JOURNAL OF INTELLECTUAL PROPERTY AND HUMAN RIGHTS

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882

http://journals.academiczone.net/index.php/jiphr

International Space Law and Climate Change Adaptation in Africa: A Systematic Review

Isah Yahaya[1], Etim Effioanwan, E[2], Jennifer C Adike[3], Ahmed R Larai[4], Haruna H Sidibage[5], Attahiru I. Emmanuel[6], Ishiaka Nafisat, A.[7]

[1,4,7]Legal Department, National Space Research and Development Agency, Abuja, Nigeria.

[3,5]Space Regulation and Spectrum Management Department, National Space Research and Development Agency, Abuja, Nigeria.

[6]National Space Research and Development Agency Abuja, Nigeria.

Corresponding author: davidoyibo08@gmail.com

Abstract: *Climate change poses significant threats to sustainable development across Africa through increasing temperatures, recurrent droughts, floods, desertification, coastal erosion, biodiversity loss, and food insecurity. As these challenges intensify, space technologies have emerged as indispensable tools for climate monitoring, disaster risk reduction, environmental management, and adaptation planning. This review examines the role of international space law in promoting climate change adaptation in Africa by synthesising existing literature on international treaties, regional space policies, national legal frameworks, and institutional arrangements. The review discusses the relevance of the 1967 Outer Space Treaty, the Liability Convention, the Registration Convention, the United Nations Committee on the Peaceful Uses of Outer Space Guidelines for the Long-term Sustainability of Outer Space Activities, the United Nations Framework Convention on Climate Change, and the Paris Agreement in supporting climate resilience across Africa. The study further reviews African initiatives, including the African Union Space Policy and Strategy, the African Space Agency, and the Global Monitoring for Environment and Security and Africa Programme.*

Keywords: *Space law, climate change adaptation, Africa, Earth observation, environmental sustainability, African Space Agency.*

Introduction

Climate change has emerged as one of the most significant environmental and developmental challenges confronting Africa in the twenty-first century. Climate change has also become an important subject within the study and practice of international environmental law because of its transboundary impacts and the need for coordinated international responses[1]. The African continent is experiencing rising temperatures, increasingly variable precipitation patterns, prolonged droughts, devastating floods, sea-level rise, desertification, biodiversity loss, and declining agricultural productivity. These climate-induced impacts disproportionately affect African countries because of their high dependence on climate-sensitive sectors, including agriculture, fisheries, forestry, and water resources, as well as limited adaptive capacity resulting from financial, technological, and institutional constraints[2]. The adverse effects of climate change threaten progress towards achieving the African Union's (AU) Agenda 2063 and the United Nations Sustainable Development Goals (SDGs), particularly SDG 13 on Climate Action[3][4]. Climate change adaptation has therefore become a strategic priority for African governments and regional institutions. Adaptation involves adjustments in ecological, social, and economic systems in response to actual or expected climatic stimuli

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

and their effects, with the objective of reducing vulnerability and enhancing resilience[5]. Effective adaptation requires timely, accurate, and continuous environmental information to support evidence-based decision-making, disaster preparedness, agricultural planning, water-resource management, ecosystem conservation, and infrastructure development. In this regard, space-based technologies have become increasingly important tools for generating environmental intelligence that supports climate adaptation across multiple sectors[6]. Earth observation (EO) satellites. Global navigation satellite systems (GNSS), meteorological satellites, and satellite communication networks provide extensive capabilities for monitoring atmospheric conditions, land-use and land-cover changes, vegetation dynamics, surface-water availability, coastal erosion, ocean temperatures, and other environmental indicators. Satellite-derived datasets have improved drought monitoring and forecasting, flood early-warning systems, wildfire detection, food-security assessments, climate-risk mapping, and disaster-risk reduction. Earth observation is particularly important for Africa, where ground-based environmental monitoring networks remain unevenly distributed and insufficient in many regions. Satellite observations can, therefore, complement in-situ observations by providing spatially extensive and relatively consistent environmental information for climate adaptation planning[7]. The increasing reliance on space technologies for environmental monitoring has elevated the importance of international space law in addressing global environmental challenges. International space law establishes legal principles governing the exploration and use of outer space, the responsibilities of states, liability for damage caused by space objects, registration of space objects, and international cooperation in space activities. The five principal United Nations space treaties include the Outer Space Treaty, Rescue Agreement, Liability Convention, Registration Convention, and Moon Agreement, which constitute the principal treaty framework of international space law[8][9][10][11][12][13]. Among these instruments, the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), provides the foundational principles of the international space-law regime. Although these treaties were negotiated before climate change became a central concern of international environmental governance, several of their principles remain relevant to the use of space technologies for climate adaptation. Article I of the Outer Space Treaty establishes that the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries, while Article III requires space activities to be conducted in accordance with international law, including the Charter of the United Nations. Article IX further requires states to conduct activities with appropriate regard for the corresponding interests of other states and to avoid harmful contamination of outer space and adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter. These provisions provide a legal basis for interpreting space activities within the broader context of international cooperation, environmental responsibility, and sustainable use of space-based infrastructure. Beyond the United Nations treaty framework, several non-binding international instruments have sought to promote the sustainable use of outer space. These include the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) Guidelines for the Long-term Sustainability of Outer Space Activities, the Inter-Agency Space Debris Coordination Committee (IADC) Space Debris Mitigation Guidelines, and the United Nations Space Debris Mitigation Guidelines[14][15]. Collectively, these instruments seek to reduce risks associated with space activities and preserve the orbital environment upon which meteorological satellites, Earth-observation systems, climate-monitoring platforms, and disaster-management infrastructure depend. The long-term sustainability of outer space is consequently linked to the continuity and reliability of space-based environmental services that support climate monitoring and adaptation. The governance of climate adaptation is also shaped by major international environmental and development agreements. These include the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the Paris Agreement, the Sendai Framework for Disaster Risk Reduction 2015–2030, and the 2030 Agenda for Sustainable Development[16][17][18][19][20]. This framework recognizes the importance of scientific knowledge, systematic observation, technology development and transfer, capacity building, risk assessment, and international cooperation in strengthening resilience to climate change and disasters[21]. Satellite-derived environmental information is increasingly relevant to the implementation and monitoring of Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), greenhouse-gas inventories, climate-risk assessments, and disaster-risk reduction strategies. Within Africa, regional efforts to strengthen space governance have accelerated over the past decade. The African Union adopted the African Space Policy and Strategy in 2016 to promote the development and coordinated use of space science and technology in support of sustainable development across the continent[22]. The policy recognizes space science and technology as important tools for addressing socio-economic and environmental challenges, including climate change, disaster management, natural-resource management, food security, and environmental monitoring. The establishment of the African Space Agency (AfSA) further represents an important institutional development intended to strengthen

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

continental cooperation in space science and technology and improve Africa's capacity to use space-based services for sustainable development[23]. Despite these developments, significant legal and institutional challenges remain. Many African countries still lack comprehensive national space legislation governing satellite operations, Earth observation, space-data management, environmental protection, licensing, liability, and private-sector participation in space activities. Although international space treaties provide important foundational principles, they contain relatively limited provisions specifically addressing contemporary challenges associated with climate adaptation, large commercial satellite constellations, space-activity sustainability, orbital congestion, and equitable access to space-derived environmental information. However, relatively few studies have systematically examined how international space law contributes specifically to climate change adaptation in Africa while simultaneously considering the technical applications of Earth observation and the legal, institutional, and policy mechanisms connecting these domains.

Methodology

This study adopts a narrative review approach to examine existing literature on international space law and climate change adaptation in Africa. Relevant information was obtained from peer-reviewed journal articles, books, conference papers, reports published by the United Nations Office for Outer Space Affairs, the United Nations Framework Convention on Climate Change, the Intergovernmental Panel on Climate Change, the African Union, the European Space Agency, the National Aeronautics and Space Administration, and other authoritative sources. The literature search focused on publications addressing the relationship between international space law, satellite technology, environmental sustainability, disaster risk reduction, climate adaptation, and African space governance. The selected literature was critically reviewed to identify major themes relating to legal frameworks, institutional arrangements, technological applications, governance challenges, and policy recommendations. Information obtained from multiple sources was synthesized to provide an integrated assessment of the role of space law in supporting climate change adaptation across Africa.

Results and Discussion

International Space Law and Environmental Protection in Climate Change Adaptation

Article III of the Outer Space Treaty requires States to conduct activities in the exploration and use of outer space in accordance with international law, thereby establishing an important legal connection between international space law and other areas of international law, including international environmental law. This relationship has become increasingly significant in the context of climate change adaptation, as space-based technologies provide essential data and services for climate monitoring, environmental assessment, disaster risk reduction, and sustainable resource management. The role of legal practitioners and institutions in interpreting and applying space law is also important in ensuring that space activities contribute to environmental sustainability and the achievement of Sustainable Development Goal 13 (SDG 13), which calls for urgent action to combat climate change and its impacts. In this context, the term *"space lawyers"* may be broadly understood to include legal practitioners, scholars, courts, tribunals, and other institutions involved in the interpretation and application of legal principles governing outer space activities. Their interpretation of existing legal obligations can contribute to the development of practices that promote environmental protection and climate resilience. The importance of legal principles and judicial interpretation in preventing environmentally harmful activities is illustrated by *Environmental Defense Fund v. Massey*, 986 F.2d 528. Although the case concerned environmental decision-making within the United States rather than outer space activities, it demonstrates how legal and policy frameworks can be employed to challenge and deter activities with potentially adverse environmental consequences. This principle is relevant to the evolving relationship between international space law and environmental governance, particularly where space activities have implications for the Earth's environment. Article IX of the Outer Space Treaty further strengthens this relationship by requiring States

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

to conduct their activities in outer space with due regard to the corresponding interests of other States. It also requires states to undertake appropriate international consultations where their activities may cause potentially harmful interference with the activities of other states. More broadly, the provision addresses harmful contamination of outer space and adverse changes in the Earth's environment resulting from the introduction of extraterrestrial matter. These obligations provide an important legal basis for promoting environmentally responsible space activities. The provisions of this article only explicitly prohibit nuclear weapons and WMD, while ballistic missiles are consciously out of this qualification[24]. It does not specifically address the placement of non-nuclear weapons or devices or those that are not capable of causing mass destruction[25]. Moreover, the prohibition of article IV does not apply to conventional weapons and military satellites. The application of these principles can support greater consistency between international space law and international environmental and climate agreements, including the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. Consequently, the interpretation and implementation of space law principles should increasingly incorporate environmental considerations to ensure that space-based activities contribute to climate change adaptation, environmental protection, and the broader objectives of sustainable development.

Liabilities in Space Activities

The Convention on International Liability for Damage Caused by Space Objects (1972) establishes legal rules governing responsibility for damage caused by space objects. Under the Convention, launching states are absolutely liable for damage occurring on the surface of the Earth and liable for damage in outer space where fault can be established. While the Liability Convention provides an important mechanism for addressing physical damage, it does not specifically address environmental damage arising from increasing launch activities, atmospheric emissions, or orbital debris. As commercial space activities continue to expand, scholars have argued that existing liability rules should evolve to accommodate contemporary environmental concerns associated with satellite operations and launch systems for Africa, where dependence on satellite services for environmental monitoring is increasing; strengthening liability mechanisms would contribute to protecting critical satellite infrastructure used for weather forecasting, disaster management, and agricultural monitoring. The Registration Convention (1975) makes transparency a fundamental principle of international space governance to register objects launched into outer space with the United Nations. Accurate registration has become increasingly important as satellite numbers continue to grow. Effective registration supports collision avoidance, protects climate-monitoring satellites, and contributes to the long-term sustainability of orbital operations[26][27]. African countries developing national space programs can benefit from strengthening domestic registration systems consistent with international obligations.

Critical Review

The application of international space law to Africa's climate adaptation agenda extends beyond legal compliance to practical implementation. The reviewed literature demonstrates broad agreement that international space law provides a robust foundation for the peaceful use of outer space and supports international cooperation in climate monitoring. Nevertheless, the existing treaty framework has not fully kept pace with the rapid expansion of commercial space activities, satellite mega-constellations, increasing launch frequencies, and emerging environmental concerns. Most scholars argue that future reforms should strengthen environmental obligations within space governance by promoting mandatory debris mitigation standards, improving regulation of commercial space activities, encouraging open access to climate-related satellite data, and enhancing cooperation between international space institutions and climate governance mechanisms. For Africa, strengthening national legal frameworks and investing in institutional capacity will be essential for translating international legal principles into practical climate adaptation outcomes.

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

African Space Governance and Climate Change Adaptation

Over the past two decades, African countries have increasingly recognized space science and technology as important tools for sustainable development, environmental management, and climate resilience. Historically, many African states depended on satellite data and technical support from international partners because of limited domestic capabilities. However, investments in national space programs, Earth-observation systems, satellite communications, and regional cooperation have progressively strengthened Africa's capacity to generate and use space-based information. The development of African space governance is closely aligned with the African Union Agenda 2063, which identifies science, technology, and innovation as important drivers of sustainable development. Space technologies increasingly support climate adaptation, food security, disaster-risk reduction, environmental monitoring, water-resource management, and natural-resource governance. A major milestone was the adoption of the African Space Policy and Strategy in 2016. The policy provides a continental framework for coordinating space activities and promoting the application of space science and technology to Africa's development challenges. Earth observation is particularly relevant to climate adaptation because satellite data support drought and flood monitoring, desertification assessment, land-degradation mapping, agricultural monitoring, and ecosystem management. The policy also emphasizes regional cooperation, data sharing, capacity development, and the development of indigenous technical expertise to reduce dependence on external providers. Harmonizing national space programs and strengthening cooperation among African states are therefore important for improving the continent's capacity to respond effectively to increasing climate risks. Several African countries have established national space institutions that contribute to climate adaptation. Nigeria, through the National Space Research and Development Agency (NASRDA), applies satellite and geospatial technologies to flood monitoring, agricultural planning, environmental management, drought assessment, and disaster-risk reduction[28]. South Africa, through the South African National Space Agency (SANSA), supports Earth observation, environmental monitoring, wildfire detection, water-resource management, and space-weather services[29]. Countries including Egypt, Algeria, Kenya, Ethiopia, and Ghana have similarly expanded their space capabilities through satellite programs, remote-sensing centers, and geospatial applications. Despite these developments, significant disparities remain in institutional capacity, technological infrastructure, funding, and skilled personnel across African countries. Strengthening regional cooperation, technology transfer, capacity development, and sustainable financing will therefore be essential for maximizing the contribution of African space institutions to climate resilience and sustainable development.

Challenges to African Space Governance

Despite substantial progress, several governance challenges continue to limit the effectiveness of space technologies in supporting climate adaptation. The most significant challenge is the absence of comprehensive national space legislation in many African countries. Existing legal frameworks often provide only limited guidance on satellite licensing, Earth observation data governance, environmental protection, private-sector participation, and international cooperation. Financial constraints remain another major obstacle. Satellite development, launch services, ground infrastructure, and data-processing systems require substantial long-term investment that exceeds the financial capacity of many African governments. Human capacity also remains limited. Many countries continue to experience shortages of trained specialists in remote sensing, satellite engineering, geospatial analysis, space law, and climate modeling. These shortages constrain the effective use of satellite-derived information for adaptation planning; data accessibility presents an additional challenge. Although many satellite datasets are freely available, technical barriers, limited internet connectivity, inadequate computing infrastructure, and insufficient institutional coordination continue to restrict access in several countries.

Legal and Institutional Challenges to the application of Space Law in Climate Change Adaptation in Africa

The legal and institutional challenges associated with the application of space law to climate change

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

adaptation in Africa cannot be overemphasized**.** However, the review indicates that the current international legal framework remains fragmented and largely indirect in its treatment of climate adaptation. The principal legal gap is not the complete absence of applicable law, but rather the **lack of explicit integration between international space law, climate law, environmental governance, and African regional space policy**. Although space technologies have significantly improved climate change adaptation in Africa, their application remains constrained by legal, institutional, financial, and technological challenges. However, their effective use depends on appropriate legal frameworks, institutional coordination, sustainable financing, data accessibility, and skilled human resources. Addressing these constraints requires stronger national and regional legal frameworks, improved institutional cooperation, sustainable investment in capacity development, and effective data-sharing mechanisms. These measures would strengthen the role of space technologies in achieving climate resilience, disaster-risk reduction, and **Sustainable Development Goal 13**. It is necessary to establish a space court for dispute settlement among the spacefaring nations, to be called the International Tribunal for Space Law (ITSL) or World Space Court (WSC).

Future Prospects

The literature suggests considerable opportunities for strengthening African space governance. Expanding regional cooperation through the African Space Agency, increasing investment in indigenous satellite programmes, harmonising national space legislation, and strengthening partnerships with international organisations could significantly improve climate adaptation capacity. for peaceful and sustainable use of space with international cooperation. All the established and newly active spacefaring nations come to an understanding that a new phase of space law development has been started. Both developing and developed countries recognise the significance of a stable regime adopting policies for the exploration and sustainable use of outer space[30]. Artificial intelligence, cloud computing, big data analytics, and next-generation satellite systems are expected to enhance environmental monitoring and climate-risk assessment. Integrating these emerging technologies into African space governance frameworks could improve disaster preparedness, strengthen environmental management, and support implementation of the African Union's Agenda 2063 and the Sustainable Development Goals. Future policy reforms should prioritise open access to satellite-derived environmental information, promote regional data-sharing mechanisms, encourage private-sector participation under appropriate regulatory oversight, and strengthen education and research in space science, remote sensing, and space law. Such measures would enhance Africa's ability to use space technologies as effective instruments for climate resilience and sustainable development.

Summary

Overall, the reviewed studies demonstrate that satellite technologies have become indispensable components of climate adaptation strategies across Africa (Table 1). Their applications extend from agriculture and water resources to disaster management, ecosystem conservation, and coastal protection. However, the effectiveness of these technologies depends not only on technical capability but also on supportive legal frameworks, institutional coordination, data accessibility, and sustained investment in human capacity. The paper further suggests that strengthening cooperation between African governments, regional organizations, national space agencies, universities, and international partners will be essential for maximizing the contribution of space technologies to climate resilience. Future efforts should therefore integrate technological innovation with legal reform, policy development, and capacity-building initiatives to ensure that space-based information effectively supports climate adaptation and sustainable development across the continent.

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

Table 1. Climate Adaptation Area and their Reported Benefits in Africa

Climate Adaptation Area	Space Technology	Common Satellite Missions	Reported Benefits in Africa	Key Challenges
Drought monitoring	Optical remote sensing	MODIS, Sentinel-2, Landsat	Early drought detection and monitoring of vegetation stress	Limited technical capacity
Flood management	Synthetic Aperture Radar (SAR)	Sentinel-1	Rapid flood mapping and support for early-warning systems	Limited data-processing expertise
Agriculture	NDVI/EVI and optical remote sensing	MODIS, Landsat, Sentinel-2	Crop monitoring, vegetation assessment and yield estimation	Sparse ground-validation data
Water resources	Radar altimetry and gravimetry	GRACE, Sentinel-3	Reservoir, surface-water and groundwater monitoring	Limited institutional integration
Coastal management	Optical remote sensing and SAR	Sentinel-1, Sentinel-2	Shoreline-change, coastal erosion and mangrove monitoring	Inadequate coastal monitoring programmes

Conclusion and Recommendations

Climate change poses significant challenges to Africa, requiring effective adaptation strategies supported by reliable scientific information and innovative technologies. This review highlights the growing importance of space technologies, particularly Earth observation satellites, in climate monitoring, disaster risk reduction, agriculture, water resource management, and environmental protection. International space law provides an important foundation for the peaceful use of outer space and international cooperation; however, existing legal frameworks have not fully addressed contemporary challenges related to climate adaptation, satellite sustainability, data access, and commercial space activities. In Africa, limited national space legislation, inadequate funding, weak institutional coordination, and capacity constraints continue to restrict the effective application of space technologies. International space laws have shortcomings from various viewpoints. Ultimately altogether, it is a great matter of intelligence that major spacefaring countries did not ratify all treaties and more or less other countries raise the question of the effectiveness of present laws. Strengthening African space governance through harmonized legal frameworks, enhanced regional cooperation, improved access to satellite data, and investment in human capacity is essential for building climate resilience. The African Space Agency, national space institutions, and international partnerships provide important opportunities to integrate space-based solutions into climate adaptation planning. A coordinated approach that links international space law, climate policy, and technological innovation will enable Africa to maximize the benefits of space technologies for sustainable development and long-term climate resilience. Based on the reviewed literature, the following recommendations are proposed: **Develop harmonized national space laws** across African countries that integrate international space law principles with climate adaptation objectives. **Expand access to satellite-derived climate information** through open-data policies and improved digital infrastructure. **Invest in education and training** to develop African expertise in space science, remote sensing, climate science, and space law. **Integrate Earth observation technologies into national adaptation plans** and disaster risk management strategies. **Promote regional cooperation** through shared satellite programmes, research networks, and climate information platforms. **Encourage responsible commercial space activities** through clear regulatory frameworks and environmental standards.

References

[1] B. Mayer, “Climate change and international law in the grim days,” *European Journal of International Law*, vol. 24, no. 3, pp. 947–970, 2013.

[2] Intergovernmental Panel on Climate Change, *Climate Change 2023: Synthesis Report: Contribution of*

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Switzerland: IPCC, 2023.

[3] African Union Commission, *Agenda 2063: The Africa We Want*. Addis Ababa, Ethiopia: African Union, 2015.

[4] United Nations Office for Disaster Risk Reduction, *Sendai Framework for Disaster Risk Reduction 2015–2030*. Geneva, Switzerland: United Nations, 2015.

[5] Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, U.K.: Cambridge University Press, 2022, doi: 10.1017/9781009325844.

[6] United Nations Office for Outer Space Affairs, *Space Technology and Its Applications for the Benefit of Humankind*. New York, NY, USA: United Nations, 2022.

[7] African Union Commission, *African Space Policy and Strategy*. Addis Ababa, Ethiopia: African Union, 2016.

[8] United Nations, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, United Nations Treaty Series, vol. 610, p. 205, 1967.

[9] United Nations, *Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*, United Nations Treaty Series, vol. 672, p. 119, 1968.

[10] United Nations, *Convention on International Liability for Damage Caused by Space Objects*, United Nations Treaty Series, vol. 961, p. 187, 1972.

[11] United Nations, *Convention on Registration of Objects Launched into Outer Space*, United Nations Treaty Series, vol. 1023, p. 15, 1975.

[12] United Nations, *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, United Nations Treaty Series, vol. 1363, p. 3, 1979.

[13] United Nations Office for Outer Space Affairs, *United Nations Treaties and Principles on Outer Space and Related General Assembly Resolutions*. New York, NY, USA: United Nations, 2002.

[14] Inter-Agency Space Debris Coordination Committee, *IADC Space Debris Mitigation Guidelines*, IADC-02-01, Rev. 3. Inter-Agency Space Debris Coordination Committee, 2020.

[15] United Nations Office for Outer Space Affairs, *Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space*. New York, NY, USA: United Nations, 2010.

[16] United Nations, *United Nations Framework Convention on Climate Change*. New York, NY, USA: United Nations, 1992.

[17] United Nations, *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. New York, NY, USA: United Nations, 1998.

[18] United Nations, *Paris Agreement*. Bonn, Germany: United Nations Framework Convention on Climate Change, 2015.

[19] United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development*. New York, NY, USA: United Nations, 2015.

[20] United Nations, *Sendai Framework for Disaster Risk Reduction 2015–2030*. Geneva, Switzerland: United Nations Office for Disaster Risk Reduction, 2015.

[21] United Nations Office for Disaster Risk Reduction, *Sendai Framework for Disaster Risk Reduction*

Volume: 5 Issue: 08 | Aug–2026 ISSN: 2720-6882
http://journals.academiczone.net/index.php/jiphr

2015–2030. Geneva, Switzerland: United Nations, 2015.

[22] African Union Commission, *African Space Policy and Strategy*. Addis Ababa, Ethiopia: African Union, 2016.

[23] African Union, *Statutes of the African Space Agency*. Addis Ababa, Ethiopia: African Union Commission, 2019.

[24] G. H. Reynolds and R. P. Merges, *Outer Space: Problems of Law and Policy*. Boulder, CO, USA: Westview Press, 1989.

[25] M. J. Listner, "The ownership and exploitation of outer space: A look at foundational law and future legal challenges to current claims," *Regent Journal of International Law*, vol. 1, p. 75, 2003.

[26] R. S. Jakhu and J. N. Pelton, *Global Space Governance: An International Study*. Cham, Switzerland: Springer, 2017, doi: 10.1007/978-3-319-54331-3.

[27] S. Bhatia and R. S. Jakhu, "Space law and sustainability: Emerging challenges in the governance of outer space activities," *Journal of Space Law*, vol. 45, no. 1, pp. 1–24, 2021.

[28] National Space Research and Development Agency (NASRDA), *Annual Report*. Abuja, Nigeria: NASRDA, 2022.

[29] South African National Space Agency (SANSA), *Annual Report 2022/2023*. Pretoria, South Africa: SANSA, 2023.

[30] A. D. Webber, "Extraterrestrial law on the final frontier: A regime to govern the development of celestial body resources," *Georgetown Law Journal*, vol. 71, pp. 1427–1456, 1982.