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Óscar Garrido Guijarro

A common African outer space policy to meet the continent 's challenges**A common African outer space policy to meet the continent 's challenges****Abstract:**

Africa's access to space science and technology products cannot be considered a matter of luxury because they can play an important role in successfully addressing the socio-economic challenges and security threats the continent faces: food, health and environmental security, and also security from violence and terrorism.

Technological developments to address these challenges should not be outsourced. Africa cannot remain a net importer of space technologies because in the long run this will hamper its socio-economic development, security and independence. In this regard, the cooperation mechanisms that African states have put in place within the African Union, with the aim of generating indigenous capacities and knowledge that will lead to autonomy in the space sector and the transformation of African economies from resource-based to knowledge-based economies, can be seen as positive.

Key words:

Outer space, African Union, space technology, satellites, African space agency, African space strategy.

***NOTE:** The ideas contained in the *Analysis Papers* are the responsibility of their authors. They do not necessarily reflect the thinking of the IEEE or the Ministry of Defence.

Una política común africana del espacio exterior como respuesta a los retos del continente

Resumen:

El acceso de África a los productos de la ciencia y la tecnología espacial no debe ser considerado una cuestión de lujo, ya que puede jugar un papel importante para encarar con éxito los desafíos socioeconómicos y las amenazas a la seguridad que se ciernen sobre el continente: seguridad alimentaria, sanitaria y medioambiental, pero también frente a los fenómenos de la violencia y el terrorismo.

Los desarrollos tecnológicos para hacer frente a estos retos no se deberían externalizar: África no puede seguir siendo un importador neto de tecnologías espaciales porque a largo plazo ello lastrará su desarrollo socioeconómico, su seguridad y su independencia. En este sentido, pueden valorarse como positivos los mecanismos de cooperación que los Estados africanos han puesto en marcha en el seno de la Unión Africana con el objetivo de generar capacidades y conocimientos autóctonos que conduzcan a la autonomía en el sector espacial y a la transformación de las economías regionales, basadas en los recursos, en economías basadas en el conocimiento.

Palabras clave:

Espacio exterior, Unión Africana, tecnología espacial, satélites, agencia espacial africana, Estrategia Espacial Africana

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Introduction

Julie Klinger, Professor of Geography and Space Sciences at the University of Delaware, argues that there are two ways of thinking about the geopolitics of outer space. The first is the most common among American and European societies, which reduces it to the "space race" and nostalgia for the Cold War. The second, meanwhile, and based on the reality of the facts, includes other scientific, social, cultural and environmental uses and assumes that space belongs to all of us and not just to the superpowers¹.

More in tune with this second way of thinking about outer space, in January 2015, during the 24th African Union (AU) summit in Addis Ababa, Agenda 2063 was adopted. It is a programmatic document that outlines a framework for action with the aim of modernising and socio-economically transforming the continent. Agenda 2063 contains fifteen key programmes on which African countries have committed to cooperate to accelerate growth and social welfare creation. The eleventh of them is a continent-specific outer space strategy to boost Africa's prosperity.

"Outer space is of vital importance for Africa's development in all areas: agriculture, disaster management, remote sensing, climate forecasting, banking and finance, and defence and security. African access to space technology products is no longer a matter of luxury. New developments in satellite technologies make them accessible to African countries. According to Agenda 2063, appropriate policies and strategies are needed to develop a regional market for space products in the continent"².

Many African countries are already developing their own national outer space programmes and the number of those interested in this area has increased considerably. In this context, the AU has taken the opportunity to develop its own outer space programme, with the aim of adding synergies and benefiting the continent as a whole.

The AU Assembly in January 2016 endorsed the African Space Strategy, calling for the creation of an African Space Agency, which would be launched two years later in January 2018, with the objective of promoting and implementing the African Space Strategy³. Subsequently, in February 2019, Egypt was chosen as the agency's headquarters, after

¹ KLINGER, Julie. "The Geopolitics of Outer Space", *CIDOB International Yearbook 2021*. Available at: https://www.cidob.org/articulos/anuario_internacional_cidob/2021/la_geopolitica_del_espacio_exterior NOTE: All Internet links active at the date of publication of this document.

² AFRICAN UNION. "Flagship Projects of Agenda 2063". Available at: <https://au.int/agenda2063/flagship-projects>

³ AFRICAN UNION. "Statute of the African Space Agency". Available at: https://au.int/sites/default/files/treaties/36198-treaty-statute_african_space_agency_e.pdf

beating four other candidate countries: Ethiopia, Kenya, Namibia and Ghana. The agency was originally planned to start operating in 2022. In a similar vein, work is underway to establish the Pan-African University of Space Science and Technology to be based in South Africa.

What are individual states doing?

By 2022, 20 African countries already had space programmes, 13 with their own space agencies (Algeria, Angola, Egypt, Ethiopia, Gabon, Ghana, Kenya, Morocco, Nigeria, Rwanda, South Africa, Uganda and Zimbabwe), and there are a total of 48 African satellites orbiting in space. The combined budgets of states in the regions for space programmes are estimated to have reached \$535 million in 2022, \$532 million in 2021 and \$503 million in 2020. Considering that budgets in 2018 totalled \$283 million and \$325 million in 2019, there has obviously been a very significant increase in the figures in recent years. Budgets in this area are expected to continue to grow as new states are starting to develop space programmes. The governments of Botswana, Burkina Faso and Cameroon, for example, have announced their intention to develop their own space programmes in the coming years⁴. South Africa and Nigeria are the African space powers. But there are other countries, including Algeria, Egypt, Ethiopia, Angola, Kenya and Ghana, also at the forefront of public investment in this field.

| Country | Percentage distribution |
|---------------------|-------------------------|
| South Africa | 33.39 % |
| Algeria | 19.88 % |
| Nigeria | 10.87 % |
| Egypt | 7.95 % |
| Angola | 5.96 % |
| Ethiopia | 4.41 % |
| Ghana | 2.16 % |
| Kenya | 0.60 % |
| Morocco | 0.46 % |

⁴ Space in Africa. "Global Space Budgets 2021". Available at: <https://spaceinafrica.com/reports/>

| | |
|-----------------|---------|
| Gabon | 0.28 % |
| Zimbabwe | 0.14 % |
| Others | 13.91 % |

Figure 1: Distribution by country of the share of total public expenditure on space in the continent in 2020. Source: SPACE IN AFRICA. "Global Space Budgets 2021".

South Africa ranks among the top thirty countries in the world in terms of space budget and scientific output in satellite technology⁵. It launched its first satellite in 1999, which was followed by three others, the latest of which was built in collaboration with Russia for military purposes and provides radar imagery to the South African military. In 2010, South Africa inaugurated its own space agency with the aim of positioning itself as one of the world's leading outer space managers through the implementation of national programmes including data management, Earth observation, space science, space operations and space engineering⁶.

South Africa is also the African country with the longest established specialised universities, an example of which is Stellenbosch, which is working on advanced research programmes in astrophysics. Among these programmes is the Square Kilometre Array. This project is located in the Karoo desert and will feature the world's largest radio telescope, which will facilitate the study of a hundred or so galaxies and give us a better understanding of the cosmos⁷. The project, which is being carried out in cooperation with Australia, also has the mission of trying to locate intelligent life in the cosmos⁸.

⁵ AFRICAN UNION. "African Space Strategy". Available at <https://au.int/en/documents/20191007/african-space-strategy-towards-social-political-and-economic-integration>

⁶ NIKEZ, A., ANANIDZE, F., and ADU, S. "African Union Outer Space Program: Chances and Challenges". Palgrave McMillan, 2020. Available at: https://www.researchgate.net/publication/346444474_African_Union_Outer_Space_Program_Chances_and_Challenges

⁷ PÉREZ REDONDO, P. "The take-off of the African space industry". Available at: <https://revista.puertadeafrica.com/index.php/2021/09/08/el-despegue-de-la-industria-espacial-africana/>

⁸ RUIZ-CABRERA, S. "Afronauts and the African space race". Available at: <https://mundonegro.es/afronautas-la-carrera-espacial-africana/>



Photo 1: Square Kilometre Array. Source: BBC. <https://www.bbc.com/news/science-environment-54457344>

For its part, Nigeria established its own space agency in 2001 and has three satellites orbiting the Earth that provide essential data and information for monitoring the oil fields in the Niger Delta and for mapping the movements of the terrorist group Boko Haram. Nigerian space technology companies are also active in other fields such as software development, robotics and artificial intelligence⁹. As a future project, Nigeria aims to become the first African country to send an astronaut into space, which they hope will be by 2030¹⁰.

Kenya also has its own space agency and is working on launching a set of nanosatellites and rockets from the Luigi Broglio Space Centre near Malindi, a city in southeastern Kenya. Nanosatellites are a type of satellite weighing less than 1,000 kilograms¹¹. The aim is to apply the data acquired thanks to the nanosatellites to the monitoring of

⁹ MUANYA, C. and UZOHO, V. "How far with Nigeria's space dream?" Available at: <https://guardian.ng/features/how-far-with-nigerias-space-dream/>

¹⁰ NIKEZ, A., ANANIDZE, F., and ADU, S. "African Union Outer Space Program: Chances and Challenges". Palgrave McMillan, 2020. Available at: https://www.researchgate.net/publication/346444474_African_Union_Outer_Space_Program_Chances_and_Challenges

¹¹ IYANDA, D. "Kenya Space Agency to launch nano-satellites and rockets in August". Available at: <https://africanews.space/ksab-says-kenya-to-launch-nano-satellites-in-august/>

agriculture and coastal zones. This is a pioneer programme that will serve as a test for the future launch of a larger Earth observation satellite¹².

Algeria created its space agency in 2002 and has four satellites dedicated to scientific research in the telecommunications sector. Ghana, for its part, sent its first satellite into space in 2017, the work of university students from the city of Koforidua, and supported by the Japanese aerospace agency¹³.

In 2014, Ethiopia built an observatory and astronomy research centre in Entoto, near Addis Ababa, and has designed and launched several satellites in collaboration with China. The first of these was sent into space in 2019 from a launch centre in China¹⁴.

Egypt established its space agency in 2018 and has since launched two Egyptian-designed and built satellites into space, the first in collaboration with the Japanese space agency and the second with the US space agency. It is currently working on the construction of a "space city" between Cairo and Suez to house satellite manufacturing and space research centres. The project includes 23 buildings for research and teaching in this field. Furthermore, the country has been chosen to host the African Space Agency¹⁵.

In terms of private investment, in 2021 the African space industry was worth \$19.49, and this figure is expected to grow by 16.16% to over \$22.5 billion by 2026. The sector employs more than 19,000 people across the continent. South Africa is home to the largest number of space companies, followed by Mauritius, which has become the preferred destination for space startups, along with Nigeria, Egypt, Kenya, Sudan and Tunisia¹⁶. In 2022, 272 aerospace companies domiciled in 31 African States are developing technologies and providing goods or services mainly to other private sector entities or governments¹⁷.

Some of these companies come from institutions linked to universities, while others have emerged from private, state-driven initiatives. Universities such as Stellenbosch

¹² SPACE IN AFRICA. "First KiboCUBE Satellite owned by Kenya deployed from the International Space Station". Available at: <https://africanews.space/first-kibocube-satellite-owned-by-kenya-deployed-from-the-international-space-station/>

¹³ RUIZ-CABRERA, S. "Afronauts and the African space race". Available at: <https://mundonegro.es/afronautas-la-carrera-espacial-africana/>

¹⁴ ALJAZEERA. "Ethiopia launches its first satellite with help of China". Available at: <https://www.aljazeera.com/economy/2019/12/20/ethiopia-launches-its-first-satellite-with-help-of-china/>

¹⁵ AERO-NAVES. Egypt will launch a "space city" in 2022. Available at: <https://aero-naves.com/2021/09/07/egipto-estrenara-una-ciudad-espacial-en-2022/>

¹⁶ Space in Africa. "New Space Africa Industry Report 2022". Available at: <https://spacein africa.com/reports/>

¹⁷ Space in Africa. "Global Space Budgets 2021". Available at: <https://spacein africa.com/reports/>

University in South Africa and the University of Nairobi have encouraged collaboration between research and entrepreneurship, leading to the production of satellites such as 1KUNS-PF, launched in 2018¹⁸.

All space programmes are developed individually, without any inter-state coordination, and the costs are borne by each respective country. Against this background, the AU's efforts to coordinate national space policies should be encouraged. In this regard, as noted above, the AU has established the African Space Agency, which will not only coordinate the space policies of African states but will also develop an African space programme of its own for the benefit of all.

African space strategy and the creation of an agency

The African space strategy¹⁹, adopted in January 2016, is based on the conviction that technological developments to address the socio-economic challenges facing the continent cannot be outsourced, its text insisting throughout that a purely African space programme is essential for the continent.

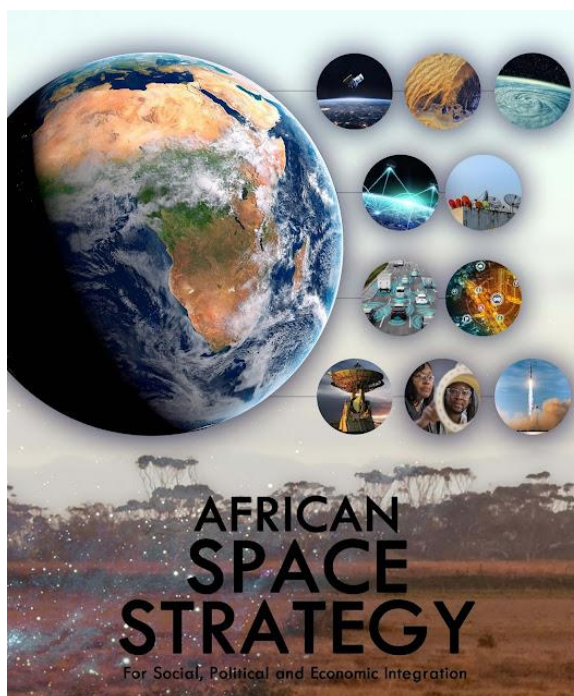


Photo 2: One of the cover pages of the African space strategy

¹⁸ PÉREZ REDONDO, P. "The take-off of the African space industry". Available at: <https://revista.puertadeafrica.com/index.php/2021/09/08/el-despegue-de-la-industria-espacial-africana/>

¹⁹ AFRICAN UNION. "African Space Strategy". Available at <https://au.int/en/documents/20191007/african-space-strategy-towards-social-political-and-economic-integration>

The document argues that Africa cannot afford to remain a net importer of space technologies because in the long run this will hamper its socio-economic development, security and independence. This being the case, it is considered that steps must be taken towards cooperation between African states, with the aim of generating indigenous capacities and knowledge that will make the necessary autonomy in the space sector possible. The strategy recognises that Africa must work to harness the benefits inherent in space science and technology to successfully overcome challenges, including ensuring that its citizens have their basic needs met and enjoy comprehensive security, including food, health, and environmental security, and security from violence and terrorism.

The document considers that the space sector should not only be perceived as a high-level technological field, but that awareness should be raised about its ability to provide useful tools for effective management of natural resources and essential communication links, especially for rural communities. To this effect, the implementation of this strategy is seen as essential to transform Africa's resource-based economies into knowledge-based economies.

The African space strategy focuses on four areas:

- Earth observation, which allows the collection of physical, chemical, biological and meteorological information to improve resource management.
- Satellite communications.
- Navigation and positioning, applicable in many areas, such as air traffic management.
- The development of space science and astronomy.

The document concludes that decisions on the formalisation of an African space programme will result in long-term sustainable benefits and will help the continent to develop its social and economic potential in the public and private sectors.

A common African space policy, however, requires the establishment of a legal and regulatory framework that provides a stable platform for investors and establishes the relevant institutions and governance bodies. This is where the African Space Agency fits in, the statute of which was approved in January 2018²⁰.

²⁰ AFRICAN UNION. "Statute of the African Space Agency". Available at: https://au.int/sites/default/files/treaties/36198-treaty-statute_african_space_agency_e.pdf

The African continent does not have a unified law in the form of a multilateral treaty addressing space law issues in the region, but legislation is scattered across different space-related activities governed by bilateral agreements, memoranda of understanding and letters of intent. Second, each country (at least those emerging in the field of space technology) has a state space law to regulate these activities in their territories, all with different legal systems, ranging from common law, to civil law, to hybrid legal systems originating from colonial times. Since there is no multilateral treaty governing the African space programme, AU Member States realised the need for appropriate institutional agreements for the effective governance, promotion and coordination of space activities on the continent to maximise the benefits. This is the context in which the African Space Agency²¹ came into being.

The main objectives of the agency are to coordinate states' current and planned space programmes and activities to avoid or minimise duplication of resources and efforts and maximise benefits; promote an African-led space agenda through mutually beneficial partnerships; develop an indigenous space market and industry that promotes and responds to the needs of the African continent; strengthen space missions on the continent to ensure access to space data, information, services and products; and harness the potential benefits of space science, technology, innovation and applications to address Africa's socio-economic opportunities and challenges²².

To carry out the functions assigned to it, the agency has four bodies: the board, the advisory committee, the secretariat and the director general. The council, headed by the director general, acts as the main governing body and must submit an annual report to the AU Assembly. The Council is composed of ten experts chosen from among persons qualified in the field of space activities for a four-year term of office, renewable once. It should have two representatives from each African region: Central Africa, East Africa, West Africa, North Africa and Southern Africa²³.

²¹ GAIRISEB, A. "African perspective on integrated space and air traffic management", University of Cape Town, 20219. Available at: <https://open.uct.ac.za/handle/11427/31528>

²² AFRICAN UNION. "Statute of the African Space Agency". Available at: https://au.int/sites/default/files/treaties/36198-treaty-statute_african_space_agency_e.pdf

²³ NIKEZ, A., ANANIDZE, F., and ADU, S. "African Union Outer Space Program: Chances and Challenges". Palgrave McMillan, 2020. Available at: https://www.researchgate.net/publication/346444474_African_Union_Outer_Space_Program_Chances_and_Challenges

Taking stock of the first years of the strategy's implementation

In February 2022, the AU published a document outlining the progress made so far in the implementation of Agenda 2063. The institution's assessment of the space sector was as follows:

- The African Earth Observation System has been strengthened to improve environmental management. This has been achieved through the Global Monitoring for Environment and Security in Africa programme.
- Four geoportals have been developed to improve data access and knowledge management.
- Some 2,000 people have been trained in Earth observation, satellite communication, navigation and positioning, space science and astronomy, and space regulatory regimes²⁴.

Furthermore, the African space strategy considers that the 10-year outcomes should be:

- A continental space programme positioned globally and ranked among the world's top 10.
- High-resolution, independent Earth observation satellite data available for the entire continent from a constellation of satellites designed and manufactured in Africa.
- Indigenous spatial capacity, both in terms of technological platforms and human capital.
- Spin-offs from space activities and programmes.
- Strategic partnerships, both within and outside Africa, resulting in viable space missions, applications, products and services²⁵.

²⁴ Available at: <https://au.int/sites/default/files/documents/41480-doc-2nd-Continental-Progress-Report-on-Agenda-2063-English.pdf>

²⁵ AFRICAN UNION. "African Space Strategy". Available at <https://au.int/en/documents/20191007/african-space-strategy-towards-social-political-and-economic-integration>



Photo 3: One of the cover pages of the African space strategy

What are the benefits of space technology for Africa?

Space science is, in this day and age, a fundamental element for a country's development because it makes it possible to improve agricultural techniques; prevent and thus mitigate the possible adverse effects of climate change; provide Internet access in rural areas; and reduce the cost of communications by launching its own satellites, without the need to pay to use those of other states. Some practical examples illustrating the tangible benefits of space technology are as follows.

In countries where crop failure can mean the difference between plenty and famine, satellites help planners manage scarce resources and prevent potential catastrophes caused by insect pests. For example, in agricultural regions near the edge of the Sahara Desert, scientists have been able to use satellite imagery to predict where locust swarms will breed, consequently safeguarding significant areas of crops.

Remote sensing technology is of great help to cartographers who, thanks to satellite imagery, can quickly reproduce common maps and topographical plans of the landscape without the need for traditional and costly field surveys. This capability, for example,

provides deployed troops with the latest maps of terrain that may often be unfamiliar. The latter is of vital importance for peacekeeping missions in Africa.

In this same field of cartography, spatial technology is also very useful for optimal urban planning. Continuous migration flows from the countryside to the cities are creating large pockets of substandard housing. The use of satellite imagery, combined with other applications, allows urban planners to obtain a broad analytical perspective on which to devise policies for better use of space, the establishment of green areas and the introduction of new building regulations²⁶.

Given that remote sensing satellites cover the entire planet, they are vital for the study of large-scale phenomena such as ocean circulation, desertification and deforestation and other possible phenomena associated with climate change. To this effect, satellites make it possible to monitor environmental changes caused by human activity or natural processes, thereby detecting alterations that would otherwise go unnoticed.

Technology that enables navigation and positioning from space is nowadays essential for natural disaster management, providing data to prevent or mitigate the devastating effects of floods and other adverse events. What is more, lives are saved every year thanks to hurricane forecasts. The climate data obtained by this technology also provides agricultural planners with essential information for crop management and improved food production processes. By way of example, using information provided by space technology, Ethiopian authorities have been able to resolve disputes over the boundaries between arable properties. This is essential for increasing agricultural productivity, in the sense that if a farmer is certain of the size of his property, he will use his available means more efficiently to obtain higher incomes²⁷.

In the area of counterterrorism, the Nigerian military has trained military personnel in the interpretation of satellite imagery as a tool for hunting down Boko Haram. Using the NigeriaSat-X satellite, the national space agency has produced a 10-metre digital elevation simulation map and a vegetation density map of the Sambisa Forest to assist

²⁶ PÉREZ REDONDO, P. "The take-off of the African space industry". Available at: <https://revista.puertadeafrica.com/index.php/2021/09/08/el-despegue-de-la-industria-espacial-africana/>

²⁷ PÉREZ REDONDO, P. "The take-off of the African space industry". Available at: <https://revista.puertadeafrica.com/index.php/2021/09/08/el-despegue-de-la-industria-espacial-africana/>

the Nigerian military in combating the aforementioned terrorist group. Likewise, satellite topographic maps have contributed to the success of peacekeeping missions in Mali²⁸.

Border disputes are an ongoing problem for local authorities on Lake Victoria, and some fishermen have lost their lives in the line of duty. Now, thanks to the Technical University of Kenya, fishermen on Lake Victoria have a drone to keep an eye on them to ensure they do not fall victim to border conflicts. This is made possible by the TUKSat-1 nanosatellite, which aims to ensure safety in the area and assist local authorities in rescue operations. The satellite transmits coordinates and images that help track boats and possible missing persons on the lake. In addition, TUKSat-1 sounds an alarm on the ground whenever a Kenyan vessel comes too close to the Kenya-Tanzania or Kenya-Uganda borders²⁹.

GPS is also being applied to monitoring illegal maritime activities and tracking oil spills by providing accurate maps of ocean colour, temperature, currents and wind direction. Ghana's Environmental Protection Agency uses geospatial data to prosecute illegal mining³⁰. The application to air navigation is also enhancing flight safety.

Why does Africa need a common foreign space policy?

Africa is not a homogenous reality; it is a region made up of some fifty states, each with its own unique idiosyncrasies, different forms of political and economic organisation, particular geographic and demographic circumstances, varying types of natural resources and unequal levels of development. It seems unreasonable to think of an African Union of the same nature as the European Union, that is to say, one that would advance in its integration until it becomes a supranational organisation in which the member states renounce their sovereignty in certain areas, such as agricultural policy or monetary policy, in favour of a supranational body with the sovereignty to take decisions that are binding on the states.

African states do not share sufficiently similar political, economic or judicial systems to move towards supranational integration, but steps are being taken to deepen integration

²⁸ MUANYA, C. and UZOH, V. "How far with Nigeria's space dream?" Available at: <https://guardian.ng/features/how-far-with-nigerias-space-dream/>

²⁹ "Drones will help avoid border conflicts in Lake Victoria". Available at: <https://themiamimorningnews.com/drones-ayudaran-a-evitar-conflictos-fronterizos-en-el-lago-victoria/>

³⁰ WORLD ECONOMIC FORUM. "How satellites can solve Africa's eco-challenges, from deforestation to illegal mining". Available at: <https://www.weforum.org/agenda/2019/09/digital-earth-africa-illegal-mining-deforestation/>

of an intergovernmental nature within the AU. A milestone on this path was the entry into force of the African Free Trade Agreement three years ago, which created a continental free trade market for goods and services involving 55 countries and more than 1.2 billion people. It is precisely within this framework that progress can be made on a common foreign space policy of an intergovernmental nature.

While African states have their own cultural, geographic and demographic characteristics, it is also true that they share common challenges to which a continental response is seen as more effective than a purely state-based one. The challenges to food and health security, as well as security in terms of violence and terrorism, and the challenges posed by the consequences of the advance of climate change and the management of natural resources, are common to all African countries, regardless of their latitude. If, as we have seen, the dimensions and areas covered by the external space policy can offer a useful response to the challenges facing us all, a common space policy of a continental nature can be an even more efficient and effective response. The products resulting from this global response - satellite imagery, navigation and positioning, communication networks, etc. - would translate into benefits for all countries, be they small or large, northern or southern, western or eastern, because the challenges transcend state borders.

The AU's decision to equip itself with an African strategy and an African space agency are solid foundations for progress in the establishment of a pan-African partnership framework for the creation and coordination of programmes and activities at the continental level. The next step must be to seek a common space policy framework for all states wishing to advance intergovernmental cooperation. Countries should also recognise the agency's authority to coordinate space actions and programmes which, as we have seen, some countries already maintain. The aim would be to build on existing infrastructures, initiatives and experiences to create and expand indigenous space capabilities, avoid duplication and save efforts. Another step would be to invest in human capital formation for space science. Furthermore, the intellectual capital of other partners can be tapped, and use can be made of the African diaspora.

Nonetheless, the path is not without difficulties: the scarcity of highly qualified human resources; the customary competition between states, always an obstacle to cooperation; the habitual lack of security and stability in many countries of the continent, which may hinder investments; and possible population opposition to public spending on space under the consideration that they have other more urgent needs (food, health, housing,

education), not understanding that the benefits obtained by those investments will rebound on their economic and social wellbeing³¹.

Conclusions

The AU and many of its Member States are now aware of the potential of space technology to address the continent's common socio-economic and security challenges. They are also convinced of the need for a purely African space programme: to African challenges and problems, African answers from Africa.

The decision to have a space strategy and an agency to coordinate the steps already taken in this field by some countries and to lead future initiatives is consistent with joint action vis-à-vis shared challenges.

The path towards a common foreign space policy in the area of intergovernmental cooperation is not without its difficulties, but if African countries have the will they can achieve it, as they have already done with the launch of the African Free Trade Agreement.

Óscar Garrido Guijarro
IEEE Analyst
PhD in Peace and International Security
[@oscargarrido](#)

³¹ NIKEZ, A., ANANIDZE, F., and ADU, S. "African Union Outer Space Program: Chances and Challenges". Palgrave McMillan, 2020. Available at: https://www.researchgate.net/publication/346444474_African_Union_Outer_Space_Program_Chances_and_Challenges