormous economic benefits, but it may also cause irreversible environmental damage.
Mining operations typically involve the excavation and processing of large volumes of material. On the Moon, extracting Helium-3 or water-ice requires heating lunar soil to extremely high temperatures or drilling into permanently shadowed craters.

These activities can disrupt the delicate thermal balance of polar regions and alter the geological structure of the lunar surface. Because the Moon lacks atmospheric and hydrological processes, the scars left by mining operations may remain visible for millions of years.

Some scientists argue that celestial bodies should be treated as scientific and cultural heritage sites that deserve protection from excessive industrial exploitation. They contend that the Moon and Mars represent shared resources belonging to all humanity and should not be permanently altered by short-term economic interests. Others argue that resource extraction is essential for supporting space settlements and reducing humanity's dependence on Earth's limited natural resources. Balancing these competing priorities represents one of the central governance dilemmas facing the interplanetary community.

Orbital Debris and the Kessler Syndrome

Environmental challenges are not limited to planetary surfaces. The space surrounding Earth is increasingly crowded with satellites, spacecraft, and debris generated by previous missions. When satellites collide or explode, they create thousands of fragments that travel at extremely high velocities. Even small pieces of debris can damage or destroy operational spacecraft. This phenomenon is known as the Kessler Syndrome, a scenario in which cascading collisions generate a rapidly expanding cloud of debris that makes certain orbital regions unusable for decades or even centuries. The rapid expansion of satellite constellations during the early twenty-first century significantly increased the risk of orbital congestion. By the 2030s, tens of thousands of satellites were operating in low-Earth orbit. Although international guidelines encourage operators to remove defunct satellites from orbit, compliance remains uneven. Some companies and governments lack the resources or incentives to deorbit obsolete spacecraft. If left unaddressed, orbital debris could threaten the infrastructure necessary for space communication, navigation, and scientific research.

13. The Human Dimension of Space Settlements

While technological challenges often dominate discussions about space exploration, the human dimension of interplanetary settlement presents equally complex issues. Living beyond Earth

requires significant physical and psychological adaptation, and these adaptations may fundamentally reshape human society.

Biological Effects of Low Gravity

Human beings evolved under the conditions of Earth's gravity. The Moon and Mars provide significantly weaker gravitational environments, which can have profound effects on human physiology.
Extended exposure to low gravity can cause several health problems, including:

- Loss of bone density
- Muscle atrophy
- Cardiovascular changes
- Weakened immune systems.

Although exercise programs and medical technologies can mitigate some of these effects, long-term settlers may experience permanent physical changes that make it difficult for them to return to Earth.

This raises important questions about the rights and welfare of individuals who choose to live permanently in space. For example, should settlers be fully informed of the long-term health risks associated with low-gravity environments? Should governments provide medical support for individuals who suffer long-term physiological damage as a result of living in space?

Psychological and Social Challenges

The psychological challenges of living in space are equally significant. Space settlements are isolated environments where residents must rely on complex technological systems for survival. The constant awareness of this dependence can create significant stress.
Furthermore, communication delays between Earth and distant settlements can lead to feelings of disconnection from family and society. For settlers on Mars, these delays may reach up to twenty minutes each way.

Social conflicts within small, isolated communities can escalate rapidly if not managed effectively. Maintaining psychological well-being in such environments requires careful attention to social structures, leadership, and conflict resolution mechanisms. Some experts argue that successful space settlements will require new forms of governance and community organization designed specifically for extreme environments.

Citizenship and Identity Beyond Earth

The emergence of permanent settlements beyond Earth raises profound questions about citizenship and identity. Individuals born on Mars or the Moon may have little direct connection to any nation on Earth. If these individuals cannot easily return to Earth due to physiological differences caused by low gravity, they may develop distinct cultural identities separate from terrestrial societies. This possibility raises questions about political representation and legal jurisdiction. Should individuals born on other planets automatically inherit the citizenship of their parents' home country? Should settlements develop independent political institutions? Some scholars have even suggested that the emergence of extraterrestrial communities could eventually lead to the creation of entirely new political entities.

14. Inequality and Access to the Space Economy

The expansion of space settlements has the potential to generate enormous economic benefits. However, these benefits are unlikely to be distributed evenly across the global population. Space exploration requires advanced technological capabilities and significant financial resources. As a result, only a small number of countries currently possess the ability to launch spacecraft, operate satellites, and support human settlements beyond Earth.

The Risk of a Space Divide

This technological disparity could create a new form of global inequality often referred to as the space divide. Countries that possess advanced space capabilities may gain access to valuable resources and technological advantages that are unavailable to other nations. These advantages could reinforce existing economic disparities and concentrate wealth among a small group of technologically advanced states and corporations.

Developing countries have expressed concerns that the benefits of space exploration should be shared more equitably. Some policymakers argue that space resources should be managed as a common heritage of humankind, similar to international waters.

Others argue that the enormous costs and risks associated with space exploration justify allowing companies and nations that invest in these activities to retain control over the resources they extract.

Access to Space Infrastructure

Another source of inequality lies in access to space infrastructure. Launch facilities, communication networks, and transportation systems represent essential gateways to the interplanetary economy. Countries or corporations that control these gateways may be able to shape the terms under which other actors participate in space activities. For example, a company that operates the primary transportation network between Earth and lunar settlements could potentially charge high fees for access, limiting participation by smaller organizations or developing countries. Ensuring fair access to space infrastructure may therefore become a major issue for international governance.

Economic Opportunities and Global Development

Despite these concerns, the expansion of space activities also presents significant opportunities for global development. Space-based technologies already contribute to agriculture, environmental monitoring, disaster response, and telecommunications in many developing regions. Advances in satellite imaging and data analysis have improved the ability of governments to manage natural resources and respond to climate change.

In the long term, space industries could create new markets and employment opportunities that benefit a broader range of countries.

Achieving these benefits will require policies that encourage international cooperation and knowledge sharing while maintaining incentives for innovation and investment.

Crisis Dynamics and Strategic Actors

15. Major Actors in the Interplanetary System

By the year 2040, the interplanetary environment has evolved into a complex system composed of states, corporations, international organizations, and emerging off-world communities. Each of these actors plays a distinct role in shaping the political and economic dynamics of space. Understanding the motivations and capabilities of these actors is essential for delegates participating in the Futuristic Crisis Committee.

Nation-States

Nation-states remain the most powerful actors in the international system. Governments possess the legal authority to regulate space activities conducted by their citizens and corporations, and they control significant financial and technological resources. Several countries have established extensive space programs and are actively involved in interplanetary development.

United States

The United States continues to be one of the leading space powers. Through partnerships between NASA and private companies, the United States has played a central role in the development of reusable launch systems, lunar infrastructure, and commercial space industries. American policy emphasizes cooperation with international partners through agreements such as the Artemis Accords, which promote principles including transparency, interoperability, and responsible resource extraction.

However, critics argue that these agreements also strengthen U.S. influence over emerging governance structures in space.

China

China has rapidly expanded its space capabilities over the past two decades. Through the International Lunar Research Station initiative, China has collaborated with several countries to establish a network of lunar research facilities and infrastructure. China's approach to space governance often emphasizes long-term planning, state coordination, and technological self-reliance. Chinese policymakers have also expressed interest in developing independent interplanetary transportation systems and resource extraction technologies.

European Union and Partner States

European countries have traditionally emphasized multilateral cooperation in space governance. The European Space Agency works closely with international partners on scientific missions, Earth observation programs, and space exploration initiatives.

European policymakers often advocate stronger international regulation of commercial space activities, particularly in areas related to environmental protection and sustainability.

India and Emerging Space Powers

Several emerging space powers have developed advanced capabilities in satellite technology, launch systems, and planetary exploration. India, Japan, South Korea, and other countries have demonstrated increasing interest in participating in lunar missions and commercial space activities. These countries often emphasize the importance of maintaining equitable access to space resources and preventing the monopolization of space by a small number of powerful actors.

Private Corporations

Private corporations have become central players in the interplanetary system. Many companies now operate critical infrastructure, including launch vehicles, satellite constellations, and transportation networks connecting Earth with off-world settlements. These corporations possess capabilities that rival those of national governments. Some companies employ thousands of engineers and scientists and manage complex supply chains spanning multiple continents and orbital facilities.

Corporate actors often prioritize innovation and economic growth, but their activities can also generate conflicts related to environmental protection, labor rights, and resource ownership.

International Institutions

International organizations play a coordinating role in the governance of space activities. Although these institutions do not possess the same level of authority as nation-states, they provide important forums for dialogue and cooperation.

The United Nations system, particularly the Committee on the Peaceful Uses of Outer Space, remains an important platform for developing international norms and guidelines related to space governance. However, the rapid pace of technological development often outstrips the ability of these institutions to establish comprehensive regulatory frameworks.

Off-World Settlements

The emergence of permanent settlements on the Moon and Mars has introduced a new category of actors into the international system. These communities consist of scientists, engineers, technicians, and families who live and work beyond Earth.

Although most settlements remain dependent on Earth for supplies and technological support, their growing populations and economic activities have begun to generate demands for greater autonomy. Residents of off-world settlements often argue that decisions affecting their lives should not be made solely by distant governments or corporate executives on Earth. As settlements grow in size and complexity, their political influence is likely to increase.

16. Case Studies of Emerging Interplanetary Conflicts

The expansion of human activity into space has already generated several disputes that illustrate the challenges of governing the interplanetary frontier. These conflicts highlight the tensions between national interests, commercial ambitions, and the need for international cooperation.

Case Study 1: The Lunar Water Dispute

The discovery of significant water-ice deposits near the lunar south pole transformed this region into one of the most strategically important locations in the solar system.
Water serves multiple functions in space settlements. It supports human life, enables agricultural systems, and can be converted into hydrogen and oxygen for rocket fuel. Access to water therefore determines whether settlements can sustain themselves and support deep-space missions. Several countries and corporations established mining operations near the largest ice deposits. However, disagreements soon emerged regarding the boundaries of extraction zones

and the environmental impact of large-scale drilling operations. Some actors argued that the first organizations to establish facilities near the ice deposits should receive priority access to the resources. Others insisted that the Moon belongs to all humanity and that resources should be shared through international agreements. Tensions escalated when competing mining operations began interfering with each other's equipment and communication systems.

Case Study 2: Corporate Control of Orbital Infrastructure

Another major dispute emerged when a private corporation gained control of a large network of communication satellites that provided essential connectivity for lunar settlements. The company initially developed the network to support commercial operations, but it quickly became the primary communication system for many off-world communities. When the corporation announced plans to increase service fees for settlements using its network, several governments protested that the company was exploiting its position as a critical infrastructure provider. Some policymakers argued that essential communication systems should be regulated as public utilities rather than private assets. Others warned that excessive regulation could discourage private investment in space infrastructure.

Case Study 3: The Martian Autonomy Movement

The growing population of Mars Base Alpha has begun to develop a distinct political identity separate from Earth-based authorities because of communication delays and logistical constraints, Martian settlers often make important operational decisions independently. Over time, this autonomy has encouraged the development of local governance institutions within the settlement. Some residents have proposed the creation of a Martian Charter, a document that would establish basic rights and responsibilities for individuals living on Mars. However, Earth-based governments remain concerned that granting political autonomy to Martian settlements could undermine national authority and create new geopolitical tensions.

17. Governance Dilemmas for Delegates

The Futuristic Crisis Committee is designed to explore several fundamental governance dilemmas associated with the expansion of human activity into space. Delegates should carefully consider the following questions as they prepare for debate.

Resource Ownership

Who has the right to extract and control resources located on celestial bodies? Should resources be owned by the actors that extract them, or should they be managed through international agreements that ensure equitable distribution? Balancing economic incentives with principles of fairness represents one of the central challenges of interplanetary governance.

Corporate Regulation

How should governments regulate private corporations operating in space? Corporations provide essential infrastructure and technological innovation, but their activities may also create risks related to environmental damage, monopolistic practices, or labor exploitation. Delegates must consider whether existing regulatory frameworks are sufficient or whether new institutions are required.

Environmental Protection

What responsibilities do human settlements have to protect extraterrestrial environments? Some experts argue that celestial bodies should be preserved as natural heritage sites, while others believe that responsible resource extraction is necessary for sustaining space settlements and supporting economic development. Determining appropriate environmental standards will require balancing scientific, economic, and ethical considerations.

Political Representation

How should off-world settlements be represented in decision-making processes?
As populations on the Moon and Mars grow, their residents may demand greater political participation in governance structures that affect their lives. Delegates must consider whether existing institutions are capable of representing these communities or whether new political frameworks are required.

18. Possible Crisis Developments

The Futuristic Crisis Committee will simulate a rapidly evolving interplanetary environment in which new challenges may emerge unexpectedly. Delegates should be prepared to respond to a wide range of potential developments.
These may include:

- Technical failures in life-support systems
- Disputes between competing mining operations
- Cyberattacks targeting satellite networks

- Environmental accidents affecting lunar ecosystems
- Political unrest within off-world settlements.

Effective responses to these crises will require cooperation, strategic planning, and creative problem-solving.

Delegate Preparation and Research Framework

19. Key Questions for Delegates

The Futuristic Crisis Committee is designed to simulate the complexities of governance in an interplanetary environment where technological innovation, economic interests, and political

authority intersect. Delegates are expected to approach the agenda not only as representatives of particular actors but also as strategic thinkers capable of evaluating long-term consequences. The following questions are intended to guide research and preparation. These questions do not have simple answers. Rather, they highlight the fundamental dilemmas that shape the future of space governance.

Governance of Space Resources

One of the most pressing issues in interplanetary politics concerns the ownership and management of extraterrestrial resources.
Delegates should consider the following:

- Should resources extracted from celestial bodies belong to the entities that extract them?
- Should space resources be considered the common heritage of humankind?
- What mechanisms could ensure fair access to resources while still encouraging investment and innovation?

These questions require balancing economic incentives with principles of global equity.

Regulation of Private Actors

Private corporations have become central actors in the development of space infrastructure. Their technological capabilities often rival those of national governments.
Delegates should examine:

- What responsibilities should corporations have toward the international community?
- Should corporations operating in space be regulated by national governments, international institutions, or both?
- How can governments prevent monopolistic control over critical infrastructure such as communication networks or transportation systems?

Understanding the relationship between public authority and private power will be essential for effective policymaking.

Environmental Responsibility in Space

Human activity beyond Earth introduces new environmental challenges. Mining operations, settlement construction, and transportation systems may permanently alter extraterrestrial environments.
Delegates should consider:

- Should celestial bodies be protected as scientific heritage sites?
- What environmental standards should apply to space mining operations?

- How can the international community prevent orbital debris from threatening space infrastructure?

These questions require balancing scientific preservation with economic development.

Political Status of Off-World Settlements

The growth of permanent settlements beyond Earth raises important questions about governance and political representation.
Delegates should explore:

- Should off-world settlements remain under the jurisdiction of Earth-based governments?
- Should settlements eventually develop autonomous political institutions?
- How can the rights of individuals living beyond Earth be protected?

These questions touch upon fundamental principles of political authority and human rights.

Security and Stability in Space

Space infrastructure has become essential for global communication, navigation, and economic activity. Protecting these systems from disruption is therefore a major concern for governments.
Delegates should consider:

- What measures can reduce the risk of conflict in space?
- Should new arms control agreements be developed for space technologies?
- How can transparency and confidence-building measures reduce mistrust between competing actors?

Addressing these issues will require careful diplomatic negotiation.

20. Suggested Research Topics

To prepare effectively for debate, delegates should develop a strong understanding of the technological, legal, and political dimensions of space governance.
Key research areas include:

Space Governance and International Law

Delegates should study the major treaties and agreements that regulate space activities, including:

- The Outer Space Treaty
- The Liability Convention

- The Registration Convention
- The Moon Agreement.

Understanding the principles and limitations of these frameworks will help delegates develop informed policy proposals.

Commercial Space Development

Research into the commercial space sector will provide valuable insight into the economic drivers of space exploration.
Important areas include:

- Reusable launch technology
- Satellite mega-constellations
- Space tourism
- Asteroid mining
- Microgravity manufacturing.

These industries shape the economic incentives that influence policy decisions.

Planetary Science and Space Technology

Delegates should also familiarize themselves with the scientific and technological challenges associated with space settlement.
Relevant topics include:

- Life-support systems
- Radiation protection
- In-situ resource utilization
- Propulsion technologies
- Orbital mechanics.

Understanding these technologies will help delegates assess the feasibility of proposed policies.

Ethics and Governance of Space Exploration

The expansion of human activity beyond Earth raises important ethical questions about environmental protection, resource distribution, and the future of human civilization.
Delegates may explore topics such as:

- Planetary protection
- Environmental ethics in space exploration
- Intergenerational responsibility for extraterrestrial environments

- The long-term future of human settlement in space.

These perspectives can help inform thoughtful and responsible policy proposals.

21. Glossary of Key Terms

The following terms frequently appear in discussions of space governance and exploration.

1. **Asteroid Mining:** The process of extracting valuable minerals and materials from asteroids located throughout the solar system.

2. **Helium-3:** A rare isotope found in lunar soil that may potentially be used as a fuel source in future nuclear fusion reactors.

3. **In-Situ Resource Utilization (ISRU):** Technologies that allow settlers to produce essential resources such as water, oxygen, and fuel directly from the local environment.

4. **Lagrange Points:** Positions in space where gravitational forces between two large celestial bodies create stable locations for spacecraft or space stations.

5. **Low-Earth Orbit (LEO):** The region of space approximately 160 to 2,000 kilometers above Earth's surface where many satellites operate.

6. **Planetary Protection:** Policies and procedures designed to prevent biological contamination between Earth and other celestial bodies.

7. **Space Debris:** Fragments of satellites, rockets, or other spacecraft that remain in orbit and pose collision risks to operational spacecraft.

8. **Outer Space Treaty:** The foundational international agreement governing activities in outer space, adopted in 1967.

22. Concluding Reflection

Humanity stands at the threshold of a new era in its history. The expansion of settlements beyond Earth represents both a technological achievement and a profound transformation in the way humans relate to the universe. The decisions made during the early stages of interplanetary development will shape the political, economic, and ethical foundations of future space societies. If governed wisely, space exploration could promote scientific discovery, economic prosperity, and international cooperation. If governed poorly, it could replicate many of the conflicts and inequalities that have historically shaped human civilization. The Futuristic Crisis Committee

invites delegates to confront these challenges through thoughtful debate and creative policymaking.

The future of the interplanetary community depends on the ability of leaders to balance ambition with responsibility, innovation with stewardship, and competition with cooperation. The conversation that begins in this committee chamber reflects a broader question facing humanity: How should civilization organize its expansion beyond Earth?

23. Further Research Resources

1. Introduction to the Outer Space Treaty – United Nations Office for Outer Space Affairs
   https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html
2. International Space Law Treaties and Principles – United Nations Office for Outer Space Affairs
   https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html
3. International Space Law Explained – United Nations
   https://www.un.org/en/peace-and-security/international-space-law-explained
4. Artemis Program Overview – NASA
   https://www.nasa.gov/humans-in-space/artemis/

5. NASA Artemis Plan: Sustained Lunar Exploration Strategy
https://www.nasa.gov/wp-content/uploads/2020/12/artemis_plan-20200921.pdf
6. Water on the Moon and Lunar Ice Deposits – NASA Science
https://science.nasa.gov/moon/moon-water-and-ices/
7. In-Situ Resource Utilization (ISRU) Technologies – NASA
https://www.nasa.gov/overview-in-situ-resource-utilization/
8. Lunar Surface Innovation Initiative – NASA Space Technology Mission Directorate
https://www.nasa.gov/space-technology-mission-directorate/lunar-surface-innovation-initiative/
9. Break the Ice Lunar Challenge: Extracting Water from the Moon – NASA Technical Report
https://ntrs.nasa.gov/citations/20205007833
10. Why Lunar Ice is Critical for Future Moon Missions – Space.com
https://www.space.com/moon-lunar-ice-poles-artemis-program
11. Importance of Lunar Ice for Artemis III and Future Missions – Universe Today
https://www.universetoday.com/articles/in-situ-resource-utilization-and-the-importance-of-lunar-ice-for-artemis-iii
12. Human and Robotic Exploration Program – European Space Agency (ESA)
https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration
13. ESA Lunar Exploration Initiatives – European Space Agency
https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/Exploration/Moon
14. Space Exploration Overview – Encyclopaedia Britannica
https://www.britannica.com/science/space-exploration
15. Outer Space Treaty Overview – Encyclopaedia Britannica
https://www.britannica.com/topic/Outer-Space-Treaty
16. Space Law and the Future of Space Exploration – Drishti IAS Policy Analysis
https://www.drishtiias.com/blog/space-law-and-the-future-of-space-exploration
17. Outer Space Governance and International Treaties – Vision IAS Policy Review
https://visionias.in/current-affairs/monthly-magazine/2024-07-27/science-and-technology/outer-space-governance
18. Evidence for Hydrogen and Water Ice at the Lunar South Pole – Scientific Research Paper (arXiv)
https://arxiv.org/abs/2303.03911
19. Distribution of Molecular Water on the Moon – Scientific Research Paper (arXiv)
https://arxiv.org/abs/2302.10815
20. NASA Lunar Drill Technology and Resource Exploration Tests – NASA Artemis Mission Update
https://www.nasa.gov/missions/artemis/nasas-lunar-drill-technology-passes-tests-on-the-moon/

Appendix 1

Timeline of Events

Year	Event
2020-2024	Commercial Space Revolution Begins
2025	Global Space Economy Surpasses $500B
2026-2028	Artemis & ILRS Lunar Programs Begin
2029	Major Lunar Water Deposits Discovered
2030-2032	First Permanent Lunar Settlement
2033	First Crewed Mars Mission
2034-2036	Orbital Manufacturing Expands
2036	Mars Base Alpha Established
2037	Corporate Infrastructure Dominance
2038	Asteroid Mining Begins
2039	First Human Born on Mars
2040	Global Interplanetary Governance Crisis