



Outreach and Capacity Building for Sustainable Space Development: Insights from Benin

31st UN/IAF Workshop on Space Technology for Socio-Economic Benefits

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SUSTAINABILITY EVERYWHERE

In today's world, sustainability is no longer just an option; it is a necessity that touches every aspect of human life : ecological, economic, and social.

Sustainability is particularly critical for developing nations, where balancing economic growth, environmental protection, and social development is challenging but essential for long-term prosperity.

Space sustainability involves minimizing the negative impact on the space environment while maximizing its benefits for Earth.



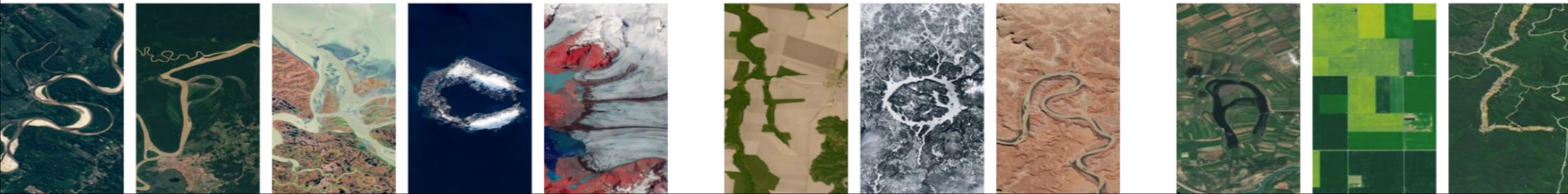
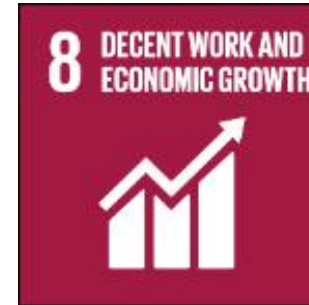
The relevance of Space Sustainability

1. The Negative Impact of Space Activities on Earth :

- Environmental Pollution from Launches
- Resource Consumption and Production Waste
- Impact on Local Communities

2. Reducing the Negative Impact of Space Activities in Space :

- Space Debris Accumulation
- Preventing Orbital Crowding
- Sustainable Resource Exploitation



A group of students in school uniforms are gathered outdoors, looking through telescopes and binoculars. In the foreground, a student in a black shirt with a purple sunburst design is looking through binoculars. Next to them, a student in a blue patterned shirt is also looking through binoculars. In the background, many other students in light-colored uniforms are standing and looking in the same direction. A building with a red roof is visible in the background. The sky is overcast. A dashed white line and a solid white circle are overlaid on the right side of the image.

EDUCATION AND OUTREACH FOR SUSTAINABLE SPACE DEVELOPMENT IN BENIN

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The State of Space Activities in Benin

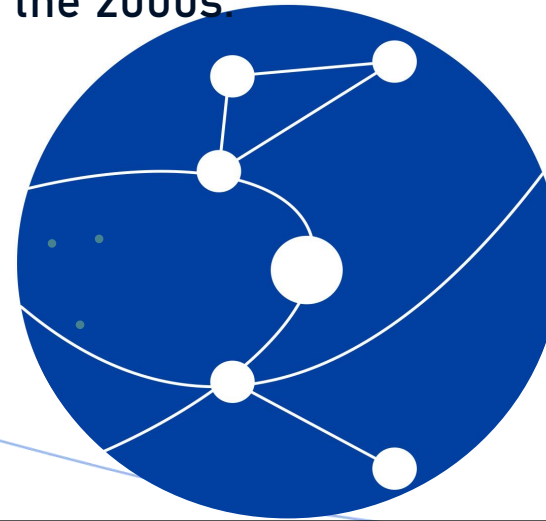
Benin does not yet have a formal **space industry**, a **national space agency**, or any state space ambitions. There are no satellite projects or government policies dedicated to space development.



However, there is a growing interest in space science among the youth due to the grassroots initiatives led by astronomy and space science associations : Club Astronomique Orion Bénin and Sirius Space Association, since the 2000s.

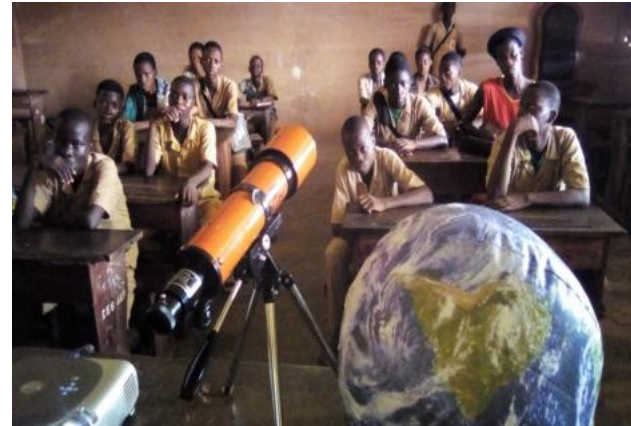


Public and private organizations like the National Meteorological Agency heavily rely on international partnerships and space-based technologies to contribute to Benin sustainable development .



Outreach Activities

Since 2021, numerous activities in STEM and space science have been held in schools and universities across Benin to raise awareness and building interest among young people.



Capacity Building and Hands-On STEM Programs

Stargazing & Outreach

Space Technology Experimentation

Workshops & Webinars

Challenge Competitions

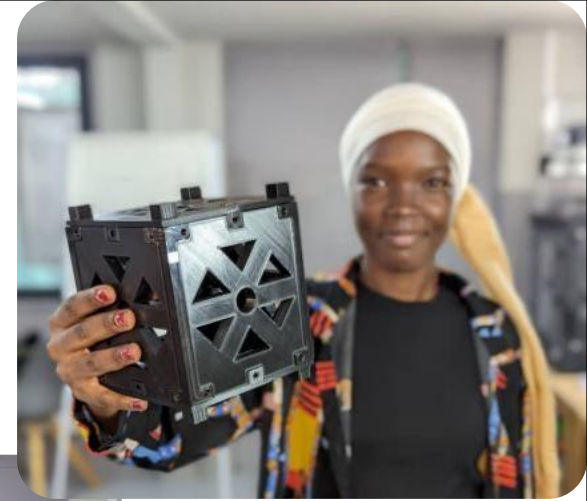
Space Research

CubeSat
Development

Asteroid Search Campaigns

Space Summer School

NASA Space Apps Challenge



National Space Strategy Proposal



We have worked on a National Space Strategy proposal as an integrated and sustainable framework for space development. This strategy focuses on the responsible use of space technologies for sustainable development, ensuring that the country benefits from advances in areas like agriculture, climate monitoring, and communication.



Infrastructure



Organization & Management



Education & Training



Research & Applications



International cooperation





SPACE SUSTAINABILITY IN DEVELOPPING REGION : WEST AFRICA

African Space Industry

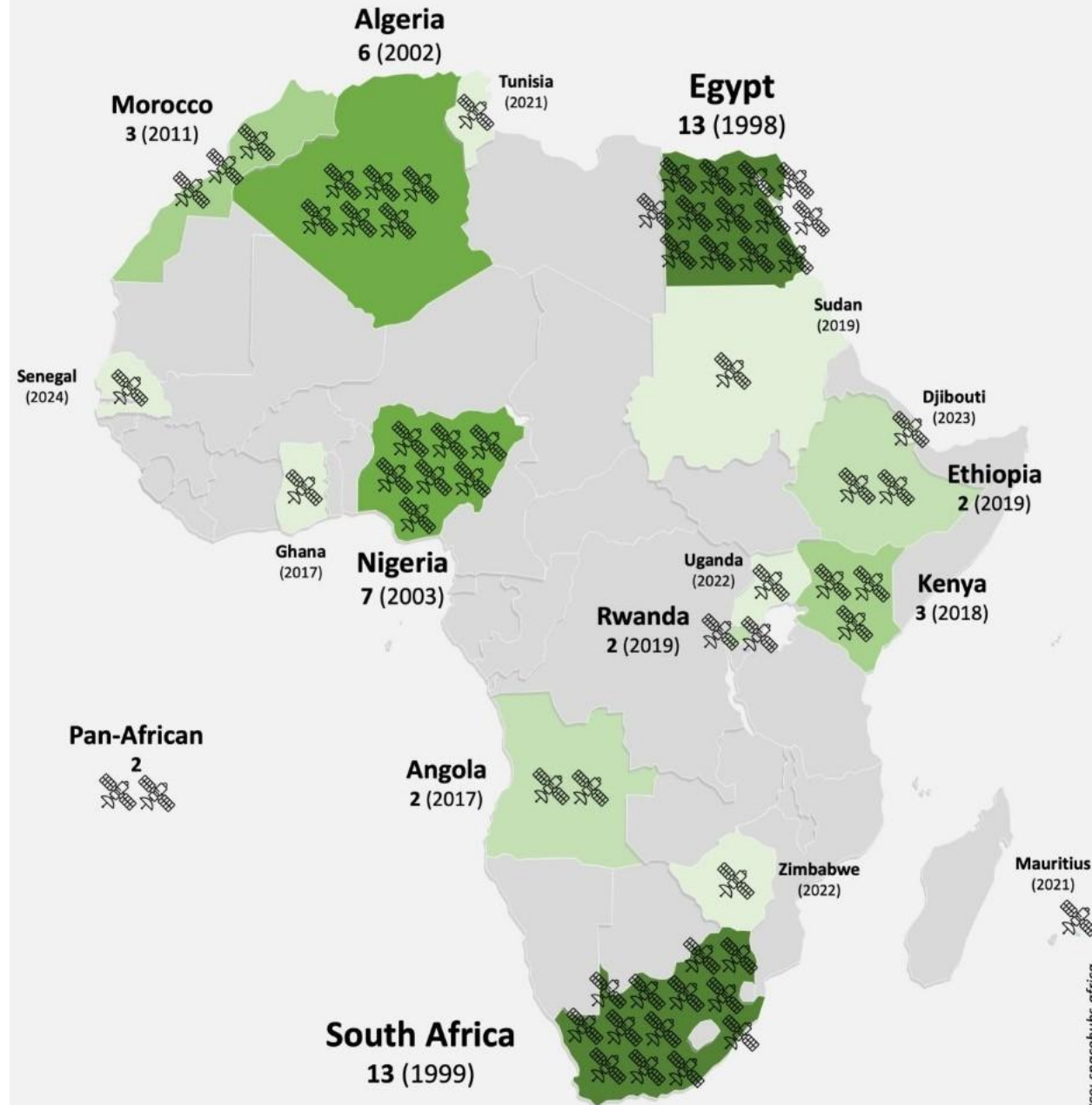
About half of 59 African satellites launched by 16 states are CubeSats. South Africa and Egypt have set ambitious goals for space development with satellite constellation.

In West Africa, Ghana and Cote d'Ivoire have made strides by launching satellites.

Countries like Rwanda, Angola and Senegal, with their space program and national space agency, serve as examples of what can be achieved through education and international collaboration.

Benin and 37 others countries are on track to develop their national space industry. With incoming space faring nations, space sustainability is crucial issue .

Satellites launched by African countries



Senegal's Journey

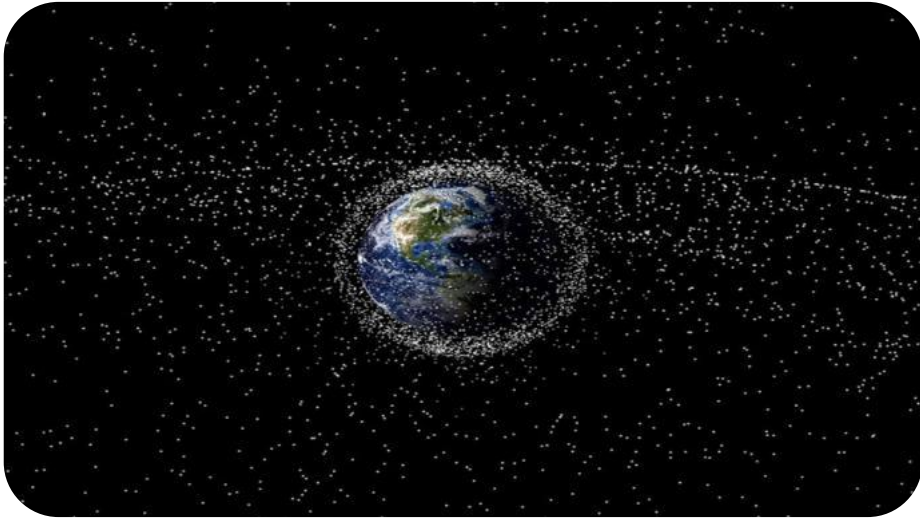
In 2023, the country launched its space agency, and on August 16, 2024, Senegal announced its first satellite. Senegal's clear ambition and space program aim to position the country as a leader in Africa's space landscape. Their approach to fostering a sustainable space program, including education and outreach, highlights the importance of long-term vision and international cooperation.

Côte d'Ivoire's Progress

Côte d'Ivoire is also advancing in the space sector, with its space program and ongoing satellite project. Although it has yet to create a national space agency, the country is building the foundation for future space endeavors.



Space sustainability challenges for African Nations



For countries like Benin and Cote d'Ivoire, the challenges of space sustainability are pressing. The rise of LEO mega-constellations and space debris threatens access to space for emerging space nations, raises the issues of space sovereignty and dependence on foreign technologies.



Despite these challenges, cooperation between African nations and international actors is essential for space sustainability. By working together, these countries can secure equitable access to space while addressing global issues like space debris.

Ensuring Space Sustainability for Future

Actions needed to be take to adopt a forward-thinking approach that prioritizes space sustainability and address challenges like space debris and enhance collaboration ensuring that space activities are inclusive and benefit all.

In this regard, international cooperation is essential, as it will enable Benin and other emerging space nations to share resources, knowledge, and strategies to tackle the pressing issues of space sustainability.

As a future space nation, Benin is set to become a responsible space actor, and is well-positioned to contribute to the regional and international efforts in order to benefit from space technologies for its sustainable development.



Different objectives, same space : share common goals !



Thank you

With different challenges, Benin has need and opportunities to develop its space capabilities through STEM education, technology development and international cooperation.

Support Our Mission
Contribute to create equitable and sustainable space opportunities for all

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