ANALYSING THE ROLE OF THE GOVERNING REGULATORY BODIES IN SHAPING THE FUTURE OF SPACE TOURISM: BALANCING INNOVATION, SAFETY AND GROWTH

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ABSTRACT

Space tourism is predicted to "take off" in the first quarter of the twenty-first century, although compared to conventional travel destinations, there won't be as many visitors in orbit until space travel becomes more affordable and safe. For everyone, space is the ultimate frontier. Various space tourism companies are being proven with the aim that in the near future there will be regular space travel which in due course of time would be as simple and routine as an air travel. However, as that may be the scenario in future, the trends in the space tourism industry today do not envisage such tremendous number of people rotating around the Earth. For all mankind, space remains the last uncharted region. Understood this but what sort of comical concept is it to promote tourism for this arena. Of course, the most important question is whether the existing Space Laws will be sufficient for the operations of space tourism in the years to come.

This paper also tackles the issue of authorising space tourists and overseeing their activities. Further issues relate to the registration of the aircraft or space vehicle, which is engaged in transporting the tourists and the state's jurisdiction and control over it. Probably, the most problematic component of this new type of activity is responsibility of passengers, or more properly speaking, responsibilities of third parties, for space tourism.

This paper considers the legal and regulatory laws necessary for the safe travel of passenger and crew and vehicles in the space. In such a case the primary goal becomes to analyse to what extent the innovations of space tourism belong to the governments and or the intergovernmental organisations regulatory framework.

Keywords: space tourism, space, innovation, aviation, safety, space laws, orbit.

CHAPTER 1 - INTRODUCTION

Space tourism means any commercial activity offering customers direct or indirect experience with space travel" is the definition of "space tourism. In 1994, the World Tourist Organisation (WTO) and the United Nations Statistical Committee provided an official definition of tourism, which is defined as "the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure.

Space tourism has roots in the early days of space exploration, with visions of civilian space travel inspired by the Apollo missions in the 1960s. But it wasn't until the 21st century that the concept started to take shape as a viable industry, with Dennis Tito becoming the first paying tourist to visit the International Space Station (ISS) in 2001 on a Russian Soyuz spacecraft, which launched commercial spaceflight. Once considered a sci-fi fantasy, space tourism is quickly becoming a real thing. The possibility of commercial space flight is becoming more likely than not, because of organisations like Virgin Galactic, Blue Origin, and SpaceX paving the way. But because space tourism is so new, there are many unanswered questions regarding regulation, safety, the environment, and fair access. National and international governing organisations are crucial in determining how this emerging business develops. They have to develop regulations that support creativity while guaranteeing participant safety and the longterm viability of space activities.

Private space projects grew significantly in the early 2000s, and as a result, Congress passed the Commercial Space Launch Amendments Act in 2004. This act reduced rules and permitted a moratorium on safety requirements for people in commercial space. By lowering regulatory constraints and giving businesses greater flexibility to operate while following to a "informed consent" approach like skydiving, this law sought to promote innovation. The lack of strict restrictions, however, has caused worries about safety in a field where exposure to microgravity and equipment malfunctions are commonplace. Enforcing adherence to safety regulations and supervising commercial spaceflight operations is a critical function of the Federal Aviation Administration (FAA). A comprehensive regulatory framework that addresses safety and takes into account the potential for economic growth and scientific advancement is critically needed as the industry expands.

International treaties and national space laws are the main regulatory bodies that control space tourism. The main body of law governing activity in space is the Outer Space Treaty of 1967, to which more than 100 nations have ratified. This convention states that space exploration

should be for the benefit of all people, forbids the militarisation of space, and holds nations accountable for any actions taken by organisations falling under their purview, including private enterprises. Spacefaring nations have enacted a number of regulations at the national level to control commercial space operations. For instance, the Federal Aviation Administration (FAA) in the US is in charge of authorising and overseeing commercial space launches, including flights for space tourism. The Office of Commercial Space Transportation (AST) of the Federal Aviation Administration (FAA) oversees the observance of safety protocols by spaceflight operators and collaborates with other federal agencies to oversee airspace integration and environmental compliance.

LITERATURE REVIEW

1) Prof.Pablo Mendez de Leon, " Crossing boarders in international air and space law"(March 2010)

The paper provides a thorough analysis of the developing domains of space and aviation law, highlighting the connections between them and the value of multidisciplinary cooperation. The first section of the article introduces "crossing borders" as a major issue, extending its application beyond physical borders to include limits in the legal and intellectual spheres. The author charts the evolution of air and space law through history, emphasising key turning points like Blériot's Channel crossing and Virgin Galactic's introduction of commercial space travel. De Leon emphasises that the competitive contexts from which both industries have emerged have challenged human creativity.

2) Malay Adhikari, "Space tourism – legal issues and challenges with special reference to India"

This article starts out by referring to space as the "final frontier" and examines the special legal issues that arise when it is commercialised for travel. Adhikari poses important queries concerning the ability of current space laws to deal with potential space tourism operations, such as permission, jurisdiction, and passenger liability. This article examines the legal consequences of the rapidly expanding field of space tourism in detail, with a special focus on Indian law. The paper underlines that in compliance with both aviation and space law, national authorities must approve space tourism operations. Although recent U.S. legislation has started to address this gap, Adhikari draws attention to the fact that many jurisdictions do not have explicit regulations for space tourists.

3)Dominic DePasquale, "The Emerging orbital space tourism industry: New insight into demand and prospects for success"(19Sep, 2006)

This article discusses the emerging orbital space tourism sector, emphasising the need, feasibility of the market, and highlighting the demand, market viability and financial modelling for companies involved in space tourism. It also includes case studies and interviews with industry experts.

4)Mukesh Pandey, "The Possibility of space tourism in India: issues and concerns"(January,2013

This article examines a number of topics related to space tourism in India, including as its potential, difficulties, and the regulatory structure required to help this developing sector. Space tourism is thought to be a promising industry that might improve India's travel and tourism offering and draw in international capital. The paper highlights that there is a significant interest in commercial space flight among Indian population due to India's breakthroughs in space technology, especially through ISRO. A substantial section of the paper addresses the requirement for an all-encompassing legal framework to oversee space tourism endeavours. This covers rules pertaining to crew member licensing, safety requirements, and spaceship registration. The article highlights that the development of space tourism in India may be seriously hindered in the absence of appropriate rules and regulations.

5) Isaac Levi Henderson and Wai Hong Kan Tsui, "The Role of Niche Aviation Operations as Tourist Attractions"

This article explore into the growing notion of niche aviation tourism, concentrating on how specific aviation activities draw tourists not for travel, but for the experience and curiosity with aviation itself. The paper gives some instances of how aviation has been used to promote travel. They note that travellers who find aeroplanes, aviation history, or the mechanical aspects of flight fascinating are becoming more interested in aviation-related experiences. They talk about airshows, tours of historic aircraft, and airfield visits that draw aviation aficionados, for instance. This phenomenon is described as a type of "niche tourism," in which travellers are primarily drawn to enjoy their time in the air rather than to travel. The paper emphasises how niche aviation operations can go beyond their practical duty to become leisure destinations, presenting an exciting junction between aviation and tourism. According to Henderson and Tsui, these activities—which include airshows, flight simulation centres, and tours of tiny airports with historical significance—act as independent tourism attractions.

RESEARCH PROBLEM

Government regulatory frameworks, and economic viability are evaluated in order to strike a balance between innovation, safety, and sustainable growth in space tourism. how regulations from the government can successfully strike a balance between the competing needs of encouraging equitable economic development, guaranteeing passenger safety, and pushing innovation in space tourism.

RESEARCH OBJECTIVES

- To understand the existing government regulatory legal framework
- To Analyse the main safety issues related to space travel
- To evaluate the legal frameworks required to handle jurisdictional and liability concerns

SCOPE & LIMITATION

This paper focuses on assessing how government regulatory frameworks have shaped the expansion of the space tourism sector, particularly in juggling the demands of innovation, passenger safety, and long-term growth. This research also covers the government regulatory frameworks, safety regulations and risk management. Further it discusses legal and jurisdictional challenges and touches upon the India's space tourism prospects.

RESEARCH METHODOLOGY:

The methodology adopted for the purpose of conducting research on this paper is purely doctrinal. The data has been collected from various secondary sources which consists of book, journals, articles, websites etc., For the purpose of convenience this paper is divided into four parts.

CHAPTERIZATION

- Chapter 1- Introduction
- Chapter 2- Historical perspective of space regulations
- Chapter3- Analysing government regulatory framework and their impact on innovation
- Chapter 4- India's role in space tourism – prospect
- Chapter 5- Passenger safety and risk management in space tourism
- Chapter 6- Conclusion and Suggestions

CHAPTER 2- HISTORICAL PERSPECTIVE OF SPACE REGULATIONS

Since the late 1950s, with the beginning of the 'Space Age', regulation of activities carried out in outer space has been a paramount issue. With the progression of space sciences and technology, the track of the world's nations and their interactions over and beyond the planet needed legal orientation. The latest development of the circumstances is also connected with the upsurge in economic activity in outer space, due to the mount in the privatization of commercial space activities. This overview presents how space policy has developed over the years, especially in relation to prominent treaties such as the Outer Space Treaty of 1967, and the work of international organisations, especially the United Nations Office for Outer Space Affairs (UNOOSA), in development of regulations for space activities – governmental as well as commercial.

The fundamental concepts governing space law were proved in the Cold War context when space exploration turned into an important dimension for the foreign policy competition Between the U.S. and the USSR. The emphasis was thus placed on making sure that outer space endeavors would be carried out peacefully without any harmful effects on mankind. Primary space policy and legal frameworks of space treaties with the greatest influence are as follows:

1. THE OUTER SPACE TREATY, 1968

- The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space[1], including the Moon and Other Celestial Bodies, which was adopted in 1967 is often regarded as the “Magna Carta” of space law[2].
- This treaty remains the foundation of international space law today as it provides essential guidelines on the use of space.
- Outer Space Treaty a.k.a. the peaceful use of outer space, the treaty prohibits orbiting or basing nuclear weapons or other weapons of mass destruction in space or on its celestial bodies, thus defining space as a zone of universal peace.
- The Non-Appropriation Principle: No state shall extend its sovereignty to outer space or any bodies therein. This clause is crucial in avoiding the dispute of ownership areas

[1] United nation office for outer space (UNOOSA), Outer Space Treaty (1967) https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html

[2] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (adopted 19 December 1966, entered into force 10 October 1967) 610 UNTS 205 (Outer Space Treaty) Article 1-4

in outer space. The treaty underlines the idea that space should be explored for the good of all despite some states being less developed in space exploration and explicitly prohibits any form of equity in space activities.

It declares that states are responsible for any space activities in outer space or humanmade activities on the earth's surface and their resulting damages.

2. RESCUE AGREEMENT, 1968

- On December 19,1967, the Rescue Agreement[3] was approved by the United Nations General Assembly as a whole and became effective on December 3, 1968. The treaty strengthens the principles laid out in the Outer Space Treaty and explains in detail about:

  •Search and rescue of distressed astronauts

  •Astronauts returning to launch states

  •Retrieving and returning space items.

  This treaty is formally referred to as the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, and it defines the duties of the nations for assisting distressed astronauts and bringing back space objects to their respective countries. This understanding is very important for the management of space rescues and retrievals in an international context.

- The treaty came into force in the time of the first-ever human spaceflights, the Vostok missions that were Soviet Union-based, and the Mercury and Gemini programs of America. With these missions, the hazards of space travel such as emergency landings and equipment breakdowns were observed.

- While there have not been many situations where the Rescue Agreement had to be invoked, it provided valuable assistance in some scenarios such as when preparedness for the back flow of space debris or abrupt rest on a solid ground was necessary. For example: In 1978, the crashed Soviet Union's Cosmos 954 Satellite, which contained a radiation powered device, fell on Canadian territory. In this instance, it was true that the

[3] The Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space (adopted 22 April 1968, entered into force 3 December 1968) 672 UNTS 119 (Rescue Agreement) https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introrescueagreement.html

Rescue Agreement was not applied as such however its values can be seen in the way the situation and later the meeting was managed through the Liability Convention.

- The agreement has been crucial in promoting space exploration among countries. A joint space flight, for example, the Apollo-Soyuz Test Project (1975) or the ISS program afterwards, are missions that support the collaboration that the Rescue Agreement sought.
- The Rescue Agreement continues to play an important role in the development of space law. It has established guidelines for dealing with emergency situations in outer space as well as inspired ensuing non-binding treaties, like the Liability Convention and the Registration Convention, dated 1972 and 1976 respectively.
- This century has witnessed phenomena such as the introduction of private expeditions and space tourism which have made this treaty not so clear whether it will still hold. For instance, it is not indicated what the states should do in the event that there is a need of rescuing a private astronaut or a tourist in space.
- The contemporary missions in outer space have the layout that is based on saving people's lives and promoting intergalactic activities. It has also made possible other related operations such as those that are to be conducted in case of any incident on the Moon or On Mars.

3. THE LIABILITY CONVENTION ACT, 1972

"International Convention on the Liability for Damage Caused by Space Objects. It's also called the Liability Convention[4] – was adopted by the United Nations the 29th of March, 1972 and came into force on September the 1st of the same year" It concentrates on issues of liability as introduced in the 1967 Outer Space Treaty, and offers a detailed scope as pertains to the damage caused by space objects.

It is an important treaty on an international scale which is focused on the legal consequences of damages caused by space objects. The launching states are considered responsible for damages caused on the surface or to the air traffic and fault-based responsible for outer space incidents. Under the context, launching state refers to the state that carries out the launch or pays for the launch, or the state that has the launch

[4] Convention on International Liability for Damage Caused by Space Objects (adopted 29 March 1972, September 1972) (Liability Convention).

taking place in its territory or using its launch facility. The convention also includes processes for the submission of claims through diplomatic means, with recourse to a Claims Commission if controversies that cannot be resolved. It involves damages directed against individuals, their properties and the environment.

This system contributes to guaranteeing responsibility, encourages safe operations in space, and offers arrangements for reimbursement. Although the promulgation was conceived quite a few years back, its relevance cannot be underestimated as space exploration expands, more so, with the increase in private sector participation. However, the convention will need adjustments in order to stay relevant to the current issues that may not have existed before such as orbital debris and commercial enterprises.

4. THE REGISTRATION CONVENTION (1976)

"The Registration Convention (1976)[5], which is legally referred to as the Convention on Registration of Objects Launched into Outer Space, is aimed towards promoting the transparency and accountability of space undertakings. It states that within the framework of the Outer Space Treaty (1967), states shall create and maintain a register of space objects and the information about them which shall be transmitted to the UN, in addition to other information such as that of the orbit and the purpose of the object." The notable provisions include the following:

- A space object launched from a state or facility by a state shall be registered in a national registry and with the UN.
- Pertinent information such as object's name, purpose, date of launch, and orbit characteristics shall be furnished to the UN for purposes of an international register maintained by the Outer Space Affairs Office (UNOOSA).
- The difference being that in the case of registration of a space object by a state, that very state is said to have the jurisdiction over the space object, in respect of all its acts and omissions, any risks involved notwithstanding.

The convention provides peacebuilding strategies by fostering upholding the principles of mutual understanding and seeking the existence of global peace. Besides, it provides

[5] Convention on Registration of Objects Launched into Outer Space (adopted 14 January 1975, entered into force 15 September 1976) 1023 UNTS 15 (Registration Convention) https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introregistrationconvention.html

functionality which promotes accountability of space objects activities to reduce their potential conflicts and risks such as space debris. It is still relevant to the increasing space activities globally.

- The nation that causes the space object to be launched or contracts for its launch, or from whose territory or facility a space object is launched, is obligated to register the object. In that context, this makes the 'launching state' responsible for the object.
- Each state should establish and keep national registry of space objects. This registry provides name and purpose of the object alongside its technical specification. The launching state continues to have jurisdiction and control over the object.
- The states are required to provide to the United Nations Office for Outer Space Affairs (UNOOSA) information on the space objects contained in national registries that forms an international registry of objects launched in outer space accessible to the public.
- Upon registration, the states shall provide details on the space object, which shall include the following:
  - Names of launching state(s).
  - A serial number (if any).
  - Date and place of launch.
  - Basic parameters of the orbital flight including but not limited to apogee, perigee, inclination and period.
  - The general function or purpose of the object.
- The registering state retains jurisdiction and control over the space object and any personnel aboard. This provision seeks to ensure that states are responsible for their objects for at least the duration of their operations and even after in the case that the object becomes inoperable.
- It is recommended that the space object registry be amended upon changes that affect the space object, such as when there has been a change of orbit or changes in function, but this is not mandatory.
- The convention ensures that space activities are conducted openly, reducing the risk of misunderstandings or conflict. This is particularly important for military satellites or dual-use technologies that might raise suspicion among other nations.

By linking space objects to specific launching states, the convention helps determine liability in cases of damage caused by space objects, as outlined in the ***Liability Convention***.

- The registration of orbital parameters helps in tracking and managing the increasing number of satellites, reducing the likelihood of collisions and contributing to sustainable use of outer space.
- The centralised registry maintained by UNOOSA facilitates international cooperation by providing a clear record of space activities accessible to all member states.

5. THE MOON AGREEMENT(1984)

As of 2022, The Moon Agreement[6] is in force with only 18 parties and major spacefaring countries including the US, Russia, and China have not signed and ratified the agreement. The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, better known as the Moon Agreement, was adopted by the United Nations General Assembly on December 5, 1979 and came into force on July 11, 1984. It is an extension of the tenets provided in the Outer Space Treaty signed in 1967 that focuses on the exploration and use of the Moon and Other Outer Space Bodies. The Moon Agreement is a furtherance of the Outer Space Treaty which registered the demilitarisation of the Moon and other celestial bodies as embraced in that treaty. The Agreement forbids dealing on the surface the Moon or in any part thereof the threat or actual use of force or any instrument to achieve any ends contrary to this peaceful use.

The Moon Agreement embraces one of its most important ideas with designation of heavenly bodies as the "common heritage of mankind" (Article 11). This principle presupposes that:

• The Moon or its resources do not belong to any nation.

Processes that take place on outer space bodies are for the whole world without regard to the level of technological or economic development of the nations involved.

The benefits derived from the use of the resources should be regulated in time and space

[6] Agreement Governing the States on the Moon and Other Celestial Bodies (adopted 5 December 1979, entered into force 11 July 1984) (Moon Agreement), https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/intromoonagreement.html

to prevent the monopolisation of the benefits by any particular group or individual.

It prohibits all activities on the Moon that can in any way support or be construed as a threat to any of the Earth, Moon, spacecraft and its crew, and space objects. Member States are not to deploy any missiles capable of carrying nuclear warheads, whether into orbit or in any other trajectory to the Moon, nor are they to launch or store such missiles on the Moon. The treaty states that military outposts or facilities of any kind will not be constructed on the Moon, and no military activity will take place there, including weapon testing of any sort, or exercises[7]. However, any restriction does not apply to the engagement of military personnel for research activities with a scientific objective or any other humanitarian functions. It is not forbidden to use any instrument or facility required for the non aggressive exploration and exploitation of the moon. Parties to the Treaty undertake to keep to the Secretary-General of the United Nations, as well as to the general and the scientific public, to the maximum extent possible, the information activity concerning research and the use of the Moon. For each of the missions to the Moon, information about the date of the launch, the objectives of the mission, the area to be covered, the flight paths, and the expected flight duration will be given after the launch and before the mission, while the information concerning the outcome of each mission including its scientific aspects will be provided after the conclusion of the mission. When a mission exceeds 60 days, mission reports including scientific data have to be submitted every 30 days. In the case of missions that are more than six months long, it is sufficient to provide only the reasonable updates of such information thereafter. The Moon with its resources is considered for the benefit of all peoples as it is outlined in the provisions of this Agreement[8]. The Moon shall not be subject to any nation's claim of sovereignty or appropriation by occupation or use or any other means whatsoever. No State, any intergovernmental or non-governmental international organisation, any national organisation or non-governmental entity, and

no individual shall have property rights to the surface or subsurface of the Moon, any part of it, or its resources[9]. The presence of personnel, spacecraft, equipment, structures, and any other facilities on or under the surface of the Moon, including any structures

[7] UNOOSA, 'The International Framework for Space Law' https://www.unoosa.org/
[8] Moon Agreement (n 6) arts I–IV.
[9] UNOOSA, Guidelines for the Long-Term Sustainability of Outer Space Activities https://www.unoosa.org/

that may be on or beneath its surface, shall not give rise to a claim of ownership or control over the surface or subsurface of the Moon or any portion thereof.

A. Making certain that operations on other worlds are carried out purely for peaceful ends.

B. Declaring the Moon and outer space in general to be 'the province of all mankind' thus barring any national, organisational or individual territorial claims.

C. Promoting scientific research, use of resources and their benefits among different countries.

D. . Creating a framework of principles regarding the use and equitable distribution of resources taken from outer space.

CHAPTER 3 - ANALYSING GOVERNMENT REGULATORY FRAMEWORK AND THEIR IMPACT ON INNOVATION

In the US, the policies for Reusable Launch Vehicles (RLVs)[10] are focused on encouraging innovative research while being mindful of safety, the environment, and the need for expansion of the commercial space market. These RLVs are essential in order to help keep costs low and allow for more regular access to the space.

The space shuttle owned by the United States was one of the first present day launch vehicles to exhibit a partially reusable feature with others such as the Soviet Buran also undertaking to do the same[11]. Like the US, the USSR also built the Energia-Buran, a vehicle that has only flown once in 1988 and was subsequently closed in 1993[12]. Other planned RLV projects include the PlanetSpace Silver Dart, a hypersonic glider that is partly reusable and SpaceX Falcon 1 which was claimed to be partially reusable. However the majority of these called RLVs in their infancy, encountered operational difficulties that were created by technology and funding. Fully Reusable Initiatives There are projects such as SpaceX Falcon 9 and others including Skylon and the Indian RLV programme which fully reusable designs are an attempt. These ones emphasize on the fact that there is an intention within the industry to minimise the cost of access to space attendant with systems that are capable of being used over and over again. Other programs were designed or pursued in a number of ways, but complete reuse technology

[10] United States Department of Transportation, Federal Aviation Administration, 'Reusable Launch Vehicle Policy' (2004)
[11] Michael J Neufeld, Space Shuttle: The History of Developing the National Space Transportation System (Smithsonian Institution Press 2007)
[12] David M Harland and John E Catch pole, Creating the International Space Station (Springer 2002)

is still very difficult to implement. The initial approaches for the RLVs regulations in the United States were vague and received some backlashes from private space entrepreneurs who saw it as a cumbersome procedure that incurred lots of costs. In response to this, it was argued that there was a need for the United States to revise it's regulatory regime and make it less complicated and fast sweeping just like what the Russia offered at that time which had minimal constraints.

According to the industry experts Peter Diamandis and Dan DeLong[13], the process of certifying an experimental vehicle entails huge costs and a lot of paperwork, hence making it difficult and expensive to create and run RLVs. The expenses incurred during vehicle certification can be multiples higher than that of developing the vehicle itself.

The Space Act of 2004 passed in the United States sought to resolve these challenges, providing more concrete jurisdiction in controlling private human spaceflight. This was part of a wider evolution within the "Vision for Exploration" as outlined by President Bush[14] that sought to encourage government support for private sector endeavours pertaining to explorations in space. Within the United States, the most important law related to commercial space transportation is the 1984 Commercial Space Launch Act (CSLA). This act has been modified over the years in order to encourage the increase in commercial space operations, though challenges still exist for those who wish to promote both preservation of safety and exploration of creativity.

➢ **Here's a quick overview of the primary regulation-related issues worthy of concerns for RLVs:**

❖ The Federal Aviation Administration established within the U.S. Department of Transportation in the U.S. regulates RLVs through its Office of Commercial Space Transportation (AST). The agency grants licenses for launch and reentry and supervises the safety of operations for RLVs in order to ensure the health, safety, and property of the general public. Operators must adhere to stringent safety and risk assessment procedures. Furthermore, licensing goes beyond safety evaluations to include detailed assessments of the safety measures to be employed, the design of the vehicles, and the potential impacts on the environment. There are rules in place that require that the entire structure of the RLV safety management system is in place together with in-flight abort

[13] Peter Diamandis and Dan DeLong, Innovation in Space Technologies (Princeton University Press 2008).
[14] United States Congress, Commercial Space Launch Amendments Act (Public Law No 108–492, 2004)

and injuries to the public and/or the vehicle zone and protection of the public from vehicle failure.

- In addition to safety regulations, RLVs are also subject to NEPA, which is the national environmental policy act and considers the effects of the project to the surrounding environment and communities within the vicinity of the launch and landing sites. As the commercial space ventures extend towards the national airspace, the management of air traffic during both departure and arrival becomes imperative in all launches and reentries.

- The FAA works with air traffic control as necessary to avoid such situations and maintains continuous flight operations for the air traffic[15]. Generally, RLV operators must obtain liability insurance against possible damages inflicted on third parties, the amounts of which are set by the FAA based on the level of risk. In encouraging commercial activities in space, the government exposes these industries to a reasonable level of risk by offering assurances of compensation that exceed the said amounts, but only up to certain limits.

- The adoption of new technology in the operations of RLVs has equally called for the evolution of RLV'S regulators. The recent Commercial Space Launch Competitiveness Act 2015, and its recent reforms seeks to facilitate the processes and ensure consistency in the regulation in order to enhance private funding and innovation. Other current issues include the space debris generated by stages of reentry vehicles RLVs, the development of new reentry technologies, and the need for safety policies for the member countries as the companies are globally oriented.

2.1 IMPACTS OF REGULATIONS ON INNOVATION

There is a notable burden associated with complex regulatory requirements, especially so for small companies where the cost of compliance could up mountain ranges. Compliance to this standard is more than ntones carry, there are certification requirements, environmental assessments, safety skills and practices induction and provision of written records of each activity deepening the cost implication. These Industry Leaders have also observed that costs associated with certifying the product could exceed the costs incurred in developing the product making it impossible for the new player to compete. Additionally, regulatory complexities and

[15] Federal Aviation Administration, Licensing Requirements for Commercial Space Launch and Reentry (2004)

the time taken to get approvals for new technologies can also slow down their deployment in the market. Even though upholding the safety of the public remains of paramount importance, the adoption of excessive safety regulations may also curtail innovative undertakings and inherent technological risks associated with the latter. The government limits some design or some operating methods that may lower costs and improve the efficiency of the project by enforcing high safety standards.

Risk is part of space exploration these companies point out, and they cannot afford overregulations that will strangle their technological advancement. Others in the industry, such as XCOR Aerospace's Jeff Greason, argue that while regulation is necessary, there's such a thing as excessive regulation that hampers creativity and imposes unnecessary costs. Therefore some compromise must be found to keep the spirits of innovations and suit to some reasonable safety requirements.

➢ **IMPACTS OF THESE REGULATIONS :**

- One advantage of being regulated is that it reduces uncertainty, which is a crucial component of creativity. In industries that are heavily regulated such as the pharmaceutical, aviation, and financial services industries, there are rules that specify the benchmarks that companies are expected to attain. In laying down these guidelines, the regulations provide a level of assurance to companies to pursue investment in innovation and new technologies without the risk of any major legal problems.
- Policies can enhance investment in research and development (R&D) activities by providing a conducive environment for creative ideas through patents and other intellectual property rights. In this regard, patent statutes are developed to afford the inventors who are deep in research some protection from competition for a given period through exclusive rights. In this way, an inventor is able to earn revenues from his/her creation and recover the costs incurred in R&D activities. This kind of protection is very important in areas like the technology and biotechnology industries since the expenditure related to the realisation of new products is often very high.
- Governments are imposing stricter environmental regulations on companies, which are in turn giving rise to the need for them to manufacture environmentally friendly products, enhancing innovation in green technology.
- “Many regulatory obligations tend to increase expenditure, especially for small and

medium-sized enterprises (SME) that do not have the financial muscle like big corporations. The costs associated with availing oneself with the requirements of the law may further deter small entrepreneurs from venturing into daring projects. In other cases, the requirement for excessive documentation, testing, and even certification can negatively affect the product development cycle particularly for new inventions around highly regulated industries such as aerospace.

- Policies enacted to protect an existing industry and or technology can sometimes be counter-productive to disruptive innovation.

- Regulatory variations even within the same country may dull a nations capacity to innovate. For example, enterprises that deal with technology must also contend with data privacy issues especially in different continents (e.g GDPR versus CCPA). Moreover, if a business company has to deal with several different government's rules and regulations, it may also lead to higher expenses and may also prevent that company from extending its operations in other countries and so limit their innovative solutions to bare minimum."

2.3 CHALLENGES OF REGULATIONS ON INNOVATION:

- Regulatory measures are put in place to serve the public good. However, they come with excessive compliance expenditure which in most cases restricts creativity and development, especially among small and medium enterprises. Big corporations, as a result, have the reservoirs necessary to cope with such elaborate regulations, but small corporations may find this prohibitive. For instance, regulatory compliance costs in the pharmaceutical, chemical and financial industries are often exorbitant because of in-depth testing and documentation, as well as the need for certification**.** This cost is so high that it tends to deter many small enterprises from developing new and innovative ideas, thus affecting competition in the market. Furthermore, the processes involved in getting new products regulatory approved and on the market takes too long hence lowering the rate of innovations in the industry, especially for industries prone to rapid advances like the biotechnology and software development sectors.

- One of the primary problems that companies face is the ability to comply with different country and region-based regulatory policies.. Thus, such firms have to pay complex expenses that enlarge compliance on every region in which the firm operates. More so,

this fragmentation may discourage entrepreneurs from expanding the scope of their innovations as additional expenditures are required for each geographic area for compliance purposes. It can also slow the introduction of new offerings to the market, thus, limiting the speed of providing companies with advanced offerings across the borders.

➢ SUGGESTIONS

In order to encourage innovation without compromising the interests of the public, governmental authorities can think of adopting certain productive measures which are flexible and adaptive to the markets. In the recent past, a number of ways to achieve the above have come up.

- Regulatory sandboxes enable firms to experiment with new offerings or business frameworks under specific parameters while avoiding immediate adherence to fullscale regulation.
- The inclusion of innovators, specialists, and end-users in the legislative process may result in regulatory regimes which are more conducive to the development of new technologies and to changing markets. In my opinion, stakeholders allow regulators to understand the benefits and drawbacks of new technologies, allowing them to formulate rules that aim to protect society while fostering innovation as well.
- Performance standards or outcome-based regulations are those that stipulate objectives, for example, targets for reduction in emissions, instead of how such objectives are to be achieved. Such a system offers room for companies to come up with as inventive as possible means of meeting regulatory requirements, without laying emphasis on the means of achievement.

CHAPTER 4 - INDIA'S ROLE IN SPACE TOURISM - PROSPECT

The Current Status of India's Participation in Space Tourism and Its Current Benefits and Challenges Space tourism, or giving the ability to ordinary people, who are not professional astronauts, to go whales in outer space for the sake of leisure, research or business interests, has been slowly gaining popularity as a concept but the actual realisation of it has lashed up everything. India, which has completely depended on the Indian Space Research Organisation

(ISRO)[16] space program of its own, remains in the best position possible to take on this industry and realise the potential it has. The country has destroyed more than a few budgets to achieve human space flight readiness, the deployment of communication satellites, and many other recent developments put it in position number three in the commercial space travel market.

The Indian space program has already achieved some major milestones and major accomplishments which bodes well for the growth of space tourism in the country. These include:

1. Cost rationalisation of every space operation has always been a primary goal of ISRO. Mangalyaan or Mars Orbiter Mission (Mom) of 2014 is one of the most cost-effective interplanetary missions with an outlay of a mere 74 million dollars. Such cost effectiveness is a very important factor which aids in encouraging space tourism in the population who may not have otherwise considered such a venture

2. The Opportunities Presented by Human Spaceflight Developmental missions Target human space flight capabilities with the Gaganyaan mission. The target year for the first India manned mission is 2025[17]. This program aims to launch Indian astronauts into space to greet the Indian and international populations in the skies above India. All applications including space tourism will be targeted by the capabilities created for Gaganyaan.

3. Uniting with India has helped build connectivity with NASA, ESA[18] and Roscosmos and others, enhancing their technical capabilities. Such collaborations may prove favourable in creating and encouraging space tourism within the countries.

4. Commercial Launch Services ISRO commercial arm, Antrix Corporation[19], and subsequent, NewSpace India Limited (NSIL) have successfully placed satellites of many countries in orbit. These capabilities showcase India's potential in providing commercial spaceflight services in near future.

4.1 SCOPE OF GLOBAL SPACE TOURISM INDUSTRY

The global space tourism industry is on the rise with notable advancements expected brazenly indulged by private companies SpaceX, Blue origin, Virgin Galactic among others. As per the

[16] Indian Space Research Organisation (ISRO), Annual Report 2024 (ISRO, 2024).
[17] Government of India, Mars Orbiter Mission (Mangalyaan) Achievements (2014) https://www.isro.gov.in/missions/mangalyaan
[18] NASA, ESA, and Roscosmos, Global Space Collaboration Framework (2022)
[19] Antrix Corporation Limited, Commercial Launch Services in India (Antrix 2021).

findings industry analysis reports space tourism will reach up to $ 8 billion by the year 2030[20]. Some of the segments in the industry are as follows;

1. Entails short vacations to the edge of space for a moment to experience weightlessness and look out at the curvature of the earth.

2. This in turn advances the ability to take extended trips having experiences of remaining at space stations or lifestyles up in space flanking the planet Earth.

3. Distant future estimates feature tourism in and about the Moon or even the movie â€˜the Martian but such ideas are still at an immature state. A case can be made that given the economic success of Indian space missions as well as the fast reaching capabilities for carrying humans in space, it can afford to focus on the sub-orbital and orbital tourism markets for a healthy competition.

4. It is possible for India to carry out space missions at a low cost thereby giving an edge over other countries in the area of space tourism. Affordability may reach an emerging market such as lower middle class people who would like to travel for adventure.

➢ Understanding India's Edge In Space Commerce With Respect To Space Tourism

1. It is possible for India to carry out space missions at a low cost thereby giving an edge over other countries in the area of space tourism. This affordability could appeal to tourists in emerging economies as well as lower and middle-income segments.
2. The location of India on the circumference of the earth near the equator is a geographical advantage in that it takes much less energy to launch the rockets into space.
3. Tech startups in India such as Skyroot Aerospace and AgniKul Cosmos are on the onswing working on affordable space flight technologies[21]. These private players alongside ISRO's available capabilities will hasten the development of space tourism.
4. The Space program in India has enjoyed the support of both the government and the people thereby creating favourable conditions for the advancing of technology.
5. The existing tourism sector in India is likely to provide space tourism alongside other

[20] Virgin Galactic, SpaceX, Blue Origin, 'Space Tourism Industry Growth Forecast' (2023) Spaceflight Magazine.
[21] Skyroot Aerospace and AgniKul Cosmos, Space Flight Innovations in India (2023) https://www.skyroot.in

interesting activities enhancing the overall experience for travellers.

➢ **Difficulties encountered by India in promoting Space Tourism**

India has the potential in space tourism however, there are many issues that has to be looked into:

1. Most of the space tourism activities demand the creation of new, extremely expensive infrastructure such as vehicles, recreational launch sites, and training facilities, which do not come cheap. Presently in India, there are no defined laws or regulations governing commercial space tourism and human space activities
2. Passenger safety is the most important consideration in space tourism. Equally important is the provision of efficient life support systems together with the emergency recovery and risk reduction systems
3. Companies such as SpaceX and Blue Origin[23] have already ventured out into the tourism market which is focussed on space flying. There are threats that such companies may succeed because of their cutting-edge technologies and good market presence.
4. Public awareness as well as the flyers of course space tourism is considered as something which only rich people can afford. Achieving that looking attractive and appropriate for people around the world will take impressive advertising campaign together with effectively lower pricing policies Such barriers could hinder people's tourism ambition.

➢ **India may employ the following strategies in order to make the most of the sky rocketing space tourism market**

1. Gaganyaan mission should be seen as a means to test the technologies and infrastructure eventual space tourism projects would be relying on. Successful human spaceflights demonstration will embolden the people and docker investors that they can also be involved in the business.

2. The Indian government is recommended to pass some privilege to the private sector, allowing them to invest in this case, in space tourism. Public-private partnerships[22]

[22] S Kulkarni, 'Opportunities for Public-Private Partnerships in Space Tourism' (2023) 19(3) India Journal of Innovation and Policy Studies 68.

would foster creativity and diminish expenditures.

3. Construction of specialised sites for launches, establishment of training camps, hotels, and other associated amenities is a must. These investments may also help provide jobs for the growth of the economy.
4. It is crucial to assure potential investors that in space tourism operations, there are clear guidelines, legal and operational safety measures in place to protect all stakeholders concerns.
5. According to India, these partnerships with existing players in the field will further the local space tourism industry by providing access to knowhow and technology.
6. Few, if any, people grasp the potential and advantages of space tourism. If only this can be ascertained, the zeal and enthusiasm will be realised.

➢ **FUTURE PROSPECTS**

1. There has been tremendous advancement in technology, and therefore India can be involved in the making of space hotels and orbital stations that would allow people to stay in space for long durations.
2. It is possible that space tourism could meet certain scientific objectives as well as education efforts geared at generations of scientists and engineers to come.
3. Cultural and Entertainment Opportunities Space travel for recreation could have a cultural aspect, for instance, decorated objects from various societies on Earth could be taken into space, or else concerts could be performed in zero gravity environments.
4. Space tourism in India can be practiced with a responsible plan with India at the forefront.

India has the potential to emerge as a key player in the global space tourism industry. The state this high-potential country has reached will allow not instead of all implementing its space tourism infrastructures and marketing programs, fighting for the market, drinking space tourism services[23]. Nevertheless, determinants such as a high level of a barrier to entry due to capital intensity, the non-existence of frameworks as well as security measures canvassed need

[23] R Balasubramaniam, 'Public Awareness and Economic Barriers in Indian Space Tourism' (2023) India Economic Review.

to be tackled. It is clear that the nation is capable not only of enhancing the performance of the space tourism industry but also of doing the optimistic evolution of inspiring and facilitating the future development. With the push toward democratising access to outer space becoming an attainable objective, India's place in such a development is beyond exaggeration.

CHAPTER 5 - PASSENGER SAFETY AND RISK MANAGEMENT IN SPACE TOURISM

As far as space tourism goes from being imagined to an actual service, the safety of the passengers and the management of the risky behaviour has become a major concern. Space tourism includes sending people who are not trained astronauts to areas that are extremely dangerous such as sub orbital, orbital or even deep space areas. This newly emerging business field calls for extensive research and requires the incorporation of novel technologies and proper legislation to tackle the challenges brought about by space tourism. This article discusses the paramount importance of the passengers safety and risk management in space tourism addressing issues of potential risks, prevention plans, legal system, and the share of responsibilities among the parties involved[24].

As the name depicts, space tourism and activities associated pose more risk than the usual aviation activities or any other land-based tourism. This is due to the unpredictability which space as an environment offers, current technology issues and scanty experience of human spaceflight. *Some examples of the risk areas include:*

- During launch and re-entry, passengers are subjected to high G-forces that are potentially harmful to the body. Those with underlying health conditions are likely to be the worst affected.
- Short term exposure to microgravity has been known to cause dizziness or motion sickness, atrophied muscles, and changes in distribution of fluids within the body.
- People in space suffer more exposure to cosmic and solar radiations than people on earth and as such are prone to more radiation-related ailments.
- There may be failure of some life support systems, some propulsion system, or even navigational aids which may lead to disasters.

[24] Government of India, Regulations on Commercial Space Tourism (2023)

- The restricted and remote setting of the spacecraft is prone to stress, anxiety, or claustrophobia in people, and this fact is more problematic in long-term missions. Clashing environments of space can also result in panic for individuals that have not undergone sufficient training

  The limitation of spacecraft extends to design and includes but is not limited to engine failure, loss of cabin pressure, or breakage of the hull. Space debris poses a threat to the safe operation of the spacecraft.

- Space weather phenomena such as solar winds and geomagnetic storms have the potential to disrupt communication links and present high levels of radiation to people onboard.

- Extreme temperature associated with re-entry into the atmosphere of the Earth may cause overheating of the thermal protection system if performed in an incorrect manner.

5.1 SAFETY MEASURES IN SPACE TOURISM

In order to provide safety for passengers, we expect the space tourism companies and regulators to put into practice the comprehensive strategies which mitigate the threats.

These can be classified into.

- The able of the space-capsules should ensure the presence of oxygen, control of temperature and handle wastes.

- The structures of the space crafts should be able to resist high forces, pressure differentials and heat stresses[25].

- Introduction of extra systems that will take over in case of primary systems (for example, in propulsion, navigation) failures improves the reliability of performance.

- Use of special shields to protect against the impact of debris in the space environment.

Pre-Flight Medical Screening

This is through providing thorough medical check-ups to screen the potential passengers and ascertain their suitability in regard to physical stress during the flight. Screening protocols should also consider the age and cardiovascular health as well as other aspects that are related to the personal risk.

[25] A Saini, 'Microgravity and Its Effects on the Human Body' (2022) 39 Journal of Space Medicine 78.

- All passengers are briefed on the operations of the space-craft, safety measures, and emergencies.
- These are exercises meant to ready the passengers for the G forces and microgravity effects.

Help in training to cope with stress, disorientation and other mental challenges.

- Adding such materials in the structuring of spacecraft further aids in minimising the radiation levels. There are also space weather forecast that helps in mission planning when the solar activity is at it is lowest .
- These are capsules or pods that are built to facilitate quick departure from a vessel in times of danger
- Joint efforts with space agencies to come up with rescue missions strategies for a lost or troubled spacecraft.
- The systems and health of the crew on board the spacecraft are always watched over by ground control teams, thus immediate essential aid is offered whenever any discrepancies are noted.

5.2 RISK MANAGEMENT AND STRATEGIES

Risk management is the process of dealing with risks by determining, measuring, and lowering the chance of dangerous occurrences to increase the safety of the passengers[26]. Space tourism companies have to engage in a risk management-oriented approach and the requirements include, but are not limited to the following:

- Carrying out risk evaluations throughout every stage of the mission with all its three parts-including pre-flight, in-flight, and post-flight activities. Conclusively determining worst-case-scenarios, along with assigning estimations for the occurrence likelihood in attempts to adequately focus on the measures directed at reduction of such risks.
- Appropriate Investments will be funnelled towards modern methodologies and processes so that spacecraft will be tested for durability and functionality apt to executing its mission. All the discussed risks including that of system failure and adverse conditions will be covered by implementing appropriate measures. Engaging with underwriters to mitigate passenger safety exposure risks through financial liability

[26] J Patel, 'Risk Management Strategies in Space Tourism' (2023) 15 Space Economy Review 102.

underwriting and other associated with costs. Withholding agreements in which passengers consent to and understand the dangers posed in the course of traveling in space.

The primary aim is to learn from every single mission undertaken to improve safety and risk management. Also, taking the comments of the passengers and the crew into account for better relevance in future operations.

Regulatory Frameworks for Safety in Space Tourism

A healthy structure for regulation is necessary for the establishment of safety measures and accountability in the space tourism sector. Some of these include:

- The United Nations Office for Outer Space Affairs (UNOOSA)[27] is responsible for international instruments including the Outer Space Treaty, which offers the overarching principles on the use of outer space. Countries such as the United States and those of the European continent have made laws regulating commercial space travel. India is also creating its own legislation for human spaceflight and space tourism.
- Space tourism operators need to get licenses for their spacecraft and use of those aircraft in operations and prove to meet the safety standards set. Certification programs ensure that the spacecraft and spacecraft equipment have undergone quality controls by meeting provided tests and operational requirements.
- Passengers should be warned of the potential risks associated with the flight prior to the commencement of it. Passengers also have to be offered insurance and training for that matter.
- Space tourism enterprises must be liable for their passenger's safety. Compliance with safety regulations can be assured through independent evaluation and inspection.
- Making sure that space tourism is safe for all is the responsibility of various stakeholders and not just one, for instance.

While space tourism carries a heavy burden of risk in terms of passenger safety and risk management. The industry can afford to take a proactive stance which involves the use of state of the art technology, appropriate training as well as strong legal systems, so that all the threats are confined and everyone has fun safely. Since mankind is moving towards a new journey in

[27] United Nations Office for Outer Space Affairs, Outer Space Treaty (UNOOSA, (1967)

this regard, safety should be the main concern not only to save lives but also to ensure that people will have faith in the reality of outer space adventure and tourism

CHAPTER 6 - RECOMMENDATIONS AND CONCLUSION

RECOMMENDATIONS:

The emerging acceleration in space tourism as a business element reveals shortcomings in the current regulation of outer space that was created primarily for state and scientific voyages. In fact, treaties such as the Outer Space Treaty (1967), the Liability Convention (1972), and the Registration Convention (1976) do not include specific aspects that will regulate the commercial, individual or tourism-oriented activities in the space.

Regulatory compliance becomes an even greater challenge with the advent of companies such as SpaceX, Blue Origin, and Virgin Galactic, as the concerns of existing legislation address only partially the matters concerning the safety of passengers, risk management and environmental protection. As well, more attention is required in its regulation as apart from economic activities whereby attractions are simply marketed, space itself has become a commercial zone and there is need for new space laws the current space laws didn't cover few laws those are here as follows :

Defects in Existing space laws:

- Present agreements like the Liability Convention only mentions on damage caused by space objects but not the liability concerning passengers for instance in space tourism flights.
- Ambiguity with respect to the factors that cause accidents, whether the operators, the manufacturers, the launching states or someone else.
- There is no international comparable approach for licensing and oversight of the commercial space tourism sector.
- Geographically distinct locations share jurisdictional boundaries with spacecraft operations and may result in jurisdictional conflict.
- There have been no positive laws or policies that would require tourists traveling to space to understand the risks that they are exposed to while travelling to the space.
- Rules do not foresee obtaining and filling wide scope of consents or agreements of informed waivers.

- Legislation currently in effect does not include provisions that would enable to insure passengers, crew and third party populations involved in space tourist activities.
- In conclusion there are no hard laws that are globally accepted that deal with the internal environmental concerns brought by space tourism such as space debris and emissions caused by launching rockets.
- So far, the existing legal framework frowns at national claims to ownership of various celestial objects. However, it is silent on the matter of commercial exploration and exploitation of these resources primarily for tourism.
- There are currently no global rules obligating space tourism service providers to follow training or medical requirements for customers and crew

Proposal for new laws to address this issue

- Require operators to ensure truthful and full risk communication to passengers and acquire informed consent signatures.
- Operators must secure adequate insurance coverage for passengers, crew, and third parties in the event of any accidents
- An intergovernmental organisation should be formed to provide for the imposition of the minimum licensing standard on space tourism providers.
- Notification and Permission Should be Provided to National Domestic Space Agency before Operation of Any Spacecraft by the Respecting Entity and Also to an International Registry with an Operating Details
- Regulations on emissions from rockets and other sustainable space development practices like the use of reusable launch systems shall be implemented.
- The monitoring and sanitisation of outer space by the penal forces shall be demanded after the generation of tourism in space.
- Formulate international laws that will regulate space resources use and exploration for tourism and provide the parties with mechanisms for resource benefit distribution.
- Regulations on training of the crew and the passengers including undergoing medical examinations and training for weightless conditions should be introduced.
- All space vehicles built for the purpose of transporting individuals shall undergo a

stringent series of tests to ascertain their safety standard

- Enact regulations on the licensing and control of spaceports that will ensure their compliance with international safety, environmental, and operational criteria.

CONCLUSION

Space tourism is incredibly promising and revolutionising for humankind. However, this revolution will have to be a result of progress which will be carefully regulated. By pursuing in collaboration and innovation, taking into account the problems such as safety, liability or balanced growth, the governing regulatory bodies will be able to lead into the development of an efficient and sustainable space tourism sector. The fact that space tourism has the potential to change the face of the travel industry is not in question. With the demand for affordable and accessible travel to space, it becomes imperative to put in place flexible regulatory frameworks that promote innovation and safety while allowing for growth.

This paper has discussed the ways in which existing space legislation, which is focused on traditional government and scientific missions, is inadequate to deal with some of the issues that commercial space tourism has introduced. Among these issues are the questions of the authorisation and supervision of space activities, the registration and control of space assets, and the causes of action for third parties, all of which point to the necessity for changes in the domestic and international regimes of outer space law.

All stakeholders – states, private enterprises, and international institutions – have a duty to ensure that this new form of entertainment is not only a privilege for the few but truly available to all. With the commercialisation of space tourism, it is important to review the adequacy of the existing space laws in dealing with the challenges and opportunities posed by this new frontier. New laws are required to protect the passengers, liability issues, encourage creativity and protect the environment. In doing so, the concerned governments and international bodies will be able to encourage the development of space tourism as an economic activity within the ambit of fairness, safety and international collaboration.

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