ALC ABSTRACT

**“Lunar ethics and other legal issues as they pertain to new space actors in Africa: An African perspective to international space law with a focal point on the ethical dilemma pertaining to outer space exploration and the pursuant implications on the development of incipient space programmes on the African continent, paying particular attention to South African and Nigerian Space policy.**

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The purpose of this research is to explain to interested parties the permissions and prohibitions of international space law as they pertain to resource mining, *inter alia,* and other scientific developments thatfrequently traverse the moral divide in the regulation of outer space activities. This study is not only pertinent but relevant as these recent developments will have an impact on trade and industry on the continent, and it is critical to Africa’s participation in international fora to regulate these issues. Given that space law is still in its infancy on the African continent this further necessitates the filling of the theoretical and practical lacuna in space law on the continent. The obvious implications for relatively “new” space actors such as South Africa and Nigeria is weathering the legislative dichotomy between provisions which either prioritize scientific exploration or prioritize international cooperation. What is clear, however, is that South Africa and Nigeria are set on becoming leading providers of outer space services on the African continent and will, as a consequence, have a progressively bigger impact on the substance and adoption of space law into the domestic legislation of other African countries. With this in mind, and as the world of space law moves towards the realm of resource mining to mitigate the effects of growing populations and resource deficits, Africa too must consider the impact of recent ethical *vis-à vis* commercial trends and translate these into domestic policy. Possible solutions include the promulgation of an African Secretariat on outer space affairs or legal committee like that of the United Nations and this will be discussed alongside a cursory note on the trade and development implications on the African continent in this regard. To what extent then can African countries, particularly South Africa and Nigeria, incorporate policies in their domestic legislation that encourage resource mining within the bounds of international law, without breaching fundamental concepts such as the non-appropriation principle? Should privatisation and investment in space development be encouraged and whether scientific exploration as a whole should be prioritized over preservation of the common heritage of mankind? These are some of the questions that this paper will discuss and offer tentative solutions while affording participants the benefit of a basic introduction to Space Law, it’s development on the continent, and finally the trade and legal considerations in this regard.

Page **1** of **1**

**INTRODUCTION**

Outer Space has always fascinated man, beginning from the Biblical days of the building of the Tower of Babel to this very Century in which it is particularly important in his everyday life. So, man has been making attempt to explore, he has explored and he is still exploring this important domain. This will remain so even to the end the days of the last man on Earth. Genesis 11 “let us build a tower that will reach the heavens and make a name for ourselves,”

Like in biblical times, interest in outer space stemmed from a desire for status and prestige. At this point, it has been realized that the activities in outer space provide wealth of benefits, & go far beyond supremacy & might,[[1]](#footnote-1) which also prompted Africa to join the space race. Its these benefits of outer space exploration that I’m going to discuss today, how they are acquired, what they mean for us in the African context and how we can overcome some of the challenges involved.

 Today there are 1071 satellites in orbit, about 24 of which are African.[[2]](#footnote-2) Africa realized that space sector plays an increasingly pivotal role in the efficient functioning of modern societies and economic development. Discovered that the use of satellite technology in navigation, communications, meteorology, and earth observation can help in: transport, natural resources management, agriculture, environmental and climate change monitoring, entertainment and so on.[[3]](#footnote-3)

Some countries in Africa now delve into space sphere:

•Nigeria established its space Agency (NASRDA) in

1999

•South Africa established its space agency (SANSA) in 2010

•Algeria established the Algerian Space Agency (ASAL) in 2002

•Egypt’s Council of Ministers approved on 27 September 2017 the establishment of a space agency

•Kenya established its space agency, Kenya Space Agency, on 24th February 2017

•Ghana established its Space Science and Technology Centre in 2012

African countries have their activities limited to the use of space data for socio-economic development

**Capacity Building In Space: Resource-Mining And Other Developments On The African Continent.**

**The ALC**

In the words of Peter Martinez

“The African Leadership Conference on Space Science and Technology (known as “the ALC”) is a regional conference to promote intra-African cooperation in the uses of space science and technology to support Africa’s development.”[[4]](#footnote-4)

Held first in 2005 in Abuja then subsequently in South Africa and Kenya. Bourne in response to Africa’s fulfilment of the Millenium Development Goals (MDGs) the establishment of the African Leadership Conference on Space Science and Technology for Sustainable Development was proposed by the Nigerian delegation at the UN Committee on the Peaceful Uses of Outer Space (COPUOS) in 2004 as a way to address this situation.[1](https://www.sciencedirect.com/science/article/pii/S0265964611001263%22%20%5Cl%20%22fn1) The conference aims 1) to raise awareness among African leaders of the importance of space science and technology; 2) to provide a regular forum for the exchange of information among African countries about their space activities; and 3) to enhance intra-African cooperation in the development and applications of space technology. The leadership that is targeted by this conference is not only the national space and political leadership of African countries, but also the collective leadership of the African Union (AU) and its New Partnership for Africa’s Development (NEPAD).[[5]](#footnote-5)

A panel discussion at ALC 2011considered the development of a shared vision for space in Africa. African countries are at various stages of becoming space-capable countries. Algeria, Nigeria and South Africa are in the process of developing indigenous space capabilities, while many other countries on the continent make significant use of space-derived data. A common thread running through the activities of emerging African space countries is the use of space technology to work towards the attainment of sustainable development objectives. Some of the areas highlighted include the development and management of natural resources, management of disasters, monitoring of environmental degradation and rehabilitation, and capacity building in all aspects of the development and application of space technology. These ideas found expression in the main output of the conference, the Mombasa Declaration on Space for Africa’s Development.[3](https://www.sciencedirect.com/science/article/pii/S0265964611001263%22%20%5Cl%20%22fn3)[[6]](#footnote-6)

**Resource-Mining**

Peter Diamandis(2013) Founder, Planetary Resources

•“Everything we hold of value on this planet, metals, minerals, real estate, energy sources, fuel—the things we fight wars over—are literally in near infinite quantities in the solar system.”

The Moon Contain rare earth resources

like:

¬titanium

¬uranium

.

¬helium

-(can solve the world’s energy demand for 10,000 years

¬Plain old mineral plagioclase

–includes pink spinel, a prized jewel on

Earth.

ϖThis is worth several billions of dollars

.

Asteroids

Asteroids contain enormous quantities of accessible resources

like:

¬iron, Nickel, magnesium,

¬water,

Oxygen, Iridium, Palladium,

¬Gold, osmium, Tungsten, rhenium,

¬Ruthenium, rhodium gold, Silver,

¬Platinum, olivine , and pyroxene.

ϖ

The mineral wealth of the asteroids in the asteroid belt and the solar system is several billions of dollars.

¬The mineral resources of outer space, if mined, would worth several trillions of dollars.

¬Diamandis estimates an asteroid being tracked by Planetary Resources to worth a total sum of between $300 billion and $5 trillion

¬More so, it has also been said that one single asteroid in our solar

system -241 Germania

-has $95.8 (£60) trillion of mineral wealth

inside it

-nearly the same as the annual GDP of the entire WORLD

¬Some 1999 experiments carried out by some scientists revealed that Uranus and Neptune contain methane (CH4), which can dissociate to produce diamond at high pressures and temperatures

¬In the future, the mining of diamonds in these planets may bring revenue worth several billions of dollars

Governmental organizations

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NASA

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JAXA

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CAS

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Private Companies

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Planetary

Resources Inc

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Deep

Space Industries

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Moon

Express

Inc.

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Current Issue

Nations have made it a hot topic of debate in their legislative drafting in the last few years.

National Legislations

¬United States’ Commercial Space Launch Competitiveness Act, 2015 gives rights to its citizens, including commercial entities, to own resources extracted from space.

¬

Luxembourg’s 11 November 2016 Draft law

–ensures that private operators have rights to the resources they extract in outer space.

The Non-Appropriation principle

**Privatisation and Investment in Space**

Common heritage of mankind

**Challenges**

Legal Issues

Need for formulation of new international rules and regulations for the conduct of activities, as the new frontier was outside the bounds of existing

international law.

¬Onus fell on the UN to –“maintain international peace and security” (Article 1 United Nations Charter, 1945) and, to encourage ‘the progressive development of international law and its codification” {Article 13 (1) (a)}.

¬It became the focal point for international cooperation in outer space and for the development of international space law.

From these gave rise the 5 treaties

a. the Outer Space Treaty (1967);

b. the Rescue Agreement (1968);

c. the Liability Convention (1972);

d. the Registration Convention (1975); and

e. the Moon Agreement (1979).

1. **Licensing**

in carrying out their responsibilities under the law: States must issue licenses to all entities carrying out space activities within their territories = Authorization

Therefore, it is important for each State to have licensing regime (National Space Legislation). NASRDA Act 2010 & South African Space Affairs Act 1993.[[7]](#footnote-7)

**Recommendations**

The viability of an African Space Agency/Secretariat

Prohibition of ownership of specific resources or even of commercial exploitation thereof

has not been addressed by the OST, and essentially has not been conclusively settled at an international level.

Underdeveloping and developed states adhere to the common heritage of all mankind principle for fear that wealthier countries will monopolize these resrouces.

In 2014, at the level of UNGA, Nigeria underscored the importance of equal and non-discriminatory access to outer space for all States that would aim at improving living conditions, regardless of a country’s scientific, technological, and economic development, and stressing that Outer space was CHM.

•This position was often repeated during the three days debate.

**Conclusion**

NEED FOR NATIONAL SPACE POLICIES AND LAWS IN AFRICA

National space policy & law are important tools in African space programs

¬Int’l space law imposes a duty of authorization & continuing supervision of non-governmental space activities on all State parties.

¬Authorization here means licensing

Serious non-governmental space activities cannot take place in a State without sophisticated licensing and authorization regime.

•South Africa and Nigeria have national space policy and law regime

5. WHAT IS EXPECTED OF AFRICA IN

SPACE

¬Blur all the crevices created by political and colonial attachments in

Africa

¬Look inward for solution to the continent’s problems

¬Develop and harmonize the space laws and policies of African countries

¬Cooperate in most space projects

¬Pull resources together towards achieving African-made space products = design, develop and launch

6. CONCLUSION

The idea of African Space Agency is a laudable one. Let us nurture it, feed it and make sure it grows = Thou shall not kill the African Space Agency

If we can’t do it ourselves, no one will do it for us

It is not impossible for Africans to do it themselves

Let’s lean on one another

LONG LIVE AFRICA IN SPACE!

1. O Nester John, “Africa in Space: Legal Issues and Responsibilities Related to Space Technology Development Programmes” (2017) United Nations/South Africa Symposium on Basic Space Technology “Small Satellite Missions for Scientific and Technological Ad van cement”, Stellenbosch, South Africa pg 10 [↑](#footnote-ref-1)
2. O Nester John, “Africa in Space: Legal Issues and Responsibilities Related to Space Technology Development Programmes” (2017) United Nations/South Africa Symposium on Basic Space Technology “Small Satellite Missions for Scientific and Technological Ad van cement”, Stellenbosch, South Africa pg 10 [↑](#footnote-ref-2)
3. As above pg12. [↑](#footnote-ref-3)
4. P Martinez, “The African Leadership Conference on Space Science and Technology for Sustainable Development” (2012) vol 28 issue 1 pg 1. [↑](#footnote-ref-4)
5. As above para 4.2 [↑](#footnote-ref-5)
6. As above 4.2. [↑](#footnote-ref-6)
7. As above pg 29 [↑](#footnote-ref-7)