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Africa's ability to realize the national security, communications, development, and disaster mitigation benefits from satellites and other space technology relies on optimizing opportunities for collaboration.



North Africa and Europe seen from the International Space Station. (Photo: Kate Rubins/NASA)

March 2024 ushered in a new era of Africa's relationship with the space domain. That month, a severed submarine cable caused internet outages across 13 West African countries. Businesses, banks, and government services were paralyzed, and millions of people lost access to vital digital platforms. Yet, amid the blackout, satellite-based services such as Starlink and Nigeria's NigComSat provided uninterrupted connectivity, highlighting the resilience and strategic importance of space-based networks. For governments and businesses alike, the event was a wake-up call. Terrestrial infrastructure, while essential, remains vulnerable to accidents and sabotage, whereas space assets offer redundancy and reliability. This reality is part of a broader trend across the continent, where satellites are being leveraged not only for communications but also as tools of national resilience in the face of both human and environmental threats.

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Space is rapidly emerging as a strategic frontier for African countries given its concrete contributions to national security, socioeconomic development, and resilience against transnational threats. For much of the continent, the importance of space has often been invisible, embedded in the tools and services that citizens use daily without realizing they rely on satellites orbiting thousands of kilometers above Earth. From the broadcasting of television programs to navigation systems on smartphones and the expansion of rural broadband access, satellites have already become an integral part of African life.

Beyond these familiar applications, space technologies are also being used for border surveillance, maritime monitoring, resource management, and wildlife protection—functions that directly impact national sovereignty, security, and sustainable development. This duality explains why governments across Africa are increasingly prioritizing investments in space infrastructure, even as they grapple with the challenges of balancing ambitious national programs with limited budgets and pressing domestic needs.

The security dimension of space technologies is increasingly evident in Africa's policy priorities. Border management, for example, is a challenge for many African governments, given porous frontiers and the presence of transnational threats such as terrorism, smuggling, and human trafficking. Satellites allow governments to monitor remote and difficult-to-access regions, complementing ground patrols with a bird's-eye view of activity across vast terrains. Similarly, maritime surveillance satellites play an important role in securing Africa's exclusive economic zones, where illegal fishing and piracy have drained billions of dollars from national economies. For resource-rich countries, satellites provide another form of protection, enabling governments to monitor illegal mining, logging, and oil exploitation in real time. Equally significant is the application of tracking technologies to wildlife conservation, where African countries are using satellite-enabled collars and geospatial data to combat poaching and monitor migration patterns of endangered species. The common thread in these examples is that space assets are not abstract symbols of technological prestige, but concrete instruments of sovereignty and security.

MULTIDIMENSIONAL APPLICATIONS

Beyond security, African governments are turning to space to power the continent's socioeconomic transformation. Communication satellites are expanding internet access to rural communities that fiber-optic networks cannot reach. This is helping bridge the digital divide that continues to separate much of Africa from the global information economy. The impact is far reaching. Rural schools can access online learning platforms, health workers can deliver telemedicine services, and entrepreneurs can connect to new markets. Broadcasting satellites, similarly, continue to play a central role in the daily lives of millions, powering platforms such as Digital Satellite Television (DStv) and Canal+ that have become household names across the continent. These industries, built on space infrastructure, are not only sources of information and entertainment but also major employers and contributors to national GDP.

Agriculture, the backbone of many African economies, has also become a key beneficiary of space applications. Satellites provide data on rainfall patterns, soil quality, crop health, and pest infestations, enabling farmers to make informed decisions that increase yields and reduce losses. In countries where agriculture is both a livelihood and a matter of food security, these applications are nothing short of transformative. Likewise, satellites support marine science efforts to monitor ocean currents, fisheries, and coastal erosion, offering data that helps both governments and communities manage fragile ecosystems and economic opportunities. Urban planners are turning to geospatial technologies to design smarter, more resilient cities, particularly in regions facing rapid population growth

and unplanned urbanization. Weather and climate studies represent another frontier, as satellites provide early warnings of floods, droughts, and cyclones. Given that Africa is among the regions most vulnerable to extreme weather, these applications are critical for building adaptive capacity and reducing disaster risk.



Satellite dishes adorn rooftops in Fez, Morocco. (Photo by Creative Touch Imaging Ltd./NurPhoto)

AFRICA'S LONG LEGACY WITH SPACE

Africa's engagement with space is particularly fascinating given its rich historical lineage. Long before the launch of modern satellites, astronomy was deeply intertwined with African societies, guiding farming cycles, navigation, and cultural practices. Egypt's Nabta Playa, believed to be the world's oldest astronomical site, testifies to the continent's ancient relationship with the stars. During the Cold War, African countries hosted ground infrastructure for U.S. and Soviet missions, playing a quiet but important role in global space exploration.



Kenya Space Agency engineers hold their prototype Taifa-1 satellite. (Photo: Simon Maina/AFP)

Today, this legacy continues with the United States' National Aeronautics and Space Administration (NASA) partnering with South Africa's National Space Agency (SANSA) to host lunar exploration ground stations in support of the Artemis program, which aims to establish a long-term presence on the Moon and prepare for human missions to Mars. These partnerships underscore the continent's longstanding but often underappreciated contributions to space exploration.



Data source: Space in Africa

AN EXPANDING FOOTPRINT IN SPACE

At present, more than 21 African countries have established space programs, and 18 have launched at least one satellite. The continent has launched a combined total of 65 satellites (including miniature “CubeSats”), with over 120 additional satellites in development and expected to be launched by 2030.

Annual African government spending on space has averaged roughly \$500 million in recent years. Among the leaders are Egypt, South Africa, Nigeria, Morocco, Algeria, and Angola, each of which has made sustained investments in space. Their programs encompass a mix of Earth observation, communication, and scientific satellites, often supported by international partnerships.

The rapid growth of national programs has also raised questions about coordination and efficiency. Not every country, especially those with relatively smaller geographic territories to monitor, needs to operate its own dedicated satellites or space agency. This is underscored by the growing availability of much of the relevant data through commercial platforms. Duplication, thus, risks wasting scarce resources. Rwanda offers an illustrative example. Rather than rushing to launch new satellites, the country has prioritized building centralized systems to access and distribute commercially available data, focusing its limited resources on maximizing utility rather than pursuing prestige.

AVENUES FOR COOPERATION

The opportunities for coordination have never been greater. Egypt has demonstrated what collaborative efforts can achieve through initiatives such as the African Development Satellite Initiative (AfDev-Sat), which has trained 71 engineers from 34 African countries and opened its satellite assembly, integration, and testing facilities to continental partners. The inauguration of the African Space Agency (AfSA) in Cairo in April 2025 represents another milestone, offering a continental framework for aligning space programs, providing policy coordination, reducing duplication, and fostering shared access to infrastructure and data. AfSA's mandate is ambitious: to harmonize strategies, facilitate joint missions, negotiate international partnerships, and ensure that space activities directly support the African Union's Agenda 2063 vision for a prosperous, integrated continent.

The African Union Commission previously implemented the Global Monitoring for Environment and Security and Africa (GMES and Africa) initiative, with support from the European Commission. The initiative was designed to enhance African countries' access to and effective use of Earth Observation data in support of sustainable development policies across the continent. Its focus has included strengthening the management of natural resources, environmental monitoring, and the coordination of humanitarian operations. The program was financed through a grant of €30 million for Phase I and €25 million for Phase II.

One of AfSA's early flagship efforts is the Africa-EU Space Partnership Programme, launched in 2025 with €100 million in funding under the EU's Global Gateway Strategy. This initiative aims to leverage European expertise to strengthen African capabilities in climate monitoring, agriculture, disaster risk management, and private sector development, while ensuring African ownership of the data and systems it generates.

Space has become an increasingly active area for international cooperation with Africa. It is firmly embedded in Europe's relations with the continent, while China has rapidly expanded its role as a key partner, particularly in technology development. Russia remains engaged as well, having launched Angosat-2 for Angola in 2022. The United States is also exploring avenues to expand cooperation with Africa in space beyond the Artemis program.

PRAGMATIC COOPERATION OVER PRESTIGE

Africa's turn to space reflects a pragmatic calculus. Satellites and related technologies provide unique tools to strengthen national security, protect natural assets, expand connectivity, boost agricultural productivity, and safeguard populations against climate risks. The real measure of success will not be how many satellites each country launches, however, but how effectively the continent as a whole harnesses space to achieve shared goals. Coordination, capacity building, and continental institutions such as the AfSA will be central to avoiding fragmented investments and ensuring that space becomes a driver of integration rather than duplication.

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For Africa's space industry to achieve sustainable growth, it is crucial to ensure that the AfSA remains agile and effective in its operations—and safeguard against the bureaucratic inefficiencies that have historically hindered the African Union Commission. The ongoing success of the AfSA will also depend on strong and sustained support from African member states as well as international partners, recognizing that collective commitment and cooperation are essential to the continent's leadership in space.

Citizen engagement must also be prioritized by translating technical achievements into narratives that resonate with the public, making space initiatives accessible and relatable in order to build stronger public support.

At the national level, established players such as the space agencies in Algeria, Egypt, Morocco, Nigeria, and South Africa need to adapt to the evolving global model that enables the private sector as an engine of innovation and technological advancement. Today's space landscape is very different from the one that existed when these space agencies first launched their programs and were the sole driver of policies and program implementation. Opening up to greater private participation will not only stimulate creativity but also attract much-needed financing that can accelerate ecosystem growth.

Emerging players should learn from the missteps of their predecessors and focus on building institutions that are not just relevant for the present but also resilient and forward-looking for the future. Ultimately, the prestige of establishing a national space program is short-lived. If, a decade after its creation, there is still no evidence of independent technology demonstration, then the program's relevance and impact are greatly diminished.

As the space sector matures, Africa has the opportunity not only to meet its own development needs but also to contribute solutions to global challenges, from climate monitoring to food security and planetary science. Space, in this sense, is not a luxury for Africa but a strategic necessity—one that holds both immediate benefits and long-term promise for a continent seeking to shape its own destiny in an interconnected world.

