

F-UNOOSA

STUDY GUIDE

LegacyMun

TABLE OF CONTENTS:

1- Welcoming Letters

1.1 Letter From Secretary-General

1.2 Letter From Under-Secretary-General

1.3 Letter From Academic Assistant

2- Introduction to the Committee

2.1 Procedure of the Committee

i. Roll call

ii. Moderated Caucus

iii. Semi-moderated Caucus

iv. Unmoderated Caucus

2.2 What is F-UNOOSA and Its Mandates

2.3 Purpose of This Committee

3- Introduction to the Agenda: The Martian Colonization

4- Timeline of Critical Events (2020–2075)

5- The Martian Environment: A Comprehensive Analysis

5.1 The Atmosphere, Pressure, and Topography

- 5.2 Temperature Fluctuations and Thermal Management*
- 5.3 Gravitational Challenges and Medical Implications*
- 5.4 Radiation Hazards and Shielding Solutions*
- 5.5 Meteorological Phenomena: Dust Storms and Resource Scarcity*

6- Target Settlement Zones on Mars

7- Historical Background of Space Exploration and Geopolitics

- 7.1 The First Space Race (Cold War Era)*
- 7.2 The Second Space Race (Commercial and Asian Ascendancy)*
- 7.3 The Third Space Race (The Resource Crisis and Multi-Planetary Era)*

8- Comprehensive National Space Agendas and Future Plans

- 8.1 United States of America (NASA & Commercial Partners)*
- 8.2 People's Republic of China (CNSA)*
- 8.3 Russian Federation (Roscosmos)*
- 8.4 European Space Agency (ESA)*
- 8.5 Republic of India (ISRO)*
- 8.6 Japan Aerospace Exploration Agency (JAXA)*
- 8.7 United Arab Emirates Space Agency (UAESA)*

9- The Martian Colonization Treaty: Key Legislative Frameworks

- 9.1 Logistics, Orbital Mechanics, and Transportation Methods*
- 9.2 Mission Architecture: Centralized Collaboration vs. Decentralized Competition*
- 9.3 Territorial Claims, Exclusive Economic Zones, and Border Demarcation*
- 9.4 Settlement Infrastructure, Energy Grids, and Initial Coalitions*
- 9.5 Demographic Engineering: Gender, Occupation, Psychology, and Quotas*
- 9.6 Economic Framework, Martian Currency, and Funding Mechanisms*
- 9.7 Jurisdiction, Law Enforcement, and Dispute Resolution*

10- Bloc Positions and Strategic Alignments

11- Questions a Treaty Must Answer

12- Glossary of Key Terminology

1) Welcoming Letters

1.1) Letter from Secretary-General:

1.2) Letter from Under-Secretary-General:

Esteemed Delegates,

It is my distinct honor and privilege to welcome you to the Futuristic United Nations Office for Outer Space Affairs (F-UNOOSA).

Humanity currently stands at the precipice of its most ambitious endeavor. The rapid acceleration of commercial spaceflight, the exploitation of extraterrestrial resources, and the imminent colonization of Mars have rendered our traditional, purely advisory frameworks obsolete. We are no longer merely observing the cosmos; we are actively claiming our place within it. This monumental shift necessitates a governing body with genuine legislative and regulatory authority—a mandate that F-UNOOSA has been exceptionally granted by the UN Security Council and the General Assembly.

In this landmark session, you are tasked with a responsibility of unprecedented magnitude: the drafting and ratification of the Martian Colonization Treaty. I must be unequivocally clear on this point—you are not here to draft recommendations or non-binding resolutions. This committee operates as the central legislative assembly for interplanetary settlement, and the treaty you formulate will be an instrument of absolute "hard law."

The decisions you make in these sessions will dictate the territorial jurisdictions of off-world settlements, regulate orbital logistics, and establish uncompromising planetary protection protocols. Furthermore, you will navigate the complex, and often conflicting, interests of traditional state powers and emerging mega-corporations. F-UNOOSA possesses the executive power to strictly enforce this treaty, complete with the authority to sanction any entity that violates our shared mandate for the peaceful, organized, and equitable expansion of human civilization.

I expect nothing less than rigorous debate, strategic foresight, and diplomatic excellence from each and every one of you. The survival and prosperity of our civilization beyond Earth depend on the legal foundation we lay today.

Prepare yourselves for the challenges of the new frontier. I look forward to witnessing your negotiations.

Sincerely,
Tuna Coşkun
Under-Secretary-General for F-UNOOSA

1.3) Letter from Academic Assistant:

2) Introduction to the Committee

This part will give some information about the procedure and the flow of our committee, and further bring you some general knowledge about UNOOSA including the purposes and the authorities of the committee.

2.1) Procedure of the Committee:

i) Roll call:

When your character's name is called out during a roll call, you can respond with a word ‘present’ or sentence which is ‘present and voting’

ii) Moderated Caucus:

A moderated caucus in Model United Nations (MUN) is a temporary, structured debate where delegates speak in turns on a specific subtopic under the direct control of the chair.

iii) Semi-moderated Caucus:

Unlike moderated caucuses, delegates in a semi-moderated caucus are allowed to speak without the chair's permission, as long as they do not interrupt other cabinet members and treat each other with respect.

iv) Unmoderated Caucus:

In an unmoderated caucus, delegates are free to draft any kind of paper they want to achieve their goals and support others.

2.2) What is F-UNOOSA and Its Mandates:

The United Nations Office for Outer Space Affairs (UNOOSA) was established in the 20th century to promote international cooperation in the peaceful uses of outer space. However, as the 21st century progressed and the commercialization of space accelerated, it became apparent that a purely advisory body was insufficient. The realization of routine interplanetary travel necessitated a governing body with genuine legislative and regulatory authority over extraterrestrial activities.

Thus, the Futuristic United Nations Office for Outer Space Affairs (F-UNOOSA) was formed. F-UNOOSA is granted unique executive powers by the UN Security Council and the General Assembly. Its mandate is clear: to oversee the peaceful, organized, and equitable expansion of human civilization beyond Earth.

In this specific session, F-UNOOSA acts as the central legislative assembly for Martian colonization. Delegates must understand that the outcome of this committee—the Martian Colonization Treaty—is an instrument of "hard law." Once ratified by the necessary majority, the terms dictated within the Treaty will be strictly enforced. The committee has the authority to sanction nations that violate the treaty, regulate the launch schedules of colony ships, and dictate the legal jurisdiction of off-world settlements.

2.3) Purpose of This Committee:

3) Introduction to the Agenda: The Martian Colonization

One of the ultimate tests of human ingenuity and diplomacy is the transition from a single-planet species to a multi-planetary civilization. The agenda of Martian colonization represents the culmination of decades of robotic exploration, orbital mapping, and incremental technological breakthroughs. The scientific community has definitively mapped the resources available on Mars, including vast subterranean water-ice deposits and mineral-rich regolith, confirming the planet's viability for sustained human habitation.

However, the logistical and financial scale of this undertaking is staggering. The establishment of a self-sustaining colony requires the transportation of thousands of metric tons of cargo, highly specialized machinery, nuclear reactors for power, and the first wave of human pioneers. The geopolitical reality is that no single nation—not even the most economically dominant superpowers—can shoulder this burden entirely alone without catastrophic domestic economic repercussions.

This necessitates either a grand international coalition or a highly structured competitive framework where multiple sovereign and commercial entities operate under a strict set of overarching rules. The agenda demands that delegates resolve deep-seated tensions regarding sovereignty, resource ownership, human rights in isolated environments, and the economic integration of a Martian colony with Earth's global economy. The time for theoretical debate has passed; the transport ships are currently under construction in low-Earth orbit, and they await the legal framework that will authorize their departure.

Science and technology are ready and waiting for your decisions.

4) Timeline of Critical Events (2020–2075)

To provide context for the current geopolitical climate, delegates must refer to the following historical timeline of events leading up to this F-UNOOSA session:

2021: NASA's Perseverance rover lands on Mars, initiating the first stages of the Mars Sample Return mission and demonstrating oxygen production from the Martian atmosphere via the MOXIE instrument.

2024: The Artemis program successfully returns humans to the Moon, establishing the foundation for the Lunar Gateway, a crucial staging point for deep-space missions.

2030: China (CNSA) and Russia (Roscosmos) complete the initial phases of the International Lunar Research Station (ILRS) at the lunar south pole, creating a parallel power structure to the US-led Artemis Accords.

2038: The first successful crewed orbital mission around Mars is completed by a joint US-European commercial consortium, proving the viability of long-duration psychological and physiological survival in deep space.

2045: The "Resource Crisis of '45" on Earth accelerates the need for off-world mining. Rare earth metals critical for green energy become perilously scarce, prompting a massive surge in space infrastructure investment.

2052: The first breakthrough in practical, stable Nuclear Thermal Propulsion (NTP) is achieved, reducing the travel time to Mars from 7-9 months to a mere 45-60 days.

2060: Uncrewed robotic fleets begin arriving on Mars, utilizing autonomous AI to construct the foundational habitats, extract initial water-ice, and set up solar and nuclear power grids in preparation for human arrival.

2075 (Present Day): The world is ready now! Preparations are almost completed but this Mars mission needs a compulsory treatment. The nations and agencies are awaited to decide their positions before the big launches of space ships. The F-UNOOSA summit is convened to finalize the Martian Colonization Treaty before launch.

5) The Martian Environment: A Comprehensive Analysis

Delegates cannot draft effective legislation without a profound understanding of the physical realities of Mars. The hostile environment dictates the engineering, economic, and social structures of the colony.

5.1) The Atmosphere, Pressure, and Topography:

The Martian atmosphere is perilously thin, possessing an average surface pressure of only 6.1 millibars (approximately 0.6% of Earth's mean sea level pressure). The composition is highly toxic to humans: 95.3% carbon dioxide, 2.7% nitrogen, and 1.6% argon, with only trace amounts of oxygen and water vapor. Consequently, humans can never venture onto the surface without fully pressurized, environmentally sealed

Extravehicular Activity (EVA) suits. A catastrophic breach in habitat pressure would result in fatal ebullism (the boiling of bodily fluids) within minutes. Topographically, Mars boasts extreme features, including Olympus Mons, the largest volcano in the solar system, and Valles Marineris, a canyon system that dwarfs the Grand Canyon, presenting both monumental engineering challenges and unique opportunities for sheltered settlement.

5.2) Temperature Fluctuations and Thermal Management:

Mars is a frozen desert. Because the atmosphere is too thin to retain heat efficiently through the greenhouse effect, temperatures fluctuate wildly. The average global temperature is approximately -60°C (-76°F). However, near the poles during winter, temperatures plummet to -125°C (-193°F). Even at the equator during summer, while daytime temperatures can reach a comfortable 20°C (68°F), they inevitably crash to -73°C (-100°F) at night. Settlements will require highly advanced thermal management systems. Habitats must be insulated with aerogels or buried beneath meters of regolith, and active heating systems—likely powered by small modular nuclear reactors (SMRs)—will be non-negotiable for survival.

5.3) Gravitational Challenges and Medical Implications:

Mars possesses a surface gravity of 3.721 m/s^2 , which is exactly 38% of standard Earth gravity (0.38g). While this makes lifting heavy construction materials easier, the long-term biological effects on the human body are profoundly concerning. Prolonged exposure to partial gravity accelerates osteopenia (loss of bone density), muscle atrophy, and cardiovascular deconditioning. Furthermore, fluid shifts toward the head can cause vision impairment (Spaceflight-Associated Neuro-ocular Syndrome - SANS). The Treaty must mandate rigorous physical therapy protocols, the potential use of artificial gravity centrifuges within habitats for sleeping quarters, and address the severe ethical questions regarding human reproduction and fetal development in a low-gravity environment.

5.4) Radiation Hazards and Shielding Solutions:

Unlike Earth, Mars lacks a global magnetosphere (magnetic field) and a thick atmosphere, leaving the surface exposed to two lethal forms of radiation: Solar Energetic Particles (SEPs) from solar flares, and Galactic Cosmic Rays (GCRs) from deep space. Surface exposure significantly increases the risk of acute radiation sickness during solar storms and long-term risks of severe cancers and neurological damage. Above-ground glass-domed cities are an architectural fantasy. Realistic settlements must be heavily shielded. The primary solutions include burying habitats under at least two to three meters of Martian regolith, utilizing the planet's natural cave systems (lava tubes), or constructing habitats surrounded by thick water jackets (as water is an excellent radiation absorber).

5.5) Meteorological Phenomena: Dust Storms and Resource Scarcity:

Mars is infamous for its massive dust storms. While the thin atmosphere means the wind lacks the kinetic force to knock over heavy equipment (contrary to popular fiction), the incredibly fine, electrostatically charged dust is highly abrasive and poses a severe threat. These storms can envelop the entire planet and last for months, blocking out sunlight and rendering solar power arrays nearly useless. The dust also easily bypasses traditional airlocks, threatening respiratory health and damaging sensitive machinery. Consequently, colonies cannot rely solely on solar power; robust, redundant energy sources like geothermal or nuclear fission are essential.

6) Target Settlement Zones on Mars

The selection of the initial landing site is highly political. Delegates must debate where their designated blocs intend to establish their zones of influence based on available resources.

Jezero Crater & Isidis Planitia: The site of the ancient river delta explored by the Perseverance rover. Rich in diverse geological samples and accessible water-ice. A prime location for scientific research and relatively flat terrain for large-scale construction.

Valles Marineris: The massive canyon system offers natural protection from radiation and dust storms if habitats are built into the canyon walls. It is also believed to have significant sub-surface aquifers. However, navigating the canyon

during landing is highly dangerous.

Hellas Planitia: The deepest impact crater on Mars. The atmospheric pressure at the bottom is significantly higher than the global average, which slightly reduces the radiation dose and thermal extremes, making habitat construction marginally easier.

The Martian Poles (Planum Boreum/Australe): Contains vast, easily accessible deposits of water-ice and dry ice (solid CO₂). Crucial for generating rocket propellant (methane and liquid oxygen via the Sabatier process) for return trips. However, the extreme cold and long periods of darkness make survival exponentially more difficult.

7) Historical Background of Space Exploration and Geopolitics

To navigate the complexities of the Treaty, delegates must understand the evolution of international relations in space.

7.1) The First Space Race (Cold War Era):

Spanning from the late 1950s to the 1970s, the first space race was a bipolar conflict between the United States and the Soviet Union, driven by ideological warfare and the quest for military-technological supremacy. This era produced historic milestones—Sputnik, Yuri Gagarin, and the Apollo Moon landings—but was defined by intense secrecy, nationalistic pride, and zero technological sharing. The Outer Space Treaty of 1967 was drafted during this time primarily to prevent the placement of nuclear weapons in orbit, explicitly forbidding national appropriation of celestial bodies.

7.2) The Second Space Race (Commercial and Asian Ascendancy):

The early 21st century saw a radical shift. The retirement of the Space Shuttle forced a reliance on Russian Soyuz rockets, fostering international reliance. However, the rise of commercial spaceflight companies in the US (such as SpaceX) disrupted the state-monopoly model by drastically lowering launch costs through reusable rocketry. Concurrently, China rapidly established itself as a top-tier space power, launching independent space stations and landing rovers on the Moon's far side. This era

transitioned space from a scientific frontier to a burgeoning economic sector, highlighting the inadequacy of 20th-century space laws to handle private property rights and commercial resource extraction.

7.3) The Third Space Race (The Resource Crisis and Multi-Planetary Era):

Beginning in the 2040s, severe resource shortages on Earth triggered a frantic rush to secure lunar and asteroid mining rights. The International Space Station was decommissioned, replaced by sovereign and corporate orbital outposts. The divide between the US-led Artemis coalition and the Sino-Russian cooperative bloc deepened. Mars became the ultimate prize—not just for scientific prestige, but as a strategic fallback point for human civilization and a hub for unparalleled economic expansion. This era is characterized by "Space Realpolitik," where nations prioritize strategic advantage, resource security, and technological dominance over idealistic cooperation.

8) Comprehensive National Space Agendas and Future Plans

Each delegation brings distinct historical capabilities, technological specialties, and political ideologies to the negotiating table.

8.1) United States of America (NASA & Commercial Partners):

The United States remains a dominant force, drawing power from a synergistic relationship between NASA and colossal private space conglomerates. The US agenda is fundamentally capitalist and expansionist. They advocate for a framework that allows private entities to claim economic rights over the Martian land they develop, arguing that commercial incentive is the only way to fund long-term colonization. They seek to establish independent "Special Economic Zones" on Mars, lightly regulated by UNOOSA, focusing on rapid infrastructure development, commercial mining, and interplanetary trade routes. The US opposes strict demographic quotas, preferring a meritocratic and market-driven selection of colonists.

8.2) People's Republic of China (CNSA):

China approaches Martian colonization with long-term, state-directed precision. Having successfully established a permanent, self-sustaining lunar base, the CNSA plans to replicate this success on Mars through massive, centrally planned engineering projects. China prioritizes stability, security, and state sovereignty. They advocate for strictly defined, sovereign national sectors on Mars where Earth's domestic laws apply. China heavily invests in nuclear thermal propulsion and autonomous robotics, aiming to pre-construct massive subterranean habitats before human arrival. They seek bilateral alliances but are highly suspicious of Western commercial exploitation, viewing it as chaotic and neo-imperialist.

8.3) Russian Federation (Roscosmos):

Despite economic challenges on Earth, Russia has maintained its edge in two critical areas: heavy-lift rocketry and advanced nuclear space technology. Roscosmos has developed the primary nuclear-fission surface reactors that the first colonies will desperately need for survival during dust storms. Russia leverages this technological monopoly to demand significant territorial concessions and leadership roles in the colony's administration. Their doctrine aligns closely with China regarding state sovereignty, preferring to operate highly fortified, independent scientific and mining outposts rather than integrating into a single global colony.

8.4) European Space Agency (ESA):

The ESA represents a coalition of European nations and brings unparalleled expertise in deep-space scientific instrumentation, closed-loop ecological life support systems (CELSS), and diplomatic mediation. Europe approaches Mars with a heavily idealistic, scientific, and environmentally conscious agenda. They strongly advocate for treating Mars as a "Global Commons," strictly adhering to the spirit of the original Outer Space Treaty. The ESA vehemently opposes sovereign borders and unchecked commercial mining, proposing instead a unified, internationalized mega-colony governed directly by a UN mandate, with strict environmental protections to preserve Martian geology from contamination.

8.5) Republic of India (ISRO):

India is the wildcard of space exploration, renowned for achieving complex interplanetary missions (like the Mangalyaan Mars orbiter) at a fraction of the cost of its rivals. ISRO has rapidly expanded its crewed flight capabilities and positions itself as the voice of the developing world in F-UNOOSA. India demands equitable access to Martian colonization, vehemently opposing any treaty that allows the US and China to monopolize the planet. They propose a mandatory "Quota System," where a percentage of seats on colony ships and a portion of extracted resources are reserved for nations lacking domestic space programs, ensuring that Mars belongs to all of humanity, not just the wealthy elite.

8.6) Japan Aerospace Exploration Agency (JAXA):

Japan is a quiet powerhouse, specializing in precision robotics, sample-return technologies, and advanced habitat architecture. JAXA often aligns with the ESA's cooperative scientific stance but maintains strong bilateral ties with the US for logistical support. Japan's primary concern in the treaty is ensuring robust legal frameworks for intellectual property rights regarding technologies developed on Mars, and guaranteeing the safety protocols for the rigorous, high-stress environment of the colony.

8.7) United Arab Emirates Space Agency (UAESA):

Building on the massive success of their Hope Probe, the UAE has heavily funded research into arid-environment agriculture, atmospheric terraforming models, and closed-system water recycling. The UAE seeks to act as a major financial backer for the initial fleet in exchange for significant administrative influence over the colony's resource management and long-term terraforming strategies.

9) The Martian Colonization Treaty: Key Legislative Frameworks

This is the core of the committee's work. The Treaty must be comprehensive, binding, and address the following critical pillars:

9.1) Logistics, Orbital Mechanics, and Transportation Methods:

The logistics of moving thousands of people and millions of tons of cargo must be standardized. The Treaty must mandate the approved propulsion systems to minimize the risk of radioactive contamination in Earth orbit (e.g., regulating Nuclear Thermal rockets). Will the spaceships utilize a "Cycler" architecture—massive space stations orbiting in a continuous loop between Earth and Mars, where smaller shuttles ferry colonists to the surface? Furthermore, who commands the spaceships? Is it a joint UN Space Command, or a flotilla of sovereign national vessels operating under shared objectives?

9.2) Mission Architecture: Centralized Collaboration vs. Decentralized Competition:

The fundamental structural question of the colony. Delegates must draft clauses deciding between:

The Unified City Model: All nations contribute to a single, centrally located mega-colony. Resources, power, and life-support are shared equally. This maximizes efficiency and safety but requires absolute diplomatic trust and a unified legal system.

The Decentralized State Model: Nations establish independent, sovereign bases spread across different regions of Mars. This satisfies nationalistic agendas and prevents a single catastrophic failure from wiping out the entire population, but invites competition, resource hoarding, and potential military conflict over borders.

9.3) Territorial Claims, Exclusive Economic Zones, and Border Demarcation:

Since the 1967 Outer Space Treaty forbids claiming sovereignty over celestial bodies, the new Treaty must establish a modern legal workaround. How will land be allocated?

-Will F-UNOOSA grant "Exclusive Economic Zones" (EEZs) similar to maritime law, where a nation doesn't own the land but has the exclusive right to mine and develop it?

-How large can these zones be? Are they determined by the amount of infrastructure built, or allocated evenly prior to launch?

-What happens if two rival nations wish to mine the same water-ice deposit at the Martian poles? The Treaty must contain precise conflict-resolution parameters for territorial disputes.

9.4) Settlement Infrastructure, Energy Grids, and Initial Coalitions:

The Treaty must outline the baseline safety and infrastructure standards. For instance, all habitats might be legally required to possess universal airlock docking mechanisms to allow for emergency rescue between rival bases. Who controls the central energy grid? If Russia provides the nuclear reactors, do they have the legal right to restrict power to a US commercial sector in the event of a diplomatic dispute on Earth? The Treaty should forge binding technical coalitions to prevent such crises.

9.5) Demographic Engineering: Gender, Occupation, Psychology, and Quotas:

The composition of the "Genesis Fleet" (the first 5,000 colonists) is a matter of intense debate. The Treaty must establish strict demographic parameters:

Occupational Ratios: A sustainable colony requires a precise balance of skill sets. How many astrophysicists versus heavy machinery operators, agronomists, or medical surgeons? The Treaty must set hard quotas for labor divisions.

Gender and Reproduction: For a colony to eventually become self-sustaining and biologically diverse, the gender ratio is critical. Will the Treaty mandate a strict 50/50 division? Furthermore, how will the Treaty address the immense ethical and medical risks of human pregnancy and child-rearing in a 0.38g, high-radiation environment? Will reproduction be strictly regulated or prohibited in the first decade?

National Quotas: How many seats are allocated to each nation? Is it based on financial contribution to the fleet, global population size, or a lottery system managed by F-UNOOSA?

Psychological Screening: What are the mandatory psychological baselines for colonists to prevent the collapse of social order in a high-stress, inescapable, confined environment?

9.6 Economic Framework, Martian Currency, and Funding Mechanisms:

Establishing the colony will cost trillions of dollars. How is this funded?

Will F-UNOOSA levy a mandatory "Planetary Expansion Tax" on all Earth nations based on GDP?

If private corporations fund the ships, what monopolies or mining rights are they granted on Mars in return?

What is the currency of Mars? Will colonists use Earth-based digital fiat (USD, Yuan, Euro), or will the Treaty establish a new "Martian Credit" backed by energy production, oxygen output, or mined rare-earth metals?

9.7) Jurisdiction, Law Enforcement, and Dispute Resolution:

When a crime is committed in a Martian colony, whose laws apply? If a Chinese national steals proprietary technology from an American corporate habitat, who has the authority to arrest, try, and punish the individual? The Treaty must establish an extraterrestrial legal framework. Will there be an independent Martian Tribunal, or will individuals remain subject solely to their Earth nation's laws? How will security forces be regulated to prevent the militarization of Mars?

10) Bloc Positions and Strategic Alignments

The table below contains suggested alliances that are prepared by considering the historical and geopolitical reasons and purposes. The table is for the delegates to have an idea about how their politics work and how it is similar to other nations.

Bloc Name	Core Members	Primary Objectives and Ideology
The Expansionist Alliance	USA, UK, Private Space Corporations	Advocates for free-market colonization, commercial mining rights, decentralized sovereign bases, and minimal UN regulatory interference. Believes profit motive drives innovation.
The Sovereignty Pact	China, Russia, Allied Nations	Demands state-led, heavily organized colonization with strict national borders. Focuses on securing strategic resource monopolies and utilizing nuclear/military technology for rapid infrastructure dominance.
The Cooperative Coalition	ESA, Japan, Canada	Pushes for a unified, internationalized mega-colony. Prioritizes scientific discovery, strict environmental protection of Mars, and sharing all technological/resource gains equally with Earth.
The Global Equity Bloc	India, Brazil, UAE, African Union	Demands proportional representation for developing nations. Advocates for a global tax to fund colonization, mandatory technology transfers from superpowers, and guaranteed demographic quotas for non-space-faring nations.

11) Questions a Treaty Must Answer

The final Martian Colonization Treaty will not be considered comprehensive or ready for ratification unless it explicitly answers the following technical and diplomatic questions in its clauses:

- What specific propulsion systems and orbital logistics will be standardized for the 5,000-person Genesis Fleet?

- Will the primary settlement architecture mandate a single, unified international city, or permit the establishment of independent, sovereign national outposts?

- How will F-UNOOSA legally allocate land on the Martian surface, and what are the precise mechanisms for demarcating and enforcing borders or Exclusive Economic Zones?

- What are the exact demographic quotas for the initial fleet concerning occupational skills, gender distribution, and national origin?

- What is the official F-UNOOSA policy regarding human reproduction and genetic viability during the first two decades of colonization under partial gravity and elevated radiation?

- How will the multi-trillion-dollar budget for the expedition be generated, and what specific rights are granted to private corporations in exchange for funding?

- Which legal jurisdiction applies to criminal and civil disputes on Mars, and what body holds the authority to enforce these laws?

- What are the mandatory engineering standards for life-support interoperability and emergency aid between potentially rival national sectors?

- How will the extraction of critical resources (water-ice, rare earth minerals) be regulated to prevent monopolization by early-arriving superpowers?

-In the event of a catastrophic diplomatic breakdown or war on Earth, what protocols exist to ensure the political neutrality and survival of the Martian colony?

12) Key Terminology

Aerocapture / Aerobraking: A maneuver using the drag of the Martian atmosphere to slow down a spacecraft, saving massive amounts of chemical propellant.

CELSS (Closed Ecological Life Support System): A completely self-sustaining system that recycles all water, air, and waste, integrating biological agriculture with mechanical filtration.

F-UNOOSA: Futuristic United Nations Office for Outer Space Affairs; the supreme legislative body governing extraterrestrial expansion.

GCRs (Galactic Cosmic Rays): High-energy radiation originating outside the solar system, posing a severe long-term cancer risk to colonists.

Hohmann Transfer Orbit: An orbital maneuver used to transfer a spacecraft between two orbits (Earth and Mars) using the lowest possible amount of energy, requiring specific planetary alignments that occur roughly every 26 months.

ISRU (In-Situ Resource Utilization): The practice of collecting, processing, and using materials found on Mars (like extracting water from ice or oxygen from CO₂) to replace materials that would otherwise need to be brought from Earth.

MOXIE (Mars Oxygen ISRU Experiment): Technology designed to produce oxygen from the carbon-dioxide-rich Martian atmosphere.

NTP (Nuclear Thermal Propulsion): A highly advanced spacecraft propulsion technology that uses a nuclear reactor to heat a liquid propellant, offering vastly superior speed and efficiency compared to traditional chemical rockets.

Regolith: The layer of loose, heterogeneous superficial deposits covering solid rock on Mars; Martian soil, which is highly toxic due to perchlorates but can be processed for construction shielding.

Sabatier Process: A chemical reaction used to produce methane and water from

the reaction of hydrogen with carbon dioxide at elevated temperatures and pressures. Critical for manufacturing return-trip rocket fuel on Mars.

SMR (Small Modular Reactor): Advanced nuclear fission reactors designed to be manufactured in a factory, transported to Mars, and deployed to provide reliable, dust-storm-resistant power.