

NASA Commissioners for Planetary Environment Sustainability: The Importance of International Relationships to Maintain and Improve Space Policy

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ABSTRACT

The National Aeronautics and Space Administration (NASA) commission includes initiative focusing on international relations theory and international collaboration in the socio-political environmental. The Rio Declaration of 1992, commonly applied towards sustainable development and environmental protection, contributes to modifying international space law (Deva Prasad, 2019). However, review and revision of the current U.S. space policy for future global space guidelines and environmental science safety is needed. NASA has been previously tasked with expanding scientific research projects in environmental science (Maguire, 2010). The accomplishment of these goals requires the development of new space policies.

Keywords: Space Policy, sustainability, Apollo, NASA budget

Comisionados de la NASA para la Sostenibilidad del Medio Ambiente Planetario: La Importancia de las Relaciones Internacionales para Mantener y Mejorar la Política Espacial

RESUMEN

La comisión de la Administración Nacional de Aeronáutica y del Espacio (NASA) incluye una iniciativa centrada en la teoría de las relaciones internacionales y la colaboración internacional en el ámbito sociopolítico ambiental. La Declaración de Río de 1992, comúnmente aplicada al desarrollo sostenible y la protección del medio ambiente, contribuye a modificar el derecho espacial internacional (Deva Prasad, 2019). Sin embargo, es necesario revisar y modificar la actual política espacial estadounidense para futuras

directrices espaciales globales y la seguridad en las ciencias ambientales. Anteriormente, la NASA se ha encargado de ampliar los proyectos de investigación científica en ciencias ambientales (Maguire, 2010). El logro de estos objetivos requiere el desarrollo de nuevas políticas espaciales.

Palabras clave: Política espacial, sostenibilidad, Apolo, presupuesto de la NASA

美国国家航空航天局行星环境可持续性委员会成员：国际关系对维护和改进太空政策的重要性

摘要

美国国家航空航天局(NASA)委员会的倡议聚焦于国际关系理论以及社会政治环境领域的国际协作。1992年的《里约宣言》被广泛用于可持续发展和环境保护，并有助于修改国际空间法(Deva Prasad, 2019)。然而，为了制定未来的全球空间指导方针和环境科学安全，有必要对当前的美国空间政策进行审查和修订。NASA此前已被委派拓展环境科学领域的科研项目(Maguire, 2010)。实现这些目标需要制定新的空间政策。

关键词：空间政策，可持续性，阿波罗计划，NASA预算

The focus of this research is the National Aeronautics and Space Administration (NASA) initiatives on the future of space policy. This paper will also focus on scientific research projects for environmental planetary safety. The Rio Declaration of 1992 can contribute to the modification of an international space law which includes the applicable rule of principles for sustainable development and environmental protection (Deva Prasad, 2019). The NASA Commission initiative on socio-political environmental factors would help to improve space policy. Dione et al. (2023) explain that

social political factors are crucial for the development of international policy.

Since 1930, space traffic policy has been modified by law and policy for space safety and sustainability (Verspiere, 2021). The NASA plays an important role in substantial work on the space exploration programs initiative, and scientific research projects. The United States administration could assist by influencing the NASA commission (Rius-Ulldemolins et al., 2023). Socio-political factors such as cultural policy are important to adopt for the renewal of the current space traffic management policy. In 1958, the United

States policymakers adopted Space Act (Shanaban, 2018). This Space Act was the first policy created by former president Dwight D. Eisenhower. The creation of this policy was the result of the Soviet Union launching a satellite into space (Tucker & Alewine, 2023). Since its inception, the U.S. national security defense has been developing policy for space exploration safety.

According to an article by Deva Prasad (2019), the Moon Agreement created in 1979 was ineffective to maintain the space environment safety. In addition, the author explains that the agreement's principles were denied in the United States to govern the Moon space traffic and others celestial bodies on exploration activities. Takeuchi (2019) indicates that the Federal Aviation Administration was working on a business strategy to develop a civil system for NASA Space Traffic Management. During the first term of the U.S. president in 2018, Donald John Trump signed Space Policy Directive 3; Verspieren (2021) provides an understanding of the objective to the current United States national space policy. The objectives on space traffic management policy consist of technical guidelines, launch risks assessment, and on-orbit collision avoidance services, etc. The socio-political environment plays an important role in the future of a global space policy to avoid orbit space conflicts (Takeuchi, 2019). The author describes a crucial interest in international space policy and the theory of global space traffic management policy in the world era of conflict.

Former president John F. Kennedy led a successful space plan which led to the first humans landing on the Moon in 1961 (Gisler & Sornette, 2008). The United States is a historical leader on space exploration accomplishment. Shanaban (2018) mentioned the driven program of first humans Moon landing and safely returned to earth. The hope of NASA is that the agency will have the first human Mars landing. The United States space exploration business, strategic with the creation of capable vehicles and artificial intelligence applications, hopes to obtain the objective goals (Chien & Morris, 2014).

After the many years, the Biden administration agreed on the NASA Artemis program. Borowitz et al. (2024) tell us that the Artemis program will be the human Mars landing vehicle. Former President Biden's strategy supported space exploration to enhancing the United States' national security, economy, and international relations (Borowitz et al., 2024). The agency space exploration and research programs support the United States economy with new research activities. One of the biggest achievements of NASA on space exploration was the application of an artificial intelligence automation monitoring system in the Kepler telescope (Chien & Morris, 2014). The Kepler telescope was sent to space and discovered exoplanets.

Artificial Intelligence played an important role for human collaboration with extraordinary commitment to deep learning and improving job performance (Livingston & Risse, 2019).

Machine learning has changed the world by collaborating with humans to work, educate, and communicate remotely. Dione et al. (2023) emphasize the importance of the socio-political factors that can influence technological innovation and the importance of artificial intelligence on research projects to identify objects. Artificial intelligence technology applications have been improving the United States' commercial and military markets on technology capability and increasing job opportunities.

The United States contingency strategic plan initiative includes international relations theory on space exploration and cooperation (Pace, 2022). The international relations theory application is valid for United States international partners on space exploration. However, the international relations theory is not applicable to U.S. space policy. The National Aeronautics and Space Administration represents a valuable interest in working with astronauts from around the world on research projects (Ben-Itzhak, 2025). A crucial example is the International Space Station, which has opened new frontier where individuals from 22 countries work on research projects, which helps emphasize the importance of the agency international partners who contributes to obtain the objective for the environmental planetary safety. According to one source, the historical the United States Moon landing was a result of a collaboration with the Union of Soviet Socialist Republic (Gisler & Sornette, 2008). The business strategy from the agency competitive partners

on projects provides an important illustration for better future decision making. A China robotic vehicle has landed on the Moon opposite side from the U.S. previous landing (Gobble, 2019). The Chinese landing on the Moon brought opportunity to a new perspective of understanding the other side of the Moon. Gobble illustrates the difference atmosphere image from the United States captured by China robotics machine from the Moon.

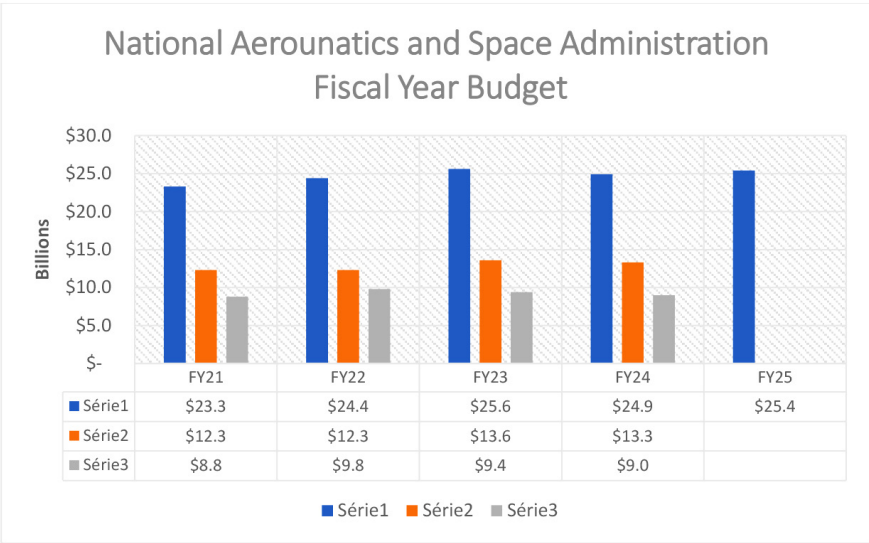
Gobble (2019) mentioned an initiative of innovation in research projects in the support of scientific investigation and the development of new capacity to prevent and manage unknown events such as the pandemic COVID-19. The role of management control practice of sharing information can enable communities to prevent mental challenges from difficult events, and to recover from environmental challenges human behavior (Tucker & Alewine, 2024). The experience of the pandemic self-distance protocol to prevent viruses around the world caused ethical challenges in communities.

The importance of environmental preservation in the United States brought the opportunity of working with international organizations in the industry on research projects. The Apollo Next Generation Sample Analysis program integration is the lunar experimental observation mission from the Moon's atmosphere material for analysis (Shearer et al., 2024). The authors promote the crucial role of Apollo—business strategy samples analysis can work in scientific research projects

to avoid future pandemics, viruses, and food safety. The agency has the capacity and charge to work on food safety research projects (Tibebu et al., 2024). NASA has been involved in food processor requirement negotiations for space mission since 1960.

The pursued interests of the U.S. government initiatives on space exploration has been successful for operation decision making (McKeown et al., 2023). During the presidential term of George W. Bush, the budget investment in the NASA business strategy initiatives contributed to the completion of the International Space Station. More-

over, Bush had an objective of a future human Mars landing with the creation of vehicles and climate change research projects (Maguire, 2010). There are political factors that contribute to NASA obtaining a successful budget. According to the source the Congressional Budget Office, managed to conduct an agency budget analysis, the United States government politically influenced the agency with monetary affordability (Gobble, 2019). At the time, the agency represented less than two percent of United States fiscal year discretionary federal budget; therefore, the agency had to reduce the cost in science and research projects.



The importance of the United States government role in the agency’s affordable budget. According to the National Aeronautics and Space Administration financial reports from fiscal years 2021 to 2024, the annual budget analysis is from the selected years in business performance with expenses in billions of dollars (Rius-Ulldemo-

lins et al., 2023). The 2025 fiscal year report provides an estimated \$25.4 billion dollars budget requested. In 2021, the Covid-19 pandemic disrupted the world economically (Patton & Egel, 2022). The disruption of the pandemic was the cause of the agency’s lower performance business operation in FY21. The agency’s fiscal year 2021 expenses

were around one-billion-dollars less in Series3 chart comparison with 2022 fiscal year budgets. The chart shows the estimated illustration of consistency with an average of \$24.7 billion dollars. The range estimated budget from these fiscal years is from \$23 to \$25 billion dollars (McKeown et al., 2023).

Conclusion

The International Space Station has been an extraordinary investment. The National Aeronautics and Space Administration International Space Station office offers the opportunity to work in space in scientific research projects, and the space station serves as international

astronaut's office to work on research projects. In addition, the input of the United States Congressional Budget Office in the agency's fiscal year affordable budget is divided into seven entity accounts. The two accounts in focus are space exploration and research projects that give employment opportunities. NASA has brought crucial achievement results from space exploration and the completed research projects. The international relations theory and socio-political environmental factors provide the importance of understanding in space policy applications in the way of social political factors that could affect the intent of new space policy regulations.

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