IPSC - MSMUN 2022

ELYSIAN SWEVEN

REDEFINING THE PRESENT
AND DEFINING THE FUTURE

MARS ACTION PLAN

DELIBERATING UPON AN ACTION PLAN FOCUSING ON CURATING ONE EARTH ON MARS.

MODY SCHOOL
LAKSHMANGARH • RAJASTHAN

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INDEX

LETTER FROM THE CHAIRPERSON's DESK

Greetings Delegates!

It is my utmost pleasure to welcome you all to the MSIPSC-MUN'22, I'm pleased to introduce you to our committee "Mars Action Programme" that'll be led by Ms.Naishadha Srivastava (Chairperson), Ms.Ritika More (Vice Chairperson) and Ms.Shambhavi Singh (Rapporteur).

Set in 2025 MAP is a futuristic special committee that'll tackle real-time issues while letting delegates put on their thinking caps and not limit themselves to the regular set proceedings of a typical committee, however we still expect delegates to at all times maintain decorum and not engage in unfair negotations, improper debating, furthermore other such mal-practices would not be encouraged and if observed, needed action would be taken with immediate effect.

It's in our best understanding that MUN conferences can often be overwhelming, especially for first-timers, therefore we're here to remind you that our expectations from delegates aren't solely based on their experience and articulation. Moreover, we want to see how they can respect differences in individual opinions, work around these and extend their policies in ways that will help them reach more

comprehensive solutions and increase consensus building. Delegates, we're all for creative intelligence and would love to watch fresh perspectives come up as the debate unfolds, so much so that we're keeping as many ends open for you to decide how the committee flows!

Lastly, we hope you return with fruitful experiences, knowledge, and most importantly memories that are worthwhile. That's it from our side, hope to see you soon.

Best Regards,
Naishadha Srivastava
Chairperson MAP
Director General MS-IPSCMUN'22

POSITION PAPER GUIDELINES

The background guide provides you with a framework and structure to continue doing research on your topic and investigating your country's stance. We encourage delegates to further explore the intricacies of the topics and develop creative solutions beyond the background guide.

Position paper is an opportunity for delegates to summarise their research in preparation for the conference. Delegates are strongly encouraged to write position papers on each topic. Below is the general structure for papers that can be adapted depending on your country and committee:

1. Topic Background: Include a brief summary of the topic and outline your country's past involvement and experience with the issue.
2. Country Stance: Explain your country's politics and position on the issue, including relevant statistics and research.
3. Proposed Solutions: Propose and provide further details on possible solutions and analyse potential benefits and drawbacks. Remember that your solutions should reflect your country's policies.

Delegates should write one position paper per topic, with each paper a maximum of one page long (excluding the work cited page). No cover pages. All papers should be single - spaced with standard margins in Times New Roman 12pt. Font. Place the following in the top left hand corner of both your position papers:

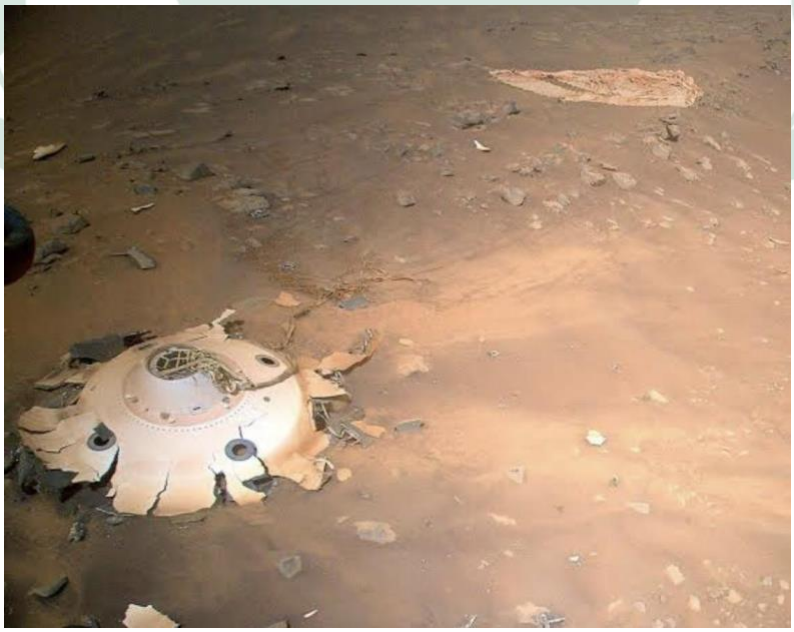
Committtee, Country, Delegate's name, School, Topic. All sources should be appropriately cited.

Position paper should be submitted to: mapipscmsmun@gmail.com

Either as a PDF or a Word document to the above mentioned email by 15th November, 2022. Please title the email in file with your committee's name and country. Delegates who do not submit position papers will be ineligible for awards. Questions regarding position papers should be directed to the above mentioned email.

INTRODUCTION

There's no question that human activity has negative environmental consequences. How we live our lives, the things we produce and consume, and how we move around affect Earth. With damage to the environment ranging from ozone depletion to acid rain, human-induced soil degradation from deforestation, pollution.The Russian-Ukrainian war triggered a tsunami that dramatically impacted the world economy, geopolitics, and food security. Due to the extreme humanitarian situation, the effects on the environment have been overlooked.



BACKGROUND INFORMATION

Set in 2025 wherein the Ukraine Russia war has been going on for the last 3 years, now resulting in constant nuclear attacks all over the world making the earth unfit for human and other life. Elon Musk has decided to call upon delegations from across the globe to collectively plan out an action plan to shift life from Earth to Mars.

Russia's war in Ukraine has caused consequences on human health but also severe damage to the environment. The war is still ongoing, there is evidence of severe air pollution and greenhouse gas emissions resulting from the intense fights. Also, warfare activities were conducted in area of the Zaporizhzhia nuclear power plant and Chernobyl, increasing the fear of radiation leaks. The biodiversity is being drastically affected due to intense deforestation and habitat destruction with potential implications for wildlife. Bombing, trench and tunnel excavations will likely negatively impact soil degradation and landscape.

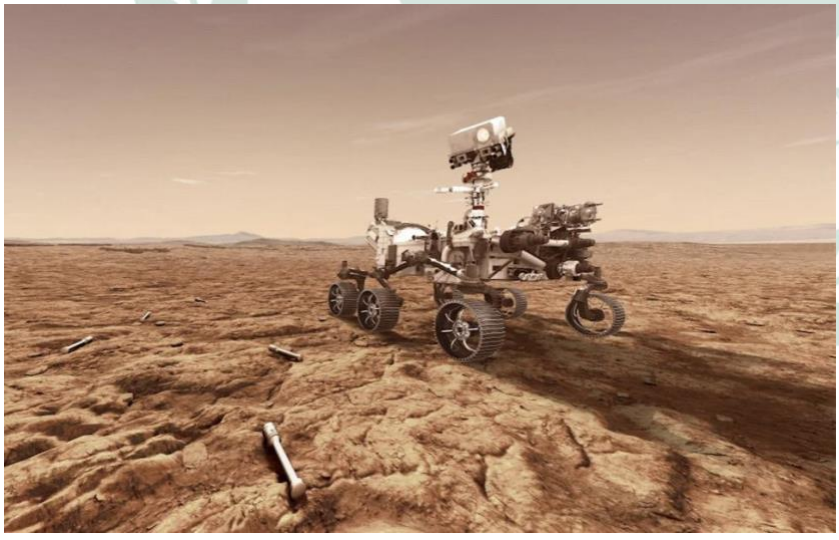
Climate change, is the greatest environmental threat we've ever faced.There is alarming evidence leading to irreversible changes in major ecosystems and the planetary climate system. Ecosystems such as the Amazon rainforest and the Arctic tundra, may be approaching thresholds of dramatic change through warming and drying. Mountain glaciers melting are in alarming state.

Elon Musk's Vision

Due to conditions caused by humans, Earth is getting depleted and making it unfit to live in. Elon Musk has a long-standing vision of establishing a city on Mars. He wants to build a city that is self-sustaining and would transform humanity into a multi-planet species. As recent research shows, the landscape of Mars is pretty treacherous. Astronauts will face surprising obstacles like dust collecting on solar panels, as well as tiny Mars rocks that have caused havoc with NASA's Curiosity mission. Elon Musk's central plan is the Starship. It's a fully reusable rocket that will enable SpaceX to send humans and cargo to Mars. It uses liquid oxygen and methane as fuel, rather than the rocket propellant.

Challenges faced on Mars

A series of dangers are caused on Mars such as in December 2021, the Hope mission to Mars hosted by the United Arab Emirates encountered a dust storm. It quickly advanced thousands of miles wide, passing over the crater containing NASA's Perseverance rover and Ingenuity helicopter. The storm lasted until January 14. It shows how the weather on Mars can be brutal.



PAST MISSIONS TO MARS

MARS CURIOSITY ROVER (NASA)

It was Launched on November 26, 2011 and landed on August 5, 2012.

It is part of NASA's Mars Science Laboratory mission, Curiosity is the largest and most capable rover ever sent to Mars. Early in its mission, Curiosity's scientific tools found chemical and mineral evidence of past habitable environments on Mars. It continues to explore the rock record from a time when Mars could have been home to microbial life.

RESULTS:

1. Curiosity Finds Evidence of Persistent Liquid Water in the Past

Just after landing, Curiosity found smooth, rounded pebbles that likely rolled downstream for at least a few miles in a river that was ankle- to hip-deep. When Curiosity reached Mount Sharp, the team found that over 1,000 vertical feet of rock formed originally as mud at the bottom of a series of shallow lakes. Rivers and lakes persisted in Gale crater for perhaps a million years or longer.

2. A Suitable Home for Life

The Curiosity rover found that ancient Mars had the right chemistry to support living microbes. Curiosity found sulphur, nitrogen, oxygen, phosphorus and carbon-- key ingredients necessary for life--in the powder sample drilled from the "Sheepbed" mudstone in Yellowknife Bay. The sample also reveals clay minerals

and not too much salt, which suggests fresh, possibly drinkable water once flowed there.

3. Organic Carbon Found in Mars Rocks

Organic molecules are the building blocks of life, and they were discovered on Mars after a long search by the Sample Analysis at Mars (SAM) instrument in several samples drilled from Mount Sharp and the surrounding plains. The finding doesn't necessarily mean there is past or present life on Mars, but it shows that raw ingredients existed for life to get started there at one time. It also means that ancient organic materials can be preserved for us to recognize and study today.

4. Present and Active Methane in Mars' Atmosphere

The Tunable Laser Spectrometer within the SAM instrument detected a seasonally varying background level of atmospheric methane and observed a ten-fold increase in methane over a two-month period. The discovery of methane is exciting because methane can be produced by living organisms or by chemical reactions between rock and water, for example.

5. Radiation Could Pose Health Risks for Humans

During her trip to Mars, Curiosity experienced radiation levels that would exceed NASA's career limit for astronauts, if left unshielded. The Radiation Assessment Detector (RAD) instrument on Curiosity found that two forms of radiation pose

potential health risks to astronauts in deep space. One is galactic cosmic rays (GCRs), particles caused by supernova explosions and other high-energy events outside the solar system. The other is solar energetic particles (SEPs) associated with solar flares and coronal mass ejections from the sun. NASA will use Curiosity's data to design missions to be safe for human explorers.

6. A Thicker Atmosphere and More Water in Mars' Past'

The SAM instrument suite has found Mars' present atmosphere to be enriched in the heavier forms (isotopes) of hydrogen, carbon, and argon. These measurements indicate that Mars has lost much of its original atmosphere and inventory of water. This loss occurred to space through the top of the atmosphere, a process currently being observed by the MAVEN orbiter.

MANGALYAAN (ISRO)

- Mangalyaan is India’s Mars orbiter that has been observing the planet since September 2014.The Mangalyaan spacecraft successfully enters Mars orbit on September 23, 2014, making ISRO only the fourth space agency in the world to do so.
- Mangalyaan has been operating for more than seven years now, observing Martian landscapes and studying their composition using its five science instruments.
- ISRO launched Mangalyaan on Polar Satellite Launch Vehicle (PSLV). ISRO also developed the ability for its ground stations to communicate with a spacecraft on another planet.

- With Mangalyaan, there were two-way communication lags of up to 42 minutes.

To infinity and beyond: Funding the future of space projects for development

- While space projects show a lot of promise, from reducing the human cost of natural disasters to boosting crop yields, a perennial problem is securing access to sustainable, long-term funding.
- From the perspective of international aid, for example, less than 0.1% of official development assistance was committed to space projects each year between 2000 and 2016, according to the Organisation for Economic Co-operation and Development.

An increasing number of countries have stepped up their focus on space-related development in recent years, obtaining finance that allows projects to be more than just another expensive technology trial remains a major challenge. This means that beyond the money, there is demand for more efficient ways of structuring programs to maximise use of funding.

MISSION TO MARS- SUCCESS OR FAIL?

It's commonly said that roughly half of all missions to Mars have succeeded- while roughly half have failed. But as it turns out, what counts as a successful or failed mission is more complicated. Missions to Mars usually rely on several moving parts. Should one of these parts fail, even though other parts remain intact, whether the mission in sum counts as a success or failure is highly subjective.

The first five missions were all undertaken by the USSR in the early 1960s and all of them failed for a variety of reasons such as radio failure or the craft breaking apart. The U.S. had its first success when Mariner 4 conducted a flyby in 1964, returning 21 images. Since then, NASA has enjoyed considerable success with 16 missions succeeding out of 22. On the other hand, the USSR/Russia has seen 15 out of its 18 missions end in failure.

RECENT DEVELOPMENTS

Current Space Projects:

Tianwen 1 Mars Mission (China)

- Tianwen-1 ("questions to heaven," or "questioning the heavens") is China's first Mars mission, consisting of an orbiter and a rover named Zhurong. It entered Mars orbit in February 2021 and Zhurong landed on May 14, 2021.
- Among the rover's science instruments is a radar that could detect pockets of water beneath the surface, which may contain life.
- Zhurong can communicate directly with Earth or use its Tianwen-1 orbiter for high-speed data relay. The orbiter has its own set of science instruments for studying Mars, including a high-resolution camera that should produce stunning images.
- Zhurong has cameras, instruments for studying Mars' climate and geology, and even an instrument to zap rocks and record the resulting chemical signatures.

Hope Mars Mission (United Arab Emirates)

- Hope is a United Arab Emirates Mars orbiter that arrived in February 2021.
- Hope is studying Mars' climate to help us understand what Mars was like when its atmosphere could have supported life.
- Hope is the Arab world's first mission to another planet.
- Hope will build on MAVEN's work by studying Mars from a much higher orbit.(MAVEN is one of multiple Mars missions that have orbits optimal for relaying communications between Mars rovers on the surface and Earth.
- Hope will study Mars' upper atmosphere, watching traces of hydrogen and oxygen—remnants from Mars' wetter days—leak into space. The spacecraft

will also study how the planet’s upper and lower atmospheres interact with each other.

PERSEVERANCE MISSION (USA)

- Perseverance is a 1-ton, six-wheeled Mars rover the size of a compact car. Based on the same design as nuclear-powered Curiosity, Perseverance can operate through dust storms that block sunlight required by solar-powered spacecraft.
- The Mars 2020 Perseverance Rover will search for signs of ancient microbial life, which will advance NASA's quest to explore the past habitability of Mars.
- The rover has a drill to collect core samples of Martian rock and soil, then store them in sealed tubes for pickup by a future mission that would ferry them back to Earth for detailed analysis. Perseverance will also test technologies to help pave the way for future human exploration of Mars.

- Strapped to the rover's belly for the journey to Mars is a technology demonstration — the Mars Helicopter, Ingenuity, may achieve a "Wright Brothers moment “ by testing the first powered flight on the Red Planet.
- There are several ways that the mission helps pave the way for future human expeditions to Mars and demonstrates technologies that may be used in those endeavors. These include testing a method for producing oxygen from the Martian atmosphere, identifying other resources (such as subsurface water), improving landing techniques etc. that could affect future astronauts living and working on Mars.

QUESTIONS TO CONSIDER

1. What extent of loss will the increasing amount of space debris cause to human spacecrafts mainly focusing on future missions to Mars ?

i) What will be the immediate Plan of Action for reacting to debris?

ii) What are the views on current advancement of maneuvering technologies to avoid space debris and collision?

2. What will be the alleged effects on the funding of space programs amidst the emergence of the World War with special emphasis on the current scenario of Russia and Ukraine?

i) What will be the possible ways through which we will be able to secure consistent funding and resources during the times of such hostility?

ii) What will be the aftereffects if the space projects cannot be sanctioned for further research due to extreme warfare?

Disclaimer:

The background guide is a compilation of various sources and scholarly work of various authors available to us through doctrinal and non - doctrinal methods. The background guide is only a source of information to provide you all with basic guidelines to pursue your further research and is not a document in its absolute nature which covers up everything you need to know about the committee, kindly use this background guide as a premise to draw your future research. It is significant to note that this background guide does not reflect the personal ideology of the Executive Board, Secretariat Members, Mody School, IPSC or any authorities concerned with the conference. The background guide is a document prepared in the best academic interest of the conference.