

SIMULATION COMMITTEE GUIDE

UNOOSA



United Nations Office on Outer Space Affairs

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Topic 1: *Regulation of Space Tourism*

I. History/Context

Whilst space exploration goes back to the past century, with the launching of the first artificial satellite in 1957 to the moon landing in 1969, the beginning of space tourism is marked by Dennis Tito's trip to outer space on April 28, 2001. He negotiated with Russia for 10 years and finally paid USD \$20M to accompany Russian astronauts to the International Space Station on a supply mission. Space tourism can be defined as recreational space travel on established government owned vehicles or vehicles fielded by private companies. Since that time, various space tourists have paid to go beyond the Earth's atmosphere, with Virgin Galactic recently completing its fourth sub-orbital space flight for tourists.

Suborbital space tourism: the rockets do not go very high or fast and will not complete an orbit around the Earth. Passengers will see the Earth from afar and will experience a few minutes of weightlessness. The rockets usually reach a height of 100 km above the ground, and the flight usually lasts up to a few hours. This is the most common form of space tourism at present.

Orbital spaceflight: spacecraft orbit around a star, planet, or moon. Passengers may spend up to a week orbiting the Earth. This market is expected to grow in the future.

A New Frontier

77 countries have their own space programmes, but not all of them cover space tourism, which is often developed by private companies. Some of these private companies include Blue Origin, SpaceX, Virgin Galactic, Boeing, Axiom Space, Space Adventures, Sierra Nevada Corporation, Zero 2 Infinity, Bigelow Aerospace, Northrop Grumman, Orbital Sciences Corporation, Rocket Lab, World View



Enterprises, Armadillo Aerospace, Orion Span, Space Tourism, United Launch Alliance and Origin Space.

As space tourism is a relatively new industry, companies say that they are on the bridge of technological development and innovation, therefore they cannot be stopped with regulations. For these reasons, in 2004, a phase called the learning period was implemented, during this time companies involved in space tourism could have the freedom to explore without having regulations. The learning period has now been extended more than four times, and questions are being asked in the USA about whether it is time for the FFA (the Federal Aviation Administration) to begin controlling space tourism and start protecting individuals planning on going to outer space. For this reason, the FFA came up with a 25-member committee named the Human Space Flight Occupant Safety Aerospace Rulemaking Committee.

Currently, there are multiple problems that have arisen from space tourism since it needs to be regulated. However, the companies that are getting involved in space tourism have a lack of knowledge on the appropriate regulations needed to make sure it is safe. They justify this lack of knowledge by comparing space tourism to aviation and stating that when aviation and commercial flights first started to take place there were no regulations; these started developing over

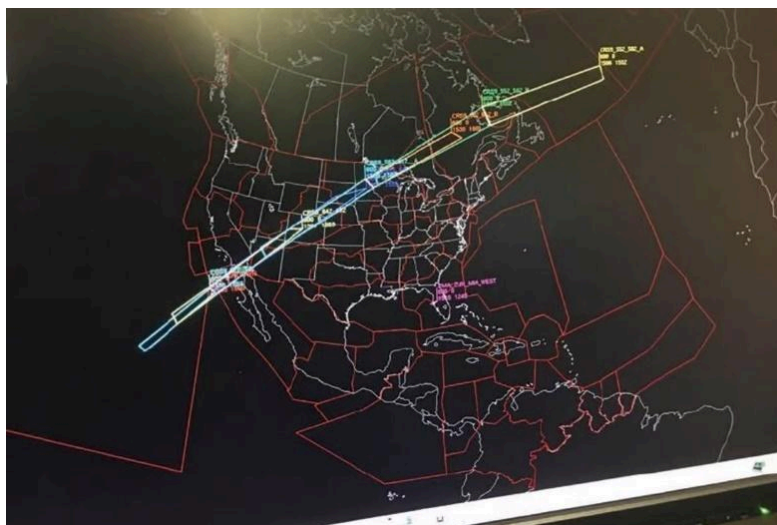


Figure 1: FAA. (2021). The Space Data Integrator tracks commercial space launches and reentries].

time. However, there need to be laws established that protect individuals being sent into space. Presently, only lift-off and entry are being protected, but they don't guarantee the safety of those individuals in the spacecraft; the laws only protect individuals on the

ground from falling debris. Crew members of the spacecraft, and individuals who plan on making the trip to outer space, need to sign a waiver that recognises the risk of going to outer space.

The Federal Aviation Administration (FAA) plays a crucial role in the United States, establishing safety standards and licensing procedures for commercial spaceflight. They constantly have to balance the risk of disaster with the need to allow for innovation.



Figure 2: Evangelist. (2013). Space Tourism Benefits

Supporters of space tourism say it has multiple positive impacts that can help support the world economy. These are three advantages of space tourism:

- Boosting scientific research. Currently companies that are already part of the market of space tourism and companies that are interested in space tourism have started searching for ways to reach space in a more cost-effective way. New space technologies and methods to manage the space tourism industry generate new developments which may also benefit world development as a whole. They will also be important for

development in other sectors of the space industry, helping the world's economy.

- Rising public awareness of space science. Space is becoming more accessible every day and this is due to the current investment being made in the space industry. Public awareness of the importance of outer space is rising, and people are becoming aware that access to space should be equitable.
- Advancing spacecraft innovation. Companies are searching for efficiency in the space tourism industry. This implies that there will be faster and better ways to reach space because of constant development across multiple companies. In the future, it will be easier for people to reach space for different reasons, such as carrying out scientific research in space.

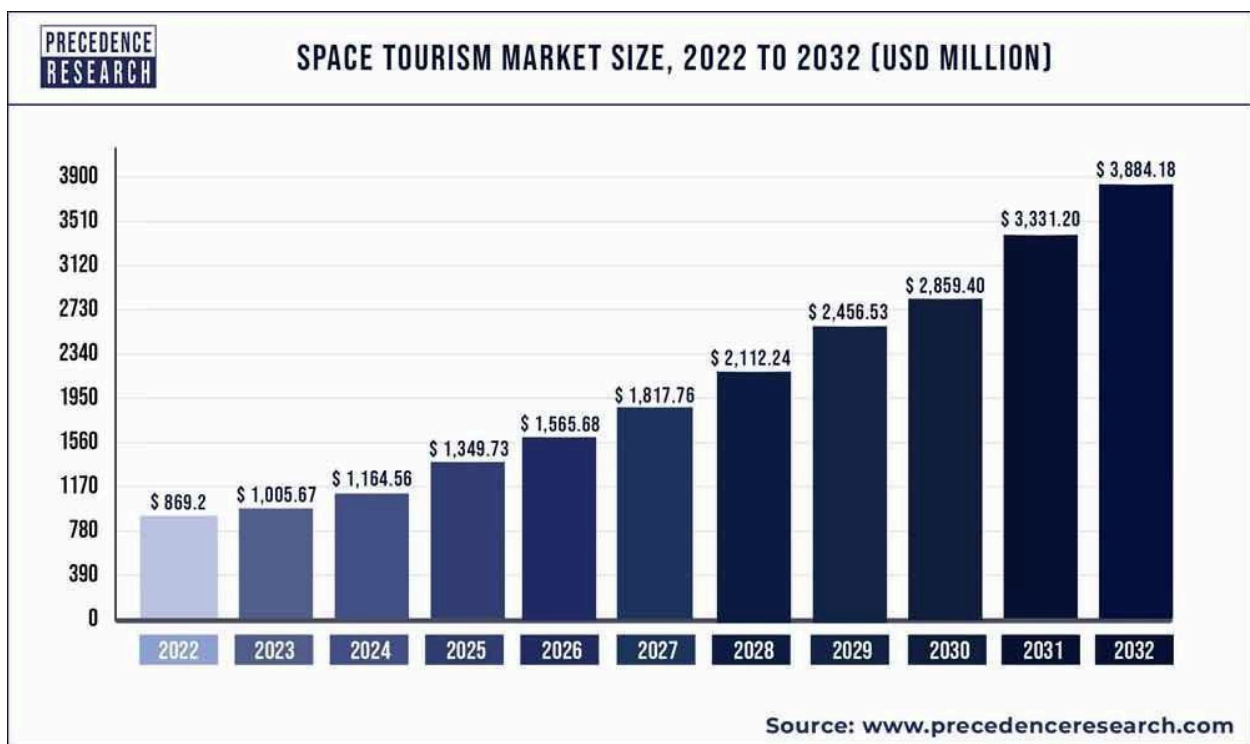


Figure 3: Projected market size for space tourism

International cooperation between countries is essential to harmonise regulations across borders and to ensure seamless operations for space tourism. There is a need to start discussions about space tourism between nations as some countries, including the United States, have been developing space programmes on a large scale for several years. As of 2023, only 77 countries in the world had access to space programmes, which means that, with space tourism development, countries that do not have sufficient monetary resources to develop space programmes are at an even greater disadvantage. A higher demand for aerospace activity could also mean that countries start a space tourism race, which could harm their relationships and affect the development of outer space activities in the near future.

II. Current Situation

Currently, the space market is worth over USD 400 billion (World Economic Forum, 2024), and the industry is constantly expanding, as more private companies start to invest in space activities. According to Forbes, (2021), there are: more than 10,000 space-focused companies globally; 5,000 significant investors; 150



Figure 4: Fox News. (2022). Nearly half of Americans want space travel.

research and development hubs; 130 governmental organisations; and 30 business sectors, from navigation and mapping to space medicine. Space is now one of the newest sectors of the economy, but there's no specific regulation on how the space industry is supposed to address space tourism.

Another concern regarding space tourism nowadays is the rise in space junk due to human activity. There is already a huge problem with the amount of junk flying around in outer space from satellites and rockets, and space tourism will only increase the problem. Additionally, the spacecraft necessary for both suborbital and orbital space travel for space tourism cause excessive emissions such as black carbon, just like any other rockets that are sent into space. Black carbon is the fine soot or dark matter that is released from vehicles, most commonly from cars. It can also be released from space rockets, causing problems for individuals and for the environment, as it can provoke lung disease, infiltrate the atmosphere and the ozone layer, and harm ecosystems. Therefore, space tourism not only poses a security issue for humans, it also contributes to outer space contamination.

Recently it has been proven that space tourism is potentially worse for the environment than air travel, because rocket launches and the spacecraft that will be used for space tourism emit black carbon directly into the stratosphere. At present, there is a higher level of air travel than space tourism, but if the demand for space tourism increases over the years, it will pose a bigger threat of contamination than air travel, and it will rapidly pollute the atmosphere. Addressing these environmental concerns requires the adoption of sustainable practices, such as developing eco-friendly propulsion systems and implementing debris reduction strategies to reduce the negative impacts on the environment that space tourism poses.

For this reason, as stated by the Space Generation Advisory Council, astronauts train for years to go to outer space while space tourists are barely prepared and in most cases they go to space for entertainment. With space flight becoming more accessible and people with minimal training being able to access space, there is the need to raise the question of whether the world is prepared for a large space tourism economy and, most importantly, is the world ready from a safety and sustainable standpoint.

UNOOSA holds a liability convention where the harm done to potential passengers is not discussed, and there is only a focus on objects in outer space or on the



ground. The US Federal Aviation Administration explicitly warns that they have not certified any launch and reentry vehicle for carrying people, except SpaceX's Dragon 2 capsule. That is not to say no attention is paid to it. The only deadly crash in commercial space flight testing, involving test pilot Michael Alsbury flying Virgin Galactic's SpaceShipTwo, has been thoroughly investigated by US safety bureaus. The accident was deemed a human error and a set of safety recommendations was made to avoid similar problems in the future. In the end, companies themselves are responsible for safety, but if space tourism is not regulated, people's lives may be at risk as a result of physical dangers to the people who travel, and environmental dangers for those who live near launch sites.

There is also a need to implement regulations to avoid contamination of outer space. These regulations include developing greener rocket launches. In order to do this, the space industry should seek to develop a cleaner source of energy to develop more sustainable rocket fuel that could include biofuels (a fuel derived immediately from living matter) that would avoid hefty amounts of black carbon from entering the atmosphere.

Some of the companies involved in space tourism are continuously refining their technology to enhance reliability and reduce costs of space travel, thereby making it more accessible to the masses. SpaceX's reusable rocket technology, for example, has significantly lowered launch costs, laying the groundwork for more affordable space tourism experiences. At the moment one trip can cost up to USD 1 million (Queen City News, 2023), so it is unlikely that space tourism will become a regular event for most people in their lifetime. However, if regulations are not put into place now, the effects of unregulated space tourism in the future may be catastrophic.

Controlling space tourism

Space tourism must be controlled and carried out with proper regulations if it is to achieve success as a new industry. There is also a need for transparency and



international treaties in order to prevent an arms race, and to protect both our planet and other places in outer space. It is essential to produce an inclusive framework for space governance that ensures all nations have a voice in shaping regulations and policies related to space tourism, not just the ones that currently have the technology to be able to offer this type of experience.

Through the years different regulations have been implemented to protect outer space that include regulations such as the ones being taken by The United States Federal Aviation Administration (FAA) that has taken a leading role in regulating commercial spaceflight activities through its Office of Commercial Space Transportation (AST). AST oversees the licensing and permitting process for commercial space launch and reentry operations, assessing the safety and risk factors associated with each mission. Companies looking to conduct space tourism flights must obtain a launch licence from the FAA.

However, even before the FFA started implementing this regulation, the Outer Space Treaty was established in 1967. It states that outer space should be free for exploration and use by all nations, but it does not offer direct regulations for commercial activities and space tourism. In 1971 and 1976 two regulations were implemented, the Liability Convention and the Registration Convention, that are treaties which outline liability for damages caused by space objects. These treaties require states to register their space objects.

Nonetheless, these regulations lack comprehensive environmental regulations concerning space tourism, and they do not consider risks such as Radiation Risks. Radiation Risks have become a concern because radiation exposure can be dangerous for space tourists, more so if commercial spaceflight takes place during solar events. Regulations do not sufficiently address these risks, and there is a call for more adequate guidelines to protect passengers from high radiation levels during flights. This is concerning due to the fact that the commercial spaceflight industry is rapidly increasing whilst regulations to deal with problems that arise from space tourism are not advancing at the same pace.



To conclude, space tourism is an exciting innovation with great potential for the future of humankind. However, it may cause multiple problems in the future if it is not regulated. There is an urgent need for countries to come together and cooperate at an international level to implement laws which will prevent space tourism from harming individuals, having a negative impact on the environment, or affecting countries' relationships regarding space affairs.

III. Key points of the debate

- The innovation that has been made by private companies, focused on space tourism, and their repercussions on the world economy
- The lack of knowledge companies that are exploring space tourism have towards protecting the safety of space tourists
- The lack of control over the businesses that are investing in space tourism
- The problem of controlling private companies which are functioning in outer space
- The negative effects space tourism poses for the environment on Earth and in outer space
- Inequalities between countries that arise as a result of space tourism
- The need to implement international laws and regulations to control space tourism
- The need to ensure that advances in space tourism are beneficial for all countries

IV. Guiding questions

1. Does your country currently have any space tourism programmes or companies, and how are these entities regulated by the government?
2. What specific international agreements or frameworks to do with outer space has your country supported or ratified?



3. What safety standards and protocols should be established for space tourism operators to ensure the safety of passengers and crew?
4. What environmental effects would an increase in space tourism have on your country? What measures need to be taken to ensure that space tourism does not have negative impacts on the environment?
5. What measures should be proposed to ensure that the economic benefits of space tourism are shared equitably among nations, and how does your delegation (if it's the case) plan to include developing countries in these benefits?
6. Does your country have its own specific laws about what can be done in outer space? How does the Outer Space treaty need to be changed to cover space tourism in particular?

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