

The Environment and Space Activity

As the exploration and development of space explodes in the coming years, the environmental and legal impacts of these activities need to be defined and regulated. Space law originated soon after the launch of Sputnik I, and while over 50 years have passed since the creation of this first Committee, space law is still loosely regulated and contains many gaps in essential terms and procedures necessary to prevent the pollution and destruction of outer space and the Earth. While Mexico has signed existing treaties created to protect the environment, including the Montreal Protocol, the Air Pollution Conference, and the Kyoto Protocol, the regulations set by these treaties lack consensus on how to protect the environment against pollution in outer space. Although Mexico’s space agency is new, having been created in 2010, the state has been involved in UNOOSA and international treaties regarding space since the joining the Committee on the Peaceful Uses of Outer Space (COPUOS) in 1959[[1]](#footnote-0). Mexico has ratified all five United Nations treaties on outer space in addition to myriad other treaties dealing with space activities created by UNOOSA and its subcommittees. Mexico believes in upholding these treaties in order to ensure continued the peaceful exploration and use of outer space.

The most pressing issues to consider in the exploration and use of outer space are the environmental impacts of the black carbon created by the launch of objects into space and the space debris created by space objects, collisions between objects, and the materials shed by objects. According to the Outer Space Treaty of 1959, States must “avoid harmful contamination of space and celestial bodies.”[[2]](#footnote-1) Black carbon is soot emitted when launching rockets into space, and contributes to greenhouse gasses, which cause global warming. As countries and companies increase participation in outer space, the black carbon released from launching rockets may pose a significant threat to the environment, as it stores nearly as much heat in the atmosphere as carbon dioxide. Mexico believes that the international community must create regulations for black carbon emissions in order to curb what may soon become a major contributor to climate change. A consensus on how to regulate and combat the threat of space debris is even more urgent in order to secure the future ability of humans to explore and use outer space. As the Liability Convention established that “countries are liable for damage caused to other spacecraft only if they act negligently,”[[3]](#footnote-2), it is often difficult to determine who is responsible for these damages because of the near impossibility of tracking every piece of space debris. In order to cut down on the pollution, possible damages, and liabilities of space debris, Mexico calls for initiatives to mitigate the growth of space debris through policies such as “one up-one down” that remove a satellite from orbit for each one launched, self-removal for space objects, and external removal of space debris. Mexico encourages cost-effective and efficient external removal systems in development by the United States and the European Space Agency, such as e.Deorbit, scheduled for testing in 2021[[4]](#footnote-3). Mexico believes that all space-faring nations must continue to develop orbital debris mitigation techniques in order to keep outer space open and free to both space-faring states and future space-faring states. Without the regulation, technology, and international cooperation needed to curb black carbon emissions and the growth of space debris, harm to the Earth, current space infrastructure, and the future of the exploration and development of space are in danger.

The environmental impacts of space grow with increased international participation in outer space, as does the impacts on power and influence of countries with a presence in space. As of now, the United States dominates with more satellites in outer space than all other countries combined. This dominance has far-reaching implications, possibly furthering power imbalances that increase the negative externality of space pollution on polluters, wherein the cost of pollution falls on third parties, rather than on the polluters. In order to keep space free, open, and peaceful, pollution including black soot and space debris must be regulated to allow for the participation of all desiring states in outer space.

The Militarization of Space and International Law

The exploration, development, militarization, and most recently, the weaponization of space have been some of the most poorly regulated areas of international law since the beginning of the Space Race in 1957. Agreements like the Outer Space Treaty set guidelines in regard to the extra-terrestrial storage of weapons of mass destruction and military usage of celestial bodies[[5]](#footnote-4). These encourage peaceful uses of outer space, but still leave gray areas due to a failure to define what constitutes a “space weapon” and address the legality of ballistic missiles, as well as the level to which nations must share the technology and intentions of their space programs. Most countries, even the most powerful ones like the U.S., China, and Russia, are opposed to the use of any weaponry in space, but are likely developing such technologies internally.

As dictated by the Outer Space Treaty and subsequent resolutions, no country should be able to use space to develop technologies to be used for warfare. All space endeavors should be peaceful in nature, meaning they cannot aim to actively harm another country or its people. The United Nations Office for Outer Space Affairs (UNOOSA) should be notified of all new and continuing outer space projects, including satellite deployment and purposes, and reserve the right to veto proposed projects if they appear to be in violation of any existing treaties and agreements, particularly those concerning weapons development and deployment. The Committee on the Peaceful Uses of Outer Space (COPUOS) can play an integral part in promoting transparency[[6]](#footnote-5). In addition to its pre-existing subsidiaries (Scientific and Technical Subcommittee and Legal Subcommittee), a forum for the sharing and discussion of potentially dangerous projects by each nation’s space agency should be integrated.

Cooperation should be the cornerstone of all space projects and developments in the modern Space Age. As seen with the success of the International Space Station, international collaboration can result in far greater progress than if any single country could accomplish. The ongoing research being done on the International Space Station yields knowledge that benefits all nations on earth, and no nation is disadvantaged by this cooperation.

Not only does open communication between space agencies and the United Nations prevent potentially devastating weapons technologies from being developed and implemented, but it also leads to the progression of beneficial technologies and an understanding of our world and the universe beyond. If each space program operated with the knowledge that their actions were known to the UN and to their fellow space agencies, and that they can be restricted, the weaponization of space will be limited and peaceful use of space encouraged.

Space Commercialization

The commercialization of space is a rapidly growing field that holds the potential for both great risk and great reward to humanity. In order to keep outer space open and free for all space-faring states, regulations need to be set in order to ensure safety without blocking the potential for exploration and investment.

The commercialization of space is inevitable and can be beneficial to all of humanity through improved access to telecommunications, global positioning systems (GPS), and improved weather forecasting. The Agencia Especial de Mexica (AEM), Mexico’s space agency, has overseen the launch of two mexican satellites into orbit, MEXSAT 2 and MEXSAT 3[[7]](#footnote-6). These satellites aim to improve telecommunications and internet access in Mexico. Mexico has also become “the world’s top destination for aerospace manufacturing investments in each of the last four years.”[[8]](#footnote-7) These investments have increased Mexico’s cooperation with the international community as well as increasing its participation in outer space activities, which benefits its citizens by creating jobs and improving telecommunications.

Mexico supports regulations that promote the safety of space exploration and use while also allowing for the growth of the space commercialization. With these looser regulations, there is a higher likelihood that corporations and governments will invest in space exploration and development and will therefore invest in the research, development, and manufacturing of the technology needed to do so. As Mexico has an expertise in high-tech manufacturing and a history of investments with industrial power such as the United States and Russia, Mexico will benefit from the likely manufacturing of aerospace parts in the country, giving a boost to the economy as well as Mexico’s own space program.

Space tourism and commercial exploration need specific regulations that protect passengers and the environment, but do not extensively inhibit investments in this rapidly growing sector. These regulations will promote investments, yet they must also set guidelines for how to mitigate the growth of space debris as well as black carbon in order to promote sustainable practices that do not harm the environment. Protections should also extend to the safety of passengers and astronauts, which, according to the Outer Space Treaty, are “envoys of mankind” and are to be protected at all costs[[9]](#footnote-8). Keeping with the Liability Treaty, states should be liable for all damages done to the space objects and citizens on those objects of other nations if the former acted negligently. This should extend to corporations and private missions as well, meaning that the risks, costs, and responsibilities of space exploration should be borne by the nation or corporation that explores and uses space. Regulations regarding the health of passengers and astronauts should also be created. Before just anyone can be launched into space, life saving medical procedures in space need to be perfected. For example, before any person with a possibly dangerous heart condition can be launched into orbit or sub-orbit, procedures must be created and perfected in micro-gravity that can save a person from a heart attack.

In sum, space commercialization has the potential for both infinite benefit and infinite harm to humanity and the environment. Regulations must balance the need to protect the environment and the openness of outer space with the need for cost-effective exploration and development of it. Regulations must allow for the future development and commercialization of space which may benefit humanity with improved communications and new energy sources, while also protecting the environment from a potential increase in space debris, black carbon, and resources harvested to build vehicles for space exploration and use.

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2. U. (n.d.). The Outer Space Treaty. Retrieved November 02, 2016, from http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html [↑](#footnote-ref-1)
3. Kleiman, M. J. (n.d.). Introduction to Space Law. Retrieved November 01, 2016, from http://www.americanbar.org/groups/young\_lawyers/publications/the\_101\_201\_practice\_series/space\_law\_101\_an\_introduction\_to\_space\_law.html [↑](#footnote-ref-2)
4. E. (n.d.). E.Deorbit. Retrieved November 03, 2016, from http://www.esa.int/Our\_Activities/Space\_Engineering\_Technology/Clean\_Space/e.Deorbit [↑](#footnote-ref-3)
5. U. (n.d.). The Outer Space Treaty. Retrieved November 02, 2016, from http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html [↑](#footnote-ref-4)
6. E. (n.d.). E.Deorbit. Retrieved November 03, 2016, from http://www.esa.int/Our\_Activities/Space\_Engineering\_Technology/Clean\_Space/e.Deorbit [↑](#footnote-ref-5)
7. S. (n.d.). MexSat-1 – Spacecraft & Satellites. Retrieved November 02, 2016, from http://spaceflight101.com/spacecraft/mexsat-1/ [↑](#footnote-ref-6)
8. 2015 Investment Climate Statement - Mexico. (n.d.). Retrieved November 04, 2016, from http://www.state.gov/e/eb/rls/othr/ics/2015/241661.htm [↑](#footnote-ref-7)
9. U. (n.d.). The Outer Space Treaty. Retrieved November 02, 2016, from http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html [↑](#footnote-ref-8)