

The Challenges of the Implementation of the National Space Research and Development Agency (NASRDA) Act, 2010

Introduction

The National Space Research and Development Agency (NASRDA) Act, 2010, is the principal legislation governing Nigeria's space science and technology programme. The Act establishes the National Space Research and Development Agency (NASRDA) and provides the legal framework for the promotion, regulation, and coordination of space-related activities in Nigeria. It also empowers the Agency to conduct space research, develop satellite technologies, promote international cooperation, regulate private sector participation, and ensure that space activities contribute to national development. Despite these laudable objectives, the implementation of the NASRDA Act has faced numerous legal, institutional, financial, and technological challenges that have hindered the realization of its full potential¹.

Overview of the NASRDA Act, 2010

The NASRDA Act was enacted to provide Nigeria with a comprehensive legal framework for developing and regulating its space programme. It confers extensive powers on NASRDA to formulate policies, conduct scientific research, develop indigenous satellite technology, regulate commercial space activities, and collaborate with international organizations². The Act also seeks to ensure that Nigeria benefits from the socio-economic opportunities presented by advances in space science and technology through applications in agriculture, communication, disaster management, environmental monitoring, security, and education (Federal Republic of Nigeria, 2010). Furthermore, the Act envisages the establishment of an effective institutional

¹ Agom, A. R. (2024). *The law on banks and other financial institutions in Nigeria*. Ahmadu Bello University Press Limited.

² Federal Republic of Nigeria. (2005). *National Space Policy and Programme*. National Space Research and Development Agency (NASRDA).

framework capable of coordinating both public and private space-related activities while ensuring compliance with international obligations arising from treaties such as the Outer Space Treaty of 1967. However, practical implementation has revealed significant gaps between the legislative objectives and actual execution.

Achievements of the National Space Research and Development Agency (NASRDA) Act

The National Space Research and Development Agency (NASRDA) Act of 2010 represents a significant milestone in Nigeria's space exploration journey, providing a robust legal framework for advancing space science and technology in the country. One of the Act's key milestones is the establishment of NASRDA itself, along with the National Space Council, which serves as the apex policy-making body for space-related activities in Nigeria. This institutional setup underscores Nigeria's commitment to fostering a conducive environment for the development of space capabilities. Additionally, Article 2 of the Act delineates the functions and powers of NASRDA and the Council, laying out strategies for space exploration and emphasizing the importance of private sector involvement³. This proactive approach reflects Nigeria's recognition of the need for collaboration and partnership to drive innovation and progress in the space industry⁴.

Furthermore, the NASRDA Act outlines specific initiatives aimed at enhancing capacity building and technological advancement in the space sector. Article 3 of the Act, in particular, establishes a comprehensive operational framework for NASRDA, including the establishment of development centres across various domains critical to space exploration. These centres, such as the National Centre for Remote Sensing and the Centre for Satellite Technology

³ Olisa, A. Legal, "*Space Law in Nigeria – A call for the Review of NASDRA Act*" (2019) Available @ Space Law in Nigeria – A Call for the Review of NASRDA Act | Olisa Agbakoba Legal (OAL) accessed 6th August, 2026.

⁴ Ibid

Development, play pivotal roles in research, training, and innovation, contributing to Nigeria's overall space capabilities. By investing in infrastructure and human capital development, the Act lays the groundwork for fostering a vibrant space science and technology ecosystem, positioning Nigeria as a regional leader in the field.⁵

Challenges of the Implementation of the NASRDA Act, 2010

The following are some of the Challenges of the Implementation of the National Space Research and Development Agency (NASRDA) Act, 2010:

1. Inadequate Funding

Inadequate funding remains one of the most significant impediments to the effective implementation of the National Space Research and Development Agency (NASRDA) Act, 2010⁶. The development and maintenance of a viable space programme require substantial and sustained financial investment in satellite design and production, launch services, space research, data processing centres, laboratories, and highly sophisticated equipment⁷. Unfortunately, budgetary allocations to NASRDA have often fallen short of the financial requirements needed to implement the Agency's statutory mandates. This has resulted in delays in the execution of critical projects, abandonment of research initiatives, and limited expansion of space infrastructure⁸. Furthermore, inadequate funding negatively affects staff training, equipment maintenance, and the upgrading of existing facilities. Satellites and ground stations require continuous monitoring, periodic maintenance, and eventual replacement to remain

⁵ Ibid

⁶ Ibid

⁷ ATOYEB, O. M. (2024). A Critical Assessment of the NASRDA Act and International Partnership Challenges. Space Policy, Nigerian Space Agency, Telecommunications & Media Law, Retrieved from <https://omaplex.com.ng/a-critical-assessment-of-the-nasrda-act-and-international-partnership-challenges/> Accessed on 6th August, 2026.

⁸ Okeke, P. N., & Nwokoye, A. O. (2017). Space science and technology development in Nigeria: Challenges and prospects. *International Journal of Scientific Research in Engineering and Management*, 1(5), 1–10.

operational. Limited financial resources also restrict Nigeria's ability to embark on independent satellite launches and technological innovations, thereby weakening the country's competitiveness in the global space industry. Unless government significantly increases investment in the space sector, many of the objectives of the NASRDA Act may remain unattainable⁹.

2. Weak Institutional Capacity

Another major challenge affecting the implementation of the NASRDA Act is weak institutional capacity. Although NASRDA has established various research centres across Nigeria, many of these institutions lack adequate infrastructure, modern laboratories, and state-of-the-art technological equipment necessary for advanced space research. In addition, several facilities require rehabilitation and modernization to meet international standards. These institutional deficiencies hinder effective scientific research, innovation, and the commercialization of space technologies. Institutional weakness is also reflected in administrative inefficiencies, bureaucratic bottlenecks, and inadequate organizational coordination. Decision-making processes are often slow, delaying project approvals, procurement activities, and implementation schedules. Moreover, insufficient institutional autonomy and limited operational flexibility reduce NASRDA's capacity to respond effectively to emerging technological challenges. Strengthening institutional governance, improving infrastructure, and enhancing administrative efficiency are therefore essential for achieving the objectives of the Act.

3. Shortage of Skilled Personnel

⁹ Oluwafemi, O., & Akinwale, A. A. (2021). The role of space technology in national development: Issues and challenges for developing countries. *Journal of Science, Technology and Innovation Policy*, 7(2), 45–57.

The successful implementation of any national space programme depends largely on the availability of highly skilled scientists, engineers, researchers, and technical experts. Space science is multidisciplinary and requires expertise in aerospace engineering, satellite communications, computer science, artificial intelligence, geospatial information systems, robotics, physics, and data analytics. Nigeria continues to face shortages of qualified personnel in many of these specialized fields due to inadequate training opportunities and limited investment in advanced scientific education¹⁰.

The migration of highly skilled professionals to developed countries in search of better career opportunities has further worsened the situation. This phenomenon, commonly referred to as "brain drain," deprives NASRDA of experienced personnel capable of leading sophisticated research projects and technological innovations. Consequently, the Agency often depends on foreign consultants and technical experts for specialized assignments, increasing operational costs and slowing indigenous technological development¹¹.

4. Inadequate Research and Development

Research and development (R&D) constitute the backbone of technological advancement and sustainable space exploration. The NASRDA Act envisages the promotion of scientific research capable of driving indigenous innovation in satellite technology, remote sensing, and space applications. However, inadequate funding for research institutions, limited collaboration between universities and industry, and insufficient laboratory facilities have significantly constrained research output within Nigeria's space sector. The low level of investment in

¹⁰ Agom, A.R. (2024). Op cit.

¹¹ United Nations Office for Outer Space Affairs. (2017). *Space law and national legislation: Regulatory frameworks for space activities*. United Nations.

research has limited the commercialization of locally developed technologies and reduced Nigeria's capacity to compete globally in space science¹². Many universities and research institutions lack modern research equipment, while available research grants are often insufficient to support long-term scientific investigations. Consequently, Nigeria continues to depend heavily on foreign technologies rather than developing indigenous innovations capable of addressing national developmental challenges.

5. Poor Inter-Agency Coordination

The implementation of the NASRDA Act requires effective collaboration among numerous government ministries, departments, and agencies whose activities intersect with space technology. These include institutions responsible for defence, agriculture, communications, education, environmental protection, disaster management, and national security. However, inadequate coordination among these institutions often results in duplication of responsibilities, inefficient utilization of resources, and fragmented policy implementation. Poor information sharing also limits the effective application of satellite-generated data for national planning and development. Valuable geospatial information that could support flood prediction, agricultural planning, environmental conservation, urban development, and security operations is often underutilized because relevant agencies fail to coordinate effectively. Strengthening inter-agency cooperation through integrated policy frameworks and data-sharing mechanisms would significantly improve the implementation of the NASRDA Act.

6. Limited Private Sector Participation

¹² Federal Republic of Nigeria. (2010). *National Space Research and Development Agency (NASRDA) Act, 2010*. Federal Government Printer.

The NASRDA Act encourages private sector participation in Nigeria's space industry through investment, technological innovation, and commercial space activities. However, the level of private sector involvement remains relatively low due to high capital requirements, regulatory uncertainties, inadequate incentives, and limited access to financing. Many private investors consider space technology a high-risk sector requiring substantial long-term investment before returns can be realized. The absence of robust public-private partnership frameworks has further discouraged private investment in satellite manufacturing, space applications, remote sensing services, and commercial launch operations. Greater collaboration between government and private enterprises would enhance technological innovation, create employment opportunities, attract foreign direct investment, and accelerate the commercialization of space technologies. Policies that provide tax incentives, grants, and investment guarantees could significantly increase private sector participation¹³.

7. Inadequate Public Awareness

Public awareness is essential for sustaining government support and encouraging national participation in scientific development. Unfortunately, many Nigerians remain unaware of the importance of space science and the numerous ways satellite technology contributes to economic growth and national development. Satellite applications support weather forecasting, telecommunications, environmental monitoring, agriculture, transportation, disaster management, mineral exploration, urban planning, and national defence. Despite these benefits, public knowledge of NASRDA's activities remains relatively low. Limited awareness also affects students' interest in pursuing careers in science, technology, engineering, and

¹³ Joshua, F, “*The NASRDA Act; Beyond a Domestic Implementation of International Space Obligations. African news; Space in Africa*” (2021) Available @ The NASRDA Act; Beyond a Domestic Implementation of International Space Obligations | Space in Africa (africanews.space) accessed 21st July, 2026.

mathematics (STEM) disciplines related to space research. Without adequate public enlightenment, government may continue to receive limited societal support for increased investment in space programmes. Public education campaigns, science exhibitions, school outreach programmes, and media engagement would help promote greater appreciation of Nigeria's space programme and encourage wider participation in space-related careers.¹⁴

8. Challenges of International Competition

Nigeria's space programme operates within a highly competitive global environment dominated by technologically advanced nations such as the United States, China, Russia, India, and members of the European Union. These countries invest billions of dollars annually in scientific research, satellite technology, artificial intelligence, and space exploration¹⁵. Their superior technological capabilities place developing countries like Nigeria at a competitive disadvantage. International competition also affects Nigeria's ability to attract investment, retain skilled personnel, and develop commercially viable space technologies. The rapid pace of technological innovation means that countries with limited research funding struggle to keep up with emerging developments in satellite engineering, space exploration, and commercial space services. To remain competitive, Nigeria must prioritize investment in indigenous innovation, strengthen international collaboration, and continuously develop its technological capabilities.

9. Regulatory and Legal Challenges

Although the NASRDA Act provides the primary legal framework governing Nigeria's space programme, certain provisions require periodic review to accommodate emerging

¹⁴ Omotayo, O., '*The Nigerian Space Conundrum*' (2019) The Republic Available @ <https://republic.com.ng/june-july-2019/nigerian-space-conundrum/> accessed 23rd February, 2024

¹⁵ Ibid at p. 27

technological and legal developments. The rapid growth of private space enterprises, commercial satellite operations, artificial intelligence, cybersecurity, and space resource utilization has created new legal issues that were not fully contemplated when the Act was enacted in 2010 (Federal Republic of Nigeria, 2010). In addition, the absence of detailed subsidiary regulations and implementation guidelines creates uncertainty regarding licensing procedures, liability for space activities, intellectual property rights, data protection, and private sector participation. Nigeria must continually update its legal framework to remain consistent with evolving international space law and best regulatory practices. Comprehensive legislative reforms would improve regulatory certainty, enhance investor confidence, and strengthen effective governance of the space sector.

10. Dependence on Foreign Technology

Nigeria continues to depend heavily on foreign countries for satellite manufacturing, launch services, specialized equipment, technical expertise, and advanced space technologies. Although international partnerships have contributed to the growth of Nigeria's space programme, excessive reliance on foreign technology limits domestic technological capacity and increases operational costs. It also exposes the country to external political, economic, and technological uncertainties that may affect long-term sustainability ¹⁶. Furthermore, dependence on imported technology slows indigenous innovation and limits opportunities for local industries to participate actively in space technology development. Building local capacity through increased investment in research institutions, technology transfer programmes, indigenous manufacturing, and human capital development would reduce this

¹⁶ Olisa Agbakoba Legal, “*Space Law in Nigeria – A call for the Review of NASDRA Act*” (2019) Available @ Space Law in Nigeria – A Call for the Review of NASRDA Act | Olisa Agbakoba Legal (OAL) accessed 21st July, 2026

dependence over time. Strengthening domestic technological capabilities is therefore essential for achieving the long-term objectives of the NASRDA Act and ensuring Nigeria's strategic independence in space science and technology¹⁷.

Recommendations

To improve the implementation of the NASRDA Act, government should substantially increase funding for space research, infrastructure, and human capacity development. Stronger collaboration between NASRDA, universities, private investors, and international partners should be encouraged to facilitate technology transfer and innovation. Government should also review and update the Act to reflect emerging developments in global space law, commercial space activities, cybersecurity, and artificial intelligence. Furthermore, public awareness campaigns should be intensified to educate citizens on the socio-economic benefits of space technology. Policies that encourage private sector investment through tax incentives, grants, and public-private partnerships should also be introduced to stimulate innovation and commercialization.

Conclusion

The NASRDA Act, 2010, represents an important milestone in Nigeria's quest to develop a vibrant space science and technology sector capable of contributing to national development. However, inadequate funding, weak institutional capacity, shortage of skilled manpower, poor inter-agency coordination, regulatory gaps, limited private sector participation, and dependence on foreign technology continue to impede its effective implementation. Addressing these challenges through sustained government commitment, institutional reforms, increased

¹⁷ Ibid

investment, and stronger collaboration among stakeholders will enable Nigeria to maximize the benefits of its space programme and strengthen its position within the global space community.

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