



ISF 2017

INTERNATIONAL
SPACE FORUM
AT MINISTERIAL LEVEL
THE AFRICAN CHAPTER

FINAL REPORT

*Nairobi, Kenya
13 February 2018*

Organizers:



Kenya Space Agency



Sponsors:



Organizers:



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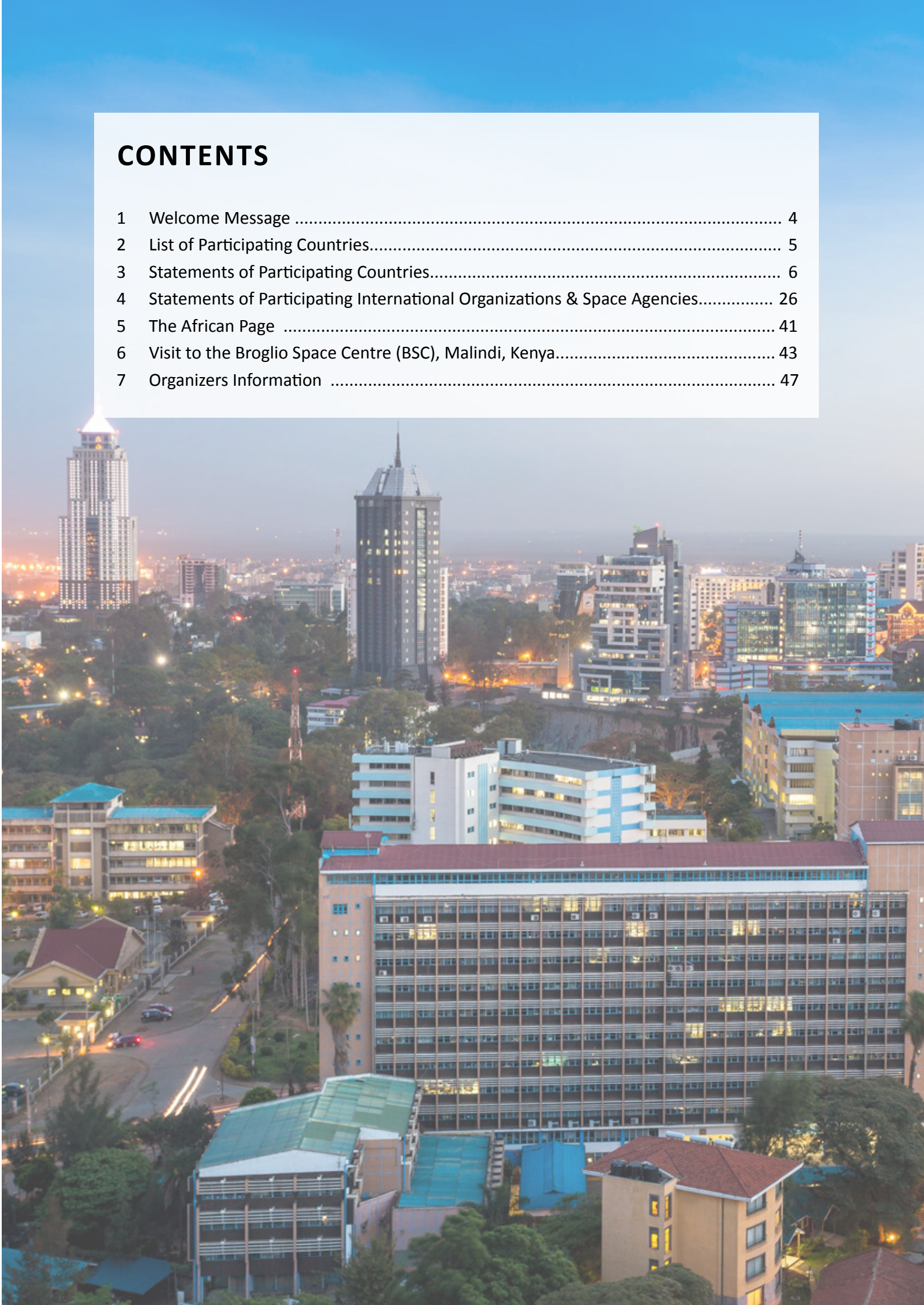


IAF Alliance Programme Partners:



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1 WELCOME MESSAGE

We take great pleasure in presenting the final report of the International Space Forum (ISF) at Ministerial Level – The African Chapter, #ISFNairobi. The planning of this African Chapter was initiated in Trento, Italy during the first edition of the ISF, in October 2016. During the Italian Forum, the Kenyan delegation, led by H.E. Amb. Omamo, Cabinet Secretary of the Ministry of Defence, announced their intention of hosting a regional chapter of the Forum in Nairobi. The beautiful city of Nairobi was ready to host a global discussion on the necessity of promoting a greater involvement of Universities and national Academies into space activities also in the African region.

An event’s success is often measured on its participants. They are the lifeblood of a meeting. Thus, we do express our sincere thanks to all the delegations who have come from 29 countries and 13 international organizations. Their presence and participation confirmed the importance of the scientific and academic expertise as an essential element for a long-term sustainable development of the future space activities.

The importance of Space in facing Africa’s challenges is now clear to all African countries: maritime security, accurate weather forecast, industrial fishing, emergency operations and environment management are only some of the regional activities that can benefit from space applications and data. Global space knowledge can also foster development in higher education and eliminate gender disparities. It is now evident that space produces direct socio-economic benefits for the involved countries as, for instance, maintaining territorial integrity or fighting against poverty. In addition, the risk of ending the enormous abundance of African national resources is a real call for environmental sustainability. The answer provided by the ISFNairobi was straightforward: the need for an equitable allocation of the available resources demands us to work as one because global challenges need global cooperation.

The ISFNairobi has been a great success mostly because of the contributions made by all participants. We have gathered all the statements, the keynotes as well as the African Page in this Report and we hope you will find it useful and enlightening. We believe that the knowledge and projects contained in these statements are the foundations for making this Earth a better place for all living beings.

Enjoy your reading!



Jean-Yves Le Gall
President
International Astronautical Federation (IAF)



Roberto Battiston
President
Italian Space Agency (ASI)



Saitoti Torome, CBS
Principal Secretary
Ministry of Defence of Kenya

2 LIST OF PARTICIPATING COUNTRIES

| | | | |
|--|----------------------------------|--|-------------------|
| | ALGERIA | | NIGERIA |
| | ANGOLA | | REPUBLIC OF CONGO |
| | BOTSWANA | | RWANDA |
| | BURUNDI | | SENEGAL |
| | DEMOCRATIC REPUBLIC OF THE CONGO | | SEYCHELLES |
| | DJIBOUTI | | SOMALIA |
| | EGYPT | | SOUTH AFRICA |
| | ERITREA | | SOUTH SUDAN |
| | ETHIOPIA | | SUDAN |
| | GHANA | | SWAZILAND |
| | KENYA | | TANZANIA |
| | LIBYA | | UGANDA |
| | MALAWI | | ZAMBIA |
| | MOROCCO | | ZIMBABWE |
| | MOZAMBIQUE | | |

INTERNATIONAL ORGANIZATIONS & SPACE AGENCIES

| | | | |
|--|--|--|--|
| ASI (Agenzia Spaziale Italiana) | | ESA (European Space Agency) | |
| AARSE (African Association of Remote Sensing of the Environment) | | IAF (International Astronautical Federation) | |
| CSA (Chinese Society of Astronautics) | | IISL (International Institute of Space Law) | |
| CNES (Centre National d’Etudes Spatiales) | | ISA (Israel Space Agency) | |
| CONAE (Comisión Nacional de Actividades Espaciales) | | SGAC (Space Generation Advisory Council) | |
| DLR (German Aerospace Center) | | UNOOSA (United Nations Office for Outer Space Affairs) | |
| ECSL (European Centre for Space Law) | | | |



3 STATEMENTS OF PARTICIPATING COUNTRIES

Statement of Algeria

By Azzedine Ousseddik

Director General, Algerian Space Agency (ASAL)



Mister Chairman

Excellencies

Ladies and gentlemen,

On behalf of the Algerian delegation, I would like to express my most sincere thanks to the Kenyan authorities for the warm welcome we received and for the kind invitation extended to us by Amb. Raychelle Omamo, Cabinet Secretary, Ministry of Defence of Kenya, to take part to the 2nd International Space Forum - The African Chapter.

My thanks also go to the organizers of this Forum, the Government of Kenya, the International Astronautical Federation and the Italian Space Agency for the excellent organization of this event and for the relevant choice of topics for this forum, in line with the sustainable development concerns of in Africa.

This event offers to us an exceptional opportunity to exchange and share experiences and information on the progress made by African states in the field of space for the well-being of populations and socio-economic and cultural development in Africa.

Excellencies

Ladies and gentlemen,

In Algeria, the Algerian Space Programme, is a reference tool for space policy in supporting sustainable development. The Algerian Space Agency (ASAL), which is the government’s space policy instrument, developed the national space programme, which focuses on four key priorities:

- 1. Implementation of Earth observation and telecommunications systems projects and participation in international satellite constellation projects;
- 2. Implementation of associated ground infrastructures to ensure the sustainability of the national space activity,
- 3. Mastering of space systems applications and services for socioeconomic development and strengthening of national sovereignty.
- 4. Development of a human, material and infrastructure potential to ensure the sustainability of national space activity and its integration into an information society.

Since 2002, Algeria put in orbit six satellites, including four for earth observation mission (EO):

- Alsat-1 in 2002, a mean resolution EO satellite, its end of life occurred on 2010.
- Alsat-2A, a high resolution EO satellite in 2010, which is always in life.
- Alsat-2B, the same high resolution EO satellite, in 2016, which constitute a constellation with Alsat-2A.
- Alsat-1B, a mean resolution EO satellite, to continue the mission of Alsat-1, launched in 2016.
- Alsat-1N, a nano-satellite for scientific research and technological development.
- Alsat-2B, Alsat-1B and Alsat-1N have been integrated in Algeria, by Algerian Engineers in our own facilities in Oran.
- Alcomsat-1 a geostationary telecommunications satellite launched on 11 December 2017 from China.

Our space programme is very ambitious and the next steps will be to increase the know-how and the master of technology.

Alcomsat-1 will provide Algeria with essential communications relays in the event of a major disaster, and will contribute to improving long-distance communications and opening up remote regions, in addition to providing a range of commercial services from broadcasting TV and radio packages to data transmission, tele-education and tele-medicine.

Excellencies

Ladies and gentlemen,

Algeria through its space projects and the doctoral school of space technology and applications in partnership with national universities has trained more than 400 experts, in both academic trainings (doctors and masters) and through the project in the different specialties of space technologies and applications.

With regard to cooperation, Algeria supports all regional initiatives promoting inter-African collaboration in the field of space technologies and applications for sustainable development in Africa. In this regard, Algeria has made its contribution to the finalization of the African space policy adopted by the African Union in December 2016 and continues to deploy its efforts to define and set up the mechanisms for its deployment and implementation.

In addition, Algeria continues to provide support to the countries of North Africa and the Sahel for the prevention and management of natural disasters through the Algiers Regional Support Office of the United Nations Platform for Disaster Management and Emergency Response (UN-SPIDER).

Finally, I would like to wish great success to this forum, convinced that the recommendations resulting from the forthcoming debates will contribute to social, economic and cultural development in Africa.

Thank you for your attention.



Statement of Egypt

By Mahmoud Hussien Ahmed

Chairman, National Authority for Remote Sensing and Space



Mr. President of the Second International Space Forum, Gentlemen, heads of space agencies and bodies of the African continent and the world, Ladies and Gentlemen,

It is my honor to participate with you in the second Space Forum in Africa, which is being held in Nairobi, Kenya, Africa.. Which has a great significance for the status of the African countries from the global space and their interest in space technology and its applications to serve humanity at the local, regional and international levels. This meeting comes within the framework of implementing the objectives of the plan on science, technology and innovation, maximizing the use of resources, building human capital and empowering young African innovators. Leading to a knowledge economy and green growth.



It is my honor to convey to you the congratulations of the Egyptian Government - represented by His Excellency the Minister of Higher Education and Scientific Research - on this forum, which will discuss topics related to space technology and its importance to the African continent, Which will have a positive impact on the peoples of the African continent to achieve the joint agenda of Africa 2063 and achieve its six goals namely to reduce poverty, to prevent the spread of diseases, to communicate, to Maintain the African outer space, to build the community and to create wealth, for improving the Social and economic situation and Leading to a better future for the people of Africa.

It is essential that all African countries participate in a unified ideology and fabric to achieve this long-term agenda to achieve this development agenda for Africa. Egypt is part of this fabric and strives to extend the hand of participation and aid to all African countries to build a knowledge economy based on science and technology, especially in space technology. In this context, it is my honor to convey to you that the Arab Republic of Egypt has been interested in space science and technology for the service of society since 1970, where a center for remote sensing was opened, which evolved into a national Authority "The National Authority for Remote Sensing and Space Science", which have acquired many potential, including a ground station for receiving international satellites and laboratories of design in addition to the excellent scientific and technical human base .

Egypt also launched a series of satellites for communications, radio and television broadcasting as well as remote sensing satellites. Egypt was able to build its own capabilities in space science and technology and relied on partnerships with many parties that contributed and contribute to the advancement of Egypt's technical and technological power. Egypt has participated in all space activities in the African continent and has played an active role with the African countries and the African Union in the preparation of the space policy and strategy in Africa and will actively contribute to implementing these policies and strategies on the ground through technical and financial contributions to advance the development of space technology in the African continent and to support the African Development Plan 2063.

Ladies and Gentlemen, Allow me to take this opportunity to congratulate the people of Africa on the adoption of the institutional and legal framework of the African Space Agency adopted at the African Summit of 28-29 January 2018. From this platform, I also call on all parties to cooperate and support the implementation of this policy to promote the African continent and achieve social and economic renaissance.

I would also like to point out here that the African Space Agency will be the legal umbrella to unify all African efforts in space science and technology to support human capacity building, support the African Space Generation Youth, build the infrastructure of space technologies and support the production of space technology products and services that contribute the development of the African continent and the improvement of the economic and social situation of the peoples of the African continent.

Ultimately, I would like to thank those responsible for preparing this meeting, and if it were not for them, this meeting wouldn't be possible and I wish you a successful meeting for the benefit of the peoples of the African continent and the peoples the world over.

Statement of Eritrea

By Beyene Russom

Ambassador of Eritrea to Kenya



Dear Cabinet Secretary of Defense of the Republic of Kenya, Honorable Ambassador Raychelle Omamo.

Dear President of International Space Forum Honorable Ministers, Leaders and representatives of space authorities, space agencies, international space organizations and senior experts.

I am thankful for the invitation extended to my country Eritrea and I feel proud and humbled to participate in this forum of ISF, Nairobi chapter representing my minister.

I would like to extend my appreciation and gratitude to the Kenyan Defense Ministry, the Italian Space Agency and the International Astronautical Federation for organizing this very open and productive discussions for the benefit of Space-Science and its Development.

The world has reached unprecedented level of Technological advances in Space-Science and Technology in a very short time. It is clear the Space-Science is expected to grow at a very high pace for the coming 10 to 30 years.

Eritrea is at the beginning stage of Space-Science that is only in theory and preliminary level of the sciences of the field. The benefits of Space-Science as has been demonstrated so far cannot be over emphasized. Its applications in Agriculture, Management of Natural Resources, Climate Change, Transportation/ Navigation, Environmental Conservation and Management are vital to the success of those sectors in achieving Sustainable Growth goals and generally the wellbeing of humankind.

The importance of Space-Science in our Agricultural efforts to achieve food security and Environmental conservation are recognized. The adverse effects of global warming & climate change are ever more increasing and are visible in our region which is located in the Sahle Sahara desert. Frequent droughts have devastated this frontier region in the past and have resulted in untold damages to livelihood and the economies at large. How can such adverse consequences of climate change be prevented? Can space science with the tremendous data it collects save humanity in the future?

As Eritrea is not endowed with good rains, lakes or rivers, it is striving to harvest every drop of water by building dams and developing irrigational schemes. Eritrea has also taken strides in successfully launching and implementing Agricultural projects in its own capacity to achieve national goals of sustainable growth and Food Security, striving to do away with drought, hunger and aid.

Data collected in climate change and drought through space-science and fast developing techniques is very important in achieving food security and agricultural management. As such, Eritrea welcomes cooperation on this sector with regards to information sharing and capacity building to achieve sustainable development goals.

In the coming 2-3 decades Space Science and its technology will have developed beyond the imagination of those who are working in the field. By that time habitable planets or moons may be discovered and what is seen as science fiction might soon be reality in the same way that what is witnessed today was once considered part of science fiction some few decades ago.

I hope, as humankind strides forward and discovers the uncharted part of the universe and galaxies, the findings will be used to the benefit of humanity and mankind.

I would like to close my statement by wishing everyone participating successful and productive discussions in 2nd International Space Forum at Ministerial Level the African Chapter.

Thank you very much.



Statement of Ethiopia

By Solomon Belay Tessema

Director General, Ethiopian Space Science and Technology Institute (ESSTI)



Excellencies :

- Kenyan Government representatives
- AU HSTC
- Director of UNOOSA
- Ambassadors
- President of Italian Space Agency, Prof. Robert Battiston,
- IAF Vice President for Science and Academy,
- Government representatives from Different countries
- Participants of 2nd International Space Forum 2017



Excellencies, Ladies and Gentlemen,

I am very pleased to give a statement on the behalf of Ministry of Science and Technology and Ethiopian Space Science and Technology Institute (ESSTI), Federal democratic Republic of Ethiopia.

Ethiopia's space activity was initiated by Ethiopia space science society in 2004 and took lead by Entoto Observatory and Research Center (EORC) starting from 2013 focusing on research, special graduate program training in astronomy, space science, remote sensing, and geodesy and satellite science. The encouraging activities of the observatory and space science society paved the way for the birth of new government institute.

Considering the importance of space science and technology for overall development, national and international collaboration Ethiopian government had established ESSTI in 2016 to lead and coordinate all space activities, represent the country in all international space related affairs and the countries engagement in space related collaboration, and ensure the implementation of treats and laws that Ethiopia has ratified or signed. Taking this opportunity, I encourage UNOOSA, ITU , all space agencies, all space communities, space industries, reach Ethiopia through ESSTI.

Ladies and Gentlemen,

The Ethiopian government has given special attention for Capacity building in infrastructure, technology, human capital development, Research and Development, International Collaboration, which are very well aligned with National priorities to bring about structural transformation and to achieve its goal of being among one of the Middle income countries by 2025. Space program has got the government's attention to the fulfillment of the above goals.

Ethiopia's geographical location and topography is highly attractive for Observational astronomical research (both optical and Radio) and space research. We very much welcome any interested party to work in collaboration with us. Ethiopia is actively working to promote the importance of Space program for Africa. The African Union is taking critical and solid steps to establish African Space Agency in the effort to transform the role Africa collectively from user to significant contributor in the space arena. As usual Ethiopia wholeheartedly supports to the success of this African Program.

In my belief, such fora have paramount importance to strengthen collaboration and partnership among us in the region and other parts of the globe. In such fora we can discuss our common challenges and exchange experiences to give moment to space program in our respective countries. Finally, I would like to thank organizers for organizing such an important event and inviting. I expect more international conference and workshops in Africa to facilitate and promote space programs.

Thank you.

Statement of Kenya

By Alice Kiarie

Director Policy and Strategy, Ministry of Defence



Space technology and its derived data has enormous potential to catalyze the socioeconomic development of the Africa continent. Kenya has used Satellite technology to provide critical information to inform decisions in disaster management, farming, conservation and monitoring of natural resources, communication, navigation, among others. This technology offers great potential towards solving problems in developing countries. However, it is noted that developing countries are not using satellite technology to its full potential due to lack of funds, expertise, equipment or awareness.

The Government of Kenya, in appreciation of the immense potential of space technology to socio-economic development, established the Kenya Space Agency under the Ministry of Defence in 2017. The Kenya Space Policy and Kenya Space Strategy were also approved in the same year to govern and guide the development of an indigenous space sector. It has been an honor to host the first Regional International Space Forum - Africa Chapter 2017

The Forum has been fulfilling because of the discussions on the THREE agenda items that are critical in addressing the challenges that African countries, as well as other developing countries, are facing as they embark on nurturing their space sector. We have all attested these agenda items which are; the need for capacity building as well as space partnerships and the potential space technology to support environmental sustainability.

On Capacity Building: Africa still lags behind in building its capacity in Space related disciplines which has resulted in the continent missing out on opportunities to create jobs and grow our economies. Africa hosts numerous institutions involved in capacity building in the space sector, one such institution that Kenya proudly hosts is the Regional Centre for Mapping of Resources for Development (RCMRD).

RCMRD was established in 1975 under the auspices of the United Nations Economic Commission for Africa (UNECA) and the African Union (AU) currently with 20 African member states. Its mission is to promote sustainable development in the member States through generation, application and dissemination of geo-information and is also actively involved in training in space related disciplines.

However, very few Universities in Africa offer space related training and there is needs to establish such educational programmes, and where they exist strengthen them. There is also need to establish collaborative programmes with space faring countries to benefit from current technology and innovations in the space arena.

On Environmental Sustainability: Africa is endowed with abundance of natural resources. It is observed that most of our countries have not mapped them and there could be more that we are yet to discover. Satellites, and in particular Earth Observation satellites, offers Africa precious tools to continue gathering and documenting information on our abundance resources and also provides a means to monitor their exploitation.

Many cities and towns in Africa are not properly planned which results in numerous challenges in providing requisite amenities. Satellite imagery can help us plan our towns and the supporting infrastructure as well as map out corridors for future growth.

Kenya is home to numerous game reserves and parks. Due to growth population, human settlement has expanded into migration routes and areas reserved for environmental conservation. With the help of satellite technology, Kenya has mapped out migration routes to avoid human-wildlife conflict. This is just one example of the application of space technology. The technology is also used to monitor Kenya's forests to discourage illegal logging, monitoring areas where the deserts are expanding to and launching mitigation measures. Other uses include monitoring the weather to give forecast to farmers and in case of anticipated weather related disasters give warnings to affected communities in good time and aid in disaster mitigation.

On Space Partnerships: In 2016, the African Union (AU) Summit adopted the African Space Policy and Strategy. Kenya supports the implementation of the Africa's space policy and strategy in driving Africa's indigenous space programme to create awareness on the potential role of space science and technology in spurring Africa's socio-economic development, while building our capacity and capability to actively participate in the global space arena.



Kenya will continue to support African initiatives that seeks to advance the growth of the space sector in the region. Examples of such initiatives include the Square Kilometer Array (SKA) and African Resource Management Constellation (ARMC). The SKA project will be a collection of hundreds of thousands of radio antennas with an area equivalent to one square kilometre (world's largest antenna) being spearheaded by South Africa. Kenya's Longonot satellite antenna has been identified for conversion into a radio antenna.

The ARMC is an initiative involving Nigeria, South Africa, Algeria and Kenya (as well as other African Agencies) that is meant to develop a constellation of satellites to provide real time, unrestricted and affordable access to satellite data for member countries and the region, The initiative will guarantee access to space, support effective environmental and resource management in Africa.

In conclusion, Kenya appreciates and reiterates that space science and technology has the potential to ignite a technology revolution in Africa and this could immensely benefit our region in terms of building the requisite human capacity in space related disciplines, create jobs in the space industry and other support industries. This is expected to lead to having spin-off companies and technologies from such ventures. At the heart of it all would to promote the socio-economic development of our continent.



Statement of Nigeria

By Isaac Namdi Anum

Acting Director, Environmental Sciences and Technology Department,
Federal Ministry of Science and Technology



I am here to represent the Honourable Minister of Science and Technology, Dr Ogbonnaya Onu who is involved in another International assignment.

Nigeria has a Space Agency, National Space Research and Development Agency which is under the supervision of the Federal Ministry of Science and Technology. It was established to foster development in area of space science, technology and its application for sustainable development and economic independence. Nigeria has launched three Earth Observation Satellites (NigeriaSat-1, NigeriaSat-2 and NigeriaSat-X) and one Communication Satellite (NigcomSat-1 that was de-orbited and was later replaced by NigcomSat-1R).

Since the establishment of the Agency, it has been building capacity of its staff in areas of space engineering and sciences, while also operating with various universities to develop the capacity of Nigerians in the use and application of space science and technology. Researches in carried out in the applications of space technology in the areas of environment, water resources, agriculture, disaster management, urban development and security. Data from earth observation satellites are made available to Nigerian Universities for free to help students carry out research and understand the use of satellite imageries, while the university lecturers were encouraged to use it to solve local problems.

Nigeria is part of the UNCOPUOS, (United Nation Committee of Peaceful uses of outer Space) DMCi, (Disaster Monitoring Constellation 1) DMCii and African Resource Monitoring Constellations. It is also a member of GEO (Group of Earth Observation) and GMES. (Global Monitoring for Environment and Security). As a member of Disaster Monitoring Constellation, we have contributed our data to the campaign on Amazon and also made such available for other parts of the world during the carter calls. Presently Nigeria represents the Regional Support office of the UNSPIDER. (United Nation Space-based platform for disaster Management and Emergency response). Data collected is used by the Military in their operations to combat the crisis arising from Boko Haram.

Nigeria is happy to announce that it is a member of the **International Astronautical Federation (IAF), African Leadership Conference and African Union Space Technology Committee. We are therefore here to support the efforts of the forum as it works with Africa.**

Thank you for listening.



Statement of Rwanda

By Joseph Demali

Defence Attaché, High Commission of Rwanda in Nairobi



Honorable Raychelle Omamo, Cabinet Secretary for Defence,
Ministers here present,
President of the International Astronautical Federation,
President of the Italian Space Agency,
Ambassadors,
Ladies and Gentlemen,

I also would like to thank the Italian Space Agency, the International Astronautical Federation, and the Kenyan government for organizing this important International Space Forum – African Chapter. Rwanda has not launched satellites, like the country represented by the previous speaker (Nigeria), but we use space services in many sectors and in line with the 1999 Vienna Declaration, Rwanda supports peaceful use of Outer Space and harnessing of space science and technology for the benefit of all mankind.



In view of the immense possibilities space science and technology can offer, Rwanda gives it the highest importance. Rwanda was among the key champions of the African Space Policy strategy approved by the African Union General Assembly in January 2016. Rwanda has particularly taken advantage of advancement in earth observation technologies as well as increased accessibility and affordability of data driving from space to improve the management of natural resources, enhance disaster monitoring and preparedness, environmental protection and management; for example, Rwanda works with the MIT in storing observatory centre for detecting pollution and upper gases. Aviation, clean based navigation, and infrastructures that supports space organizations. Health care services, e-services like tele-medicine to collect and deliver blood to rural areas. In view of this forum space science and academia for sustainable development in Africa, Rwanda see its national development as great thinking around knowledge development and this makes big data an associated major driver in process.

The country is currently developing a national data reproduction policy to complement other already adopted policies such as open data and smart Rwanda masterplan. This ambition to be data industry is supported by a pool of world class researchers, academies recently established in Rwanda whose aim is to educate and produce expats in the STEM. These academies include African Institute of Mathematical Sciences, African centre for internet of things, the African Centre of Excellence in Data Sciences, and national investees that have recently introduced programmes in this area.

Besides these institutions of innovation there is the Kigali Innovation Cité Exhibition Hub have already begun by producing practical services and data driven products derived from big data analytics.

Rwanda also supports the possibility of partnership and an integrated African space programme. We wish to congratulate our sisters' African countries that have already advanced their space programmes including Kenya that have recently enacted a law establishing a national space agency, a national space policy, and space strategy.

Thank you very much.

Statement of Senegal

By Amadou Thieno Gaye

General Director of Research and Innovation, Ministry of Higher Education, Research and Innovation



Madame Honourable Minister of Defence of Kenya,
Honourable Minister of Higher Education and Scientific Research of Sudan,
Honourable Ministers,
Mister, the President of Italian Space Agency,
Mister, the President of International Astronautical Federation,
Distinguished Heads of Delegation
Distinguished participants in your grades, respective titles, any protocol observed,



It is with a real pleasure for Senegalese delegation and I, to represent, in this important Forum the Honourable Minister of Higher Education, Research and Innovation of the Republic of Senegal. I am so much happier for the object that brings us together touches on of the utmost important topic which is the sustainable socio-economic development of our continent, for its stability and for the happiness of its youth.

In Africa, institutions of higher education and research, researchers, teacher-researchers are imperatively called upon to play a greater role in the production of knowledge, the development of innovation, in order to meet the requirements of wealth creation, social protection, safeguarding the environment and creating jobs.

Following the example of African Union through its strategy Science Technology Innovation for Africa 2024 (STISA-2024), Senegal has taken the strategic option of making Science, Technology and Innovation a key levers of economic, social and cultural development. This willingness has been demonstrated by unprecedented investment efforts after National Concertation on the Future of Higher Education and Research (CNAES) and the presidential decisions that are the foundations of the ongoing reforms. One of the flagship activities of these reforms, after the establishment of the General Directorate of Research and Innovation, is the construction of the Diamniadio City of Knowledge, new city, at the exit of Dakar and a short distance from the new international airport Blaise Diagne. The City of knowledge is being built on a site of 14 ha and will include five spaces:

- Governance and Evaluation;
- Technical infrastructure, sharing and learning;
- Promotion of Scientific Culture
- Training and apprenticeships
- Research, Innovation and Technology Transfer, with Shared Research Platforms and the National Center for Scientific Computing (CNCS), which will be in charge of the management of the High Performance Calculator (HPC) being acquired and which is an important component of the Institute of Advanced Science and Technology (ISTA). Important component of the Institute of Advanced Science and Technology (ISTA).

ISTA will host Interuniversity Masters in the following areas: Nanoscience and Nanotechnology, Nuclear Physics and Applications, Nuclear Medicine, Cyber Security, Molecular Genetics, Space Science and Technology and Remote Sensing, Atmospheric Physics and Oceanography, Big Data, Internet of Things, objects, robotics and artificial intelligence, scientific computing, numerical simulation and modelling. The ambition pursued in the short and medium term is to stimulate in this context the development of technologies that can accompany important qualitative changes in our economy.

In addition to the projects developed in Universities and other Higher Education Institutions to orient the system towards STEMS and short vocational training, this research ecosystem dedicated to STI will quickly attend the realization of the activities



of a national program for the development of space sciences and technologies, which are being developed. Thereby, Senegal demonstrates, its ambition to take full advantage of the benefits and power of space science and technology as a whole (remote sensing, earth observation, algorithms, spatial data processing, technical infrastructures for acquisition, storage and data processing, GIS, geomatics, etc ...) and in the development of value-added services, significant niche of jobs especially in new trades. It is also necessary to mention the implementation of the infrastructures of the promotion of the scientific culture within the city of knowledge, including a mini astronomical observatory and a planetarium next to a multimedia library and spaces for demonstration and scientific animation.

Thus, Senegal is organizing to take advantage of the “space” sector and ensure the achievement of the objectives of the three pillars of Senegal Emergent Plan (PSE) (structural transformation of the economy and growth, ii) human capital, social protection and sustainable development; iii) governance, institutions, peace and security) for its sustainable socio-economic development through the many opportunities for innovation offered by “space”.

Senegal’s space program is divided into 3 components:

- Development and implementation of training programs (joint university programs, certification, etc..) and capacity building;
- Development of a local space economic footprint, with a Research and Development Center for manufacturing, assembly, integration, testing and maintenance that supports the development of a local industry (startups) and an ecosystem, and the creation and commercialization of additional services including digital applications;
- Mastery of space technologies and expertise, mastery of technologies that can be used in many economic sectors (agriculture, mining, railway or naval maintenance, coastal engineering, environment, data science, etc ...),

The dynamic and pro-active approach that Senegal has chosen to implement, by ensuring the coherence of the entire system of higher education, research and innovation (ESRI) (in deep reform). The wealth production device is the willingness of the most senior Authorities, to see Senegal play a major role in the mastery and development of Science and Technology especially the space sector, and take its place resolutely in the sustainable development of our continent.

This is an opportunity for me and the Senegalese delegation to express, on behalf of the Minister of Higher Education, Research and Innovation, our sincere gratitude to the Government of Kenya for the hospitality. Our thanks also go to the organizers of the Forum for their unfailing commitment to the success of our conference. No doubt this Forum will be the Founder of a new impetus for Space Science, Technology and Innovation in Africa.

Thank you for your kind attention.



Statement of Seychelles

By Xavier Estico

Chief Executive Officer, National Institute for Science, Technology & Innovation



Excellences, Distinguished Guests, Ladies and Gentlemen:

On behalf of the government of the Republic of Seychelles, I would like to thank the Government of Kenya, Kenya Space Agency, International Astronautical Federation and La Agenzia Spaziale Italiana for the invitation to participate in this very important forum.

Seychelles is the smallest African state. Most of the time, it not visible on the maps of the continent. *I could not see Seychelles on the maps so far shown in this forum today.* It is not uncommon that it is missed out when drawing the maps. It is often missed out and when asked where is Seychelles, one just takes a pen or a marker and draws a few dots somewhere south east of the equator and writes the name Seychelles on the side. However, Seychelles is very visible through Space Science and Technologies.

Being a small oceanic archipelago, Space Science and Technologies are crucial to our socio-economic development, even to our own existence in the future. We are threatened by Climate Change. Our own neighbour, the Maldives islands are already at considerable risks of this phenomenon.

Seychelles is seriously embracing the Blue Economy as one of the main pillar of the economy. We are approximately 1% land and 99% sea, having over 1 million square kilometers of Extensive Economic Zone (EEZ). *Knowing how to swim may be a recommendable survival skill.* This huge EEZ presents a great challenge and we need to harness Space Science and Technologies to tap the resources of this vast ocean space. We are in need of Space Science and Technologies for:

1. Maritime security
2. Accurate weather forecasts
3. Harnessing our seabed resources
4. Development of our fishing industry
5. Support to emergency operations
6. Environmental and disaster management

Another very important area is the efficient operational management of one of the largest Flight Information Region (FIR) of the continent that Seychelles holds responsibility for its safe operation. The list is not exhaustive, so we look forward to be a partner of the African Space Agency.

Before, I conclude, I would like to state that it may turns out to be that the few dots somewhere southeast of the equator may have a comparative geographical advantage for the continent in relation to Space Science and Technologies.

I thank you all for your attention.



Statement of South Africa

By Valanathan Munsami

Chief Executive Officer, South African National Space Agency (SANSA)



It is with great pleasure that the South African delegation participates in this African Chapter of the International Space Forum. We would like to make use of this opportunity to congratulate the government of Kenya, the Italian Space Agency and the IAF in preparing and successfully hosting this session of the Forum.

South Africa places great importance on the development of space science and technology as a driver for assisting in the delivery of the Sustainable Development Goals and Agenda 2063 of the African Union. South Africa was the second country to submit a country report on the SDGs and in talking to our Statistician General we are made to understand the underlying challenges of identifying the relevant data sources.

Currently South Africa is developing an AIS CubeSat, to be used for the tracking of ships for maritime domain awareness applications. If successful we will be developing a constellation of CubeSats and we invite other African countries to work with us from a capacity building and operational platform perspective. We are also building the country's next optical satellite, a 450kg Earth observation satellite, EOSat-1, which will be South Africa's contribution to the African Resource Management Constellation (ARMC) and the data will be made available for use by all African countries.

SANSA has partnered with the Square Kilometer Array initiative and the Centre for High Performance Computing, amongst others, in an effort to address the infrastructure challenge through the development of a Data Intensive Research Cloud. In this regard information generated for Earth observation can be easily archived, processed and disseminated for improved critical decision-making by government in terms of supporting food security and agriculture, water resource management, land use, urban planning and disaster management, among many others.

SANSA is host to the only Space Weather Regional Warning Centre in Africa and one of 17 Regional Warning Centres worldwide, which forms part of the International Space Environment Service (ISES). We recently underwent an audit to provide space weather information to the civilian sector in Africa and the results were positive; although the formal outcome is yet to be confirmed. Space weather is also central to the information required for the long-term sustainability of outer space.

SANSA continues to provide training on the use of Synthetic Aperture Radar (SAR), throughout all government and research agencies, in South Africa and other African countries. In this endeavor we have partnered with Japan International Cooperation Agency (JICA) and the Committee on Earth Observation Satellites (CEOS) Working Group on Capacity Building and Data Democracy.

In addition, South Africa is progressing well in the establishment of the African Union Pan African University Space Science Institute. It is envisaged that the University will have satellite centers throughout the African continent and the first intake will take place fairly soon and will see approximately 100 students during its first intake.

International cooperation is the cornerstone of South Africa's Space program. In this regard, South Africa would like to underscore the importance of the African Space Policy and Strategy, which was adopted in Addis Ababa on 31 January 2016 and called for member states to mobilise domestic resources for the implementation of this policy and strategy. South Africa looks forward to working with our Continental partners, through the AfriGEOSS Initiative and the Committee on African Space Institutes (CASI), both multilaterally and bilaterally, towards the establishment of the African Space Agency and most importantly towards the implementation of the African Space Programme.

Substantial progress has been made towards the establishment of the BRICS Remote Sensing Satellite Constellation Initiative. This Initiative will assist in the sustainable development of BRICS economy and society and inject new vitality into the strategic partnership among BRICS States. There is a consensus that the BRICS Remote Sensing Satellite Virtual Constellation is a practical step towards high-tech cooperation between these countries that will assist in attaining the sustainable development goals and challenges pertaining to our respective economies and societies. South Africa has formally assumed the chair of BRICS.

Our international collaborations are further reflected in our effective participation and leadership in global partnerships such as the Group on Earth Observations (GEO), UNCOPUOS - where we are currently Chairing the Science & Technology Committee, the IAF, and the Committee of Earth Observation Satellites (CEOS).

Last year three significant international space symposiums were held in South Africa, the first was the International Symposium on Remote Sensing of Environment (ISRSE) brought together the Earth observations community to share trends and future focus on developing socio-economic application. The second, was the Joint Assembly of the International Association of Geomagnetism and Aeronomy (IAGA), where the focus was on the ocean environments and how this influence both the biota and climate conditions of the region.

The third event was the United Nations/South Africa Symposium on Basic Space Technology "Small Satellite Missions for Scientific and Technological Advancement" held in Stellenbosch from 11 to 15 December 2017. The event was co-organized by the United Nations Office for Outer Space Affairs and the Government of the Republic of South Africa and Co-sponsored by the European Space Agency. The Symposium objectives will feed into the thematic priorities identified under UNISPACE+50.

In closing allow me to reiterate the importance of the 4th Industrial Revolution for the African continent, to ensure appropriate, that is on time and on demand, access to data and processing systems through an efficient infrastructure. This will enable the immediate provision of local solutions to local problems. Inadequate infrastructure inhibits countries to fully benefit from the space applications in tackling local and large-scale challenges that extend beyond national boundaries. Collaborations aimed at developing the required infrastructure by developing countries, in partnership with developed countries, is critical.



Statement of Sudan

By **Eltigani Mustafa Mohamed Salih**

State Minister of Higher Education and Scientific Research



Honorable Amb. Raychelle Omamo, Cabinet Secretary for Defence Kenya

Dear Honorable Ministers of African Countries

Dear Honorable Mr. Mauro Massoni, Ambassador of Italy to Kenya

Dear Honorable Jean-Yves Le Gall, IAF President

Dear Honorable Roberto Battiston, ASI President

Dear Directors of the Kenyan Space Agency

Dear Honorable Colleagues, Scientists, Academics and the Audience

My gratitude and thanks are due to the Ministers of Kenya, The Ambassador of Italy, International Astronautical Federation (IAF) and Kenya Space Agency, for the kind invitation of the Sudan delegation to participate in this forum of “Space Science and Academia for Sustainable Development in Africa”

Sudan lies in the Sahelian zone of Africa which is adversely affected by climate change resulting from global warming. In recent years, rain fall has dropped quite significantly; and accordingly drought and desertification have struck many parts of the region. Tackling these issues requires early intervention by governments and international agencies. Cooperation between affected countries is also a key to the success of any measures that could be proposed to address these issues.

The government of the Sudan is getting engaged with the Academics in many universities and governmental institutes to study the effects of climate change in the quest to form a vision for policies to protect the environment and achieve sustainable development. The Institute of Environment Research, one of a number of Institutes under the umbrella of the Ministry of Higher Education and Scientific Research, is predominantly concerned with environmental issues and sustainable development.

A good number of academics and researchers in many universities assist the government to achieve the required objectives. I mention the Water Research Centre of the University of Khartoum as one example. The material collected from space and remote sensing technologies provide most of the data necessary for the analysis.

The United Nations Sustainability 17 (seventeen) goals targeting the eradication of poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. The Space sector must be proactive and develop its goals in line with the wider UN goals. The Space sector in Africa, although in its infancy, must not be isolated from the global community and has to include itself in the quest for sustainable development.

A successful sustainable development for Africa necessities working together. This requires partnerships between governments, the private sector and civil society. Sudanese universities working on many environmental issues and water resources have joined forces with other institutes in Eastern and North Africa as we are facing similar challenges. Such smart cooperation has to extend to cover the space agencies that have been established or those under establishment must adopt policies to re-enforce the cooperation, transfer and share knowledge and skills.

Capacity building is an important goal set by the Sudanese government. The government of Sudan supports training of young academics and professionals in many European countries, China, the US and many more. Training in space related fields is not an exception and the government will work hard to emphasize the importance of this sector.

There are a number of Sudanese bodies which are directly involved in research and capacity building in the space sector. The Institute of Space Research and Aerospace (ISRA) contributes to research and development in space science and aerospace engineering in Sudan. The University of Khartoum (UofK) and Sudan University of Science and Technology (SUST) have established space research centers in order to cope with the advances in the space sector. During the last

few years, many young engineers received good training via their direct involvement in building educational satellites, quadcopters and other items.

The Sudanese government is committed to joining the space sector and promotes the use of space technologies to sustain development and preserve the environment for future generations. It has established the Sudanese National Committee for Space to set policies and national strategies in the field of space, coordinate the different academic and civil bodies, direct and achieve cooperation between the Sudanese institutions and the regional and international organizations, and to develop the needed infrastructure to make Progress in the field of space.

Finally, I hope fruitful outcomes and recommendations will result from this important forum to place Africa with the rest of the world in the right track to participate in achieving the sustainable development goals for the benefit of humanity and the environment.

Thank you for listening.



Statement of Swaziland

By Mzwandile Mthethwa

Senior Science Officer, Department of Research, Science, Technology and Innovation, Ministry of Information, Communications and Technology



Your Excellency, Ambassador Raychelle Omamo – Cabinet Secretary for Defence in Kenya

All Ministers here present today

The President of the International Astronautical Federation (IAF)

The President of the Italian Space Agency (ASI)

Our Keynote Speakers

Distinguished Ladies & Gentlemen

All Protocol Observed

First of all I would like to thank the International Astronautical Federation (IAF), the Kenya Space Agency (KSA) through the Government of Kenya and the Italian Space Agency (ASI) for inviting the Kingdom of Swaziland to the 2nd International Space Forum – The African Chapter;

The Kingdom of Swaziland has a very young Ministry of ICT which recently established a Department of Research, Science, Technology and Innovation (RSTI). In 2016, the Kingdom of Swaziland ratified the Southern African Development Community (SADC) protocol on Science, Technology and Innovation; the country has since received the certificate of ratification from the SADC secretariat;

His Majesty King Mswati III has declared that developing the country's Science, Technology and Innovation (STI) is a top priority. In the wake of this declaration, following the global trends, the country is investing in the modernization of research and development infrastructure as these are requirements for a strong National System of Innovation (NSI);

The Ministry of ICT has embarked on the important exercise of developing, reviewing and amending all STI legislations and policy regimes aimed at creating an enabling environment for research and development and operationalizing the Royal Science and Technology Parks (RSTP). The Ministry of ICT has just completed the review of the National Science, Technology and Innovation Policy in line with the country's National Development Strategy (NDS) and Vision 2022.

Swaziland does not have any Space Program in place but has the Royal Science and Technology Park which could be the best host for any Space Program that can be introduced. The country has the advantage of being a close neighbor to the Republic of South Africa who, as we have heard here today, are far ahead of most countries in Africa regarding Space Exploitation. We are, as a country, in the process of collaborating with the Republic of South Africa and the Republic of Kenya on issues relating to STI. These collaborations are expected to foster the much needed growth in Space Exploration.

Swaziland is looking forward to gaining more insight on how to exploit Space for the benefit of the Swazi Nation and the World at large.

I Thank You!



Statement of Tanzania

By Amos Nungu

Assistant Director, Research and Development Department of Science, Technology and Innovation, Ministry of Education, Science and Technology



Hon. Ambassador Raychelle Omamo, Cabinet Secretary for Defence – Kenya,

President of Italian Space Agency,

Prof. Roberto Battiston, President, Italian Space Agency (ASI),

Dr. Jean-Yves Le Gall, President, International Astronautical Federation (IAF),

Hon. Ministers and Delegates,

Ladies and Gentlemen:

Greetings from Tanzania Minister of Education, Science and Technology: Prof. Joyce Ndalichako who couldn't be here today due to other commitments.

It is a privilege to be here with you today to provide the statement for Tanzania on space science and academia for sustainable development in Africa.

Space is a global and multidisciplinary system requiring a high level of technical and scientific knowledge. Universities and Academia constitute a worldwide network of privileged knowledge that could support the conception, preparation and exploitation of the Space programmes, regardless of geographical location.

Tanzania does not have a *Space Agency* yet. However, various government agencies and institutions play key roles in utilization of Space applications.

On the Capacity Building: Tanzania has established 2 fully-fledged Universities for Science and Technology, hence supporting more capacity building of experts in Science and Technology. As of today, there exist few experts in the country, some of whom participated in the formulation of African Union Space Policy.

On the “*Environment Sustainability*”, Climate Change is still a big concern worldwide. Tanzania sees an opportunity in using space technologies to deal with natural catastrophes such as flood, draughts, fire as well as climate change in general.

On the issue of “*Space Partnerships*”, Tanzania is attending this meeting to support the Africa Space initiative. But also, we are exploring partnership opportunities in the subject.

Let me end by thanking the organizers for the invitation as well as the Government of Kenya for hosting the event.

Thank you for your attention.



Statement of Zambia

By Mabvuto Sakala

Permanent Secretary, Ministry of Higher Education



Ladies and Gentlemen,

On behalf of the Minister of Higher Education, that was unable to attend this Programme,
The Organizers of the Programme,
The Host Country,
And the Fellow Participating Countries,

As Zambia focuses on implementing its national development plan, with focus on diversification of all the economy, from mining to agriculture, tourism and other sectors, we as a country cannot afford to live out the benefits and contribution of Science and Technology toward achieving our development Agenda. As such Zambia has been reinvigorating the Space Sciences institution as part of its capacity building and the establishment of the National Remote Sensing Centre (NRSC) is one such initiative. Under it, our government is establishing a Ground Receiving Station (GRS), which is expected to be commissioned in July 2018, the initiative that was started January this year with resources from our local Treasury. The GRS is being implemented within the context of Zambia's national data infrastructure programme, and it is a major step in enhancing Zambia capability.



At the individual level, in line with the observation made by the Ambassador Omamo, Cabinet Secretary for Defence, Kenya, as a Country we have dedicated a fund that is targeted for female scholars, at Master and PhD level, specifically for the science related subjects. I want to mention that this has not come without a backlash, because the male feel that they have been discriminated, so we have opened it up to the males, but we are giving priorities to the females. We are also undertaking extensive legal and regulatory reforms, and policy reforms, to ensure that the legal and policy environment, is supportive of our space science programme. We have also deliberately targeted the establishment of Universities of Science and Technology, and no other subjects. We have also established an Academy of Sciences to enhance this programme.

With respect to environmental sustainability, I think Zambia recognizes the benefits of space sciences in the sustainable management of our natural resources, and I am glad to note that Zambia, like a lot of other African countries, have an abundance of natural resources, but they might not be abundant in the near future if we do not manage them well. Like everything else, it might come to an end, and therefore the GRS is an Earth Observation equipment, to also facilitate identification of the challenges related to sustainable environmental management, as for instance, illegal mining - which as you know is a major industry - as also we are embarking on diversification hoping that with space science we will be able to address issues of deforestation and disaster management, to support our economy diversification programme. Currently, because of the interventions related to this field, we have embarked on planting a million trees, initiative launched by our Vice President, a week ago, and we hope to plant a million trees later this year, to address the challenges of deforestation, and I think without this intervention, we would not have managed.

Specific to Space Partnerships, as a country, we are I think the "New Kid on the Block" in terms of the interventions related to this field, and as we forge ahead in space science programme partnerships, with regional and international institutions to be very critical, we do not want to reinvent the wheel, if the institutions that we believe in, are forged ahead we are going to learn from them, and in this regard we are hoping this and other Forums in the future, will enhance our collaborations with our existing partners, and also open up opportunities for new ones. Currently we are in the process of operationalizing partnerships with the Twenty First Aerospace Technology Company of China, for setting up of our GRS, we are also in the initial stages, of sending a memorandum of understanding with the United States Geological Survey, LANDSAT Programme, and also with the South African National Space Agency. We have a lot to benefit from the countries that have made head way in this, and as a country we do not want to reinvent the wheel, as previously stated. As a Government we are committed to the Space Science Programme, and it's evident from the fact that there has been over 30% increase in our national budget for this year targeted to all these interventions, and that's a good commitment on our part. We also want to appreciate the support we are getting from our cooperating partners, and we are hoping that this will follow though in the years to come.

Lastly, as in conclusion, we are grateful to have been invited to this Forum, and I thank you all for listening.

Thank you.

Statement of Zimbabwe

By Susan Muzite

Chief Executive Officer, Research Council of Zimbabwe



Good Afternoon,

Your Excellencies, Ambassador Omamo, Cabinet Secretary for Defence of Kenya
Prof. Roberto Battiston, President of the Italian Space Agency
Dr. Le Gall, President of the International Astronautical Federation
All protocols observed.

The Minister of Higher and Tertiary Education Science and Technology of Zimbabwe sends warm greetings and regrets not being here in person due to conflicting engagements. I am humbly communicating his thanks and gratitude for the invitation for Zimbabwe to be here.

Zimbabwe is on a serious learning mission as the country is working to establish a Space Agency.

Many of you have been welcoming our enquiries. Thank you. Yet many others we still have to approach. Thank you in advance. A number of sector specific programmes, strategies are in place.

We hope at the next Forum engagement Zimbabwe will report significant progress on establishment of its Space Agency.

Thank you for your attention.



4 STATEMENTS OF PARTICIPATING INTERNATIONAL ORGANIZATIONS & SPACE AGENCIES

Statement of ASI (Agenzia Spaziale Italiana)

By Roberto Battiston

President, ASI



Distinguished Ministers,
Distinguished Heads of Delegation,
Dear Colleagues,

It's a privilege to take today the floor in this extraordinary assembly, among distinguished Ministers, colleagues and friends, all gathered here to understand and discuss how Universities and Academia can support space sciences, technologies and applications for the sustainable development in Africa.

A real sustainable development, in fact, requires concrete and urgent actions to be achieved with a broad partnership between Governments and civil society, starting from development of local capacity building projects. However, many countries in the world, and in Africa the majority, cannot afford a standalone space program and access to space. In this regard, the **international cooperation could be the key for space economy and capacity building development**.

Italy, and the Italian Space Agency in particular, are strongly committed to pursue sustainable development programs, contributing to achieve the **Sustainable Development Goals of the United Nations Agenda 2030**.

Mr. Chairman, let me briefly present some concrete actions in this regard.

Italy began to conduct space activities in Africa during the 1960s in cooperation with Kenya at **Broglio Space Center (BSC)** in Malindi (Kenya). Between 1967 and 1988, Italy performed 27 satellite launches from the BSC in collaboration with NASA. Today, the BSC, under the framework of the bilateral cooperation between Italy and Kenya, is mainly dedicated to ground control and data receiving activities for national and international missions.

The need for **space capacity building in Kenya and in the region** became soon clear with the growing awareness that cooperation in space activities represents a source of scientific, technical and economic benefits. In particular, the Italian Space Agency is committed to providing scholarships and fellowships to Kenyan nationals to attend under-graduate and post-graduate degree programs.

In this framework the Sapienza University of Rome and the University of Nairobi have launched joint projects supported by the Italian Space Agency. Among these, let me mention the **SBAM Project** focused on earth observation applications for agriculture, and the **IKUNS** (Italian - Kenyan University Nano-Satellite) Project, for the development of a nano-satellite for earth observation. In June 2017, the two Universities launched the **International Post-Graduate Course** in Space Mission Design and Management to educate students for the realization of the IKUNS Project through a focused and comprehensive training.

On the basis of the abovementioned experience, a team of the University of Nairobi applied to the first **KiboCUBE** call launched by JAXA in 2016 and won the selection with a proposal for the development of a cubesat named "1st Kenyan University Nano-Satellite (1KUNS)". The first Kenyan cubesat will be launched soon and deployed from the International Space Station.



Mr. Chairman,

This **International Space Forum**, after the first edition of the Forum organized in Trento (Italy) in 2016 with the title "*Space Science and Academia for sustainable development in Africa*", aims to encourage discussion on how space education and technology can support the understanding and exploitation of space benefits for the socio-economic development in Africa. It is understood that African Universities and Academia need to become part of the global space network to benefit from scientific and technological knowledge

The main outcome of the 2nd ISF will be the adoption of the **African Page/Nairobi Space Statement**, that will be added to the Trento Space Statement, issued at the end of the 1st ISF in 2016. The Nairobi Statement/African Page will summarize the main results of today's discussions and provide recommendations to the African space community on how to develop local capacities, abilities and space cooperation as a driver for capacity building and socio-economic development.

Mr. Chairman,

The Italian Space Agency has been working to establish an **International Center for Space Education in Africa** located at the Broglio Space Centre in Malindi (Kenya), with the main mission of educating African students and trainees to become the future African leaders in the field of Space Science and Technologies and of promoting regional and international cooperation for a peaceful and sustainable development of the African Continent. Thanks to its consolidated infrastructure with high-level technological capabilities and qualified human resources, the Broglio Space Center can contribute to do so.

The International Center will be open for cooperation with national and international space Agencies, Universities and any other public and private institutions interested in promoting space education and culture in Africa and in offering the best space capacity-building portfolio. ASI is ready to discuss all details with interested partners.

In conclusion, Italy and the Italian Space agency are deeply convinced that Space Capacity Building in Africa represents a precious contribution to the United Nations 2030 agenda, as well as to the African Union 2063 Agenda.

Mr. Chairman, Distinguished delegates, I thank you for your kind attention.



Statement of CNES (Centre National d'Etudes Spatiales)

By Jean-Pascal Le Franc

Director of Planning, International Relations and Quality, CNES



Introduction

Dear colleagues,

It is a great pleasure to be here today at the 2nd International Space Forum - The African Chapter dedicated to Space Science and Academia for Sustainable Development in Africa.

I would like to thank for organizing this event the Kenyan Authorities, the ASI President, Prof. Roberto Battiston, and the IAF Team. It is also a great pleasure to be in Kenya, whose historic cooperation with Italy has enabled the establishment and development of the Malindi ground station, a strategic asset for Europe and its launchers.

There is of course another special reason I would like to congratulate the Kenyan Authorities for, as a little less than a year ago, thanks to the determination of Dr. Kimani, your country joined a very prestigious list of African countries in setting up the Kenya Space Agency!

An important step for Africa

This is the second International Space Forum and it is explicitly dedicated to Africa. This reveals Africa's growing interest for space and the awareness that space science and academia can provide a consistent contribution to sustainable development for all.

I believe this will be an important step towards increasing the number of African professionals in the space sector, promoting sustainable environmental practices and enhancing space cooperation as a driver for capacity building in Africa, thus also contributing to UNISPACE+50, to the implementation of the UN Agenda 2030 and the African Union Agenda 2063.

Building on existing assets

Space has already demonstrated the benefits it can provide in a range of fields, such as agriculture, transport, bridging the digital divide, health, marine and coastal protection, mapping, forest health monitoring and protection... But all of this cannot be effective without a clear understanding of the potential of space assets, well expressed needs and, of course, the necessary infrastructures.

This is the goal behind the long history of space cooperation between France and many African countries and organizations. With ASECNA, for instance, the French space agency CNES has demonstrated the feasibility of a Satellite-Based Augmentation System (SBAS) for improved air traffic control, notably in tropical regions. This should lead to an operational system in the next few years (2022) based on the latest technologies.

But this is just one example of actions that have been carried out in this respect through French, EU and ESA programmes, by providing knowledge and tools to enable processing of space data. France supports the development of projects based on the exploitation of spatial data on the African continent, in particular the management of agricultural resources through high-resolution imagery; the use of data including altimetry for the management of water resources; the application of space services and facilities for tele-epidemiology and telemedicine; and the International Charter on Space and Major Disasters and the recovery observatory established by CNES and other space agencies...



The role of Academia

But none of this can be sustained without knowledge.

African universities have a major role to play in training future generations of scientists and engineers and in disseminating 'good practices'. For instance, through the AMESD (African Monitoring of Environment for Sustainable Development) and MESA (Monitoring for Environment and Security in Africa) projects, organized by the European and African Unions, and other projects as well, GeonetCast receiving stations have been provided to a number of African universities to offer easy access to Earth-observation satellite data, and to start building value-added image products for environmental monitoring. This was done in particular for master's degrees dedicated to agriculture and water resource management.

The ActinSpace initiative is another excellent indication that space is driving innovation for employment and economic development in a sphere outside its usual ecosystem. This initiative created by CNES and ESA gives young people the chance to develop their entrepreneurial spirit and conceive concrete applications to found start-ups. It has already been successfully applied in some African countries, such as Morocco, Gabon, Senegal and Nigeria.

Space Climate Observatory

On the occasion of the One Planet Summit last December, 30 space agencies agreed to set up a Space Climate Observatory (SCO) based on observations from space of ECVs—the essential climate variables defined by the Global Climate Observing System, GCOS—data validation and intercalibration, data access based on a free and open data policy, and data expertise. The main objective is to provide users, especially those with no specific expertise in climate space data, with all the information needed for monitoring the health of our planet—thus promoting the spirit of space climate data democracy and agencies' actions in support of climate science.

The French, European and global space sectors are resolutely committed to tackling climate change and to moving forward with the implementation of the Paris Agreement. This initiative is supported by European space agencies, as well as other nations including China, Russia, India, Mexico, Morocco and the United Arab Emirates. This powerful tool is open to international partnership and cooperation and can substantially contribute to African wealth and development.

Concluding remarks

Space science and academia are powerful means to achieve sustainable economic development. They can be effectively applied through African partnerships and provide concrete and useful services to fulfil the most important needs of countries. France and its space agency have already a number of partnership projects and initiatives with African countries that can be ramped up in the future. All the countries and agencies attending this conference can work together in a common effort to provide efficient synergies for the different initiatives that could go under the name of "Space for Africa".

Thank you for your attention.



Statement of CONAE (Comisión Nacional de Actividades Espaciales)

By Raúl Kulichevsky

Deputy Technical and Executive Director, CONAE



Honorable Kenya Government Authorities

President of IAF

President of ASI

Distinguished Delegates

Since the creation of the Argentine Space Agency, CONAE, in 1991 and the implementation of our National Space Plan, we have been actively working on the three main topics defined for this Forum. All our Space Missions are devoted to them.

The National Space Plan has enabled us, working in partnership with different Space Agencies, to continuously expand our capabilities in design, manufacturing and testing spacecrafts, establish our Ground Stations and develop applications according to our country and our partner's needs, and all this work with the basement of human resources training.

We know about the difficulties of doing such things but we are a testimony that it can be done, and the way is through collaboration between countries.

Finally, I wanted to proudly announce that CONAE will host the 3rd International Space Forum, the South American Chapter at the end of this year.

We look forward to meeting you in Argentina!!



Statement of DLR (German Aerospace Center)

By Pascale Ehrenfreund

Chair of the Executive Board, DLR



What the space sector can do for Africa – and how Africa can contribute to the space sector

Dear Ambassador, dear Minister, dear Dr. Le Gall, dear Prof. Battiston, dear Prof. Wörner, dear Dr. Di Pippo, dear Dr. Munsami, dear Heads of Delegations, Ladies and gentlemen, it is a pleasure to be here part of this "Second International Space Forum at Ministerial Level focusing on Space Science and Academia for sustainable development in Africa". I welcome the initiative to have this IAF Event in Africa to discuss "Space Science and Academia for Sustainable Development in Africa".

The space sector is in transition. It has evolved from activities of few countries with mainly science and technology motives to a sector allowing direct socio-economic benefits for the involved countries. With the ongoing internationalisation and globalisation of the space sector with new institutional and private actors emerging across all continents, today you do not need to master the whole chain of space activities to be able to reap the benefit of space.

This is a chance for Africa since space is definitely part of the answer to challenges we are facing on all continent. We all agree around this table that Space technology and its applications can contribute to solve societal challenges like food security; sustainable agriculture and forestry; clean and efficient energy; smart, green and integrated transport; climate change and its consequences – just to name a few. By tackling those and other challenges Space can create a considerable positive socio-economic benefit for Africa and help achieving the United Nations Sustainable Developments Goals.

I want here to highlight a few examples of current activities of German actors to provide solutions to the African continent.

Satellite Communication for example provides connectivity for remote areas where landlines cannot be laid down. Without such space-based solutions those regions would have a hard time attracting commercial enterprises and industry. We already see a lot going on in this area. For example last month CETel, a German service provider of end-to-end communications solutions, has signed a contract with SES Networks to connect exploration and production sites in Africa via medium earth orbit.

In the field of Earth observation, the German company EOMAP, which was founded in 2006 as a spin-off from the DLR Remote Sensing Technology Institute, on 22 January 2018 published a new online portal with global comprehensive water quality data. With such data now for the first government institutions, environmental authorities, the water industry will be able to take better-informed decisions with regard to sustainable water management – a challenge for many African countries.

But our efforts to make use of Space to exploit Space benefits for Africa's socio-economic Development would come off too short by just exporting German, European or international solutions to African countries. We will only start harvesting the full potential of Space if the African actors like universities, academia, companies and Space Agencies are involved in developing and building such solutions tailored specifically for African needs.

Africa is already a player in space and you have space actors from the North to the South, and from West to the East. The ecosystem is there to further develop space.



The framework and instruments to make this concept of greater involvement a reality are also at hand and I would like to refer to just a few: As it was already mentioned on the political level on 31 January 2016 in Addis Ababa the African Union adopted the African Space Policy and African Space Strategy, in which it is laid down how Space can contribute to social, political and economic integration. One of the core principles of the Strategy is the “Development of indigenous capacity to operate and maintain core space capabilities” and one of the strategic actions defined is “Promoting international cooperation”. In other words: Make African Space actors part of the global network of space players. The creation of an African Space Agency, as currently discussed, would be an important step in this direction.

Another significant approach by the African Union is the Pan African University with research institutes located in different countries and focused on multiple areas like agriculture, water and energy management, space science, or technology like here in Kenya. This concept not only creates know-how through research but is also a means of building up of capacities. Capacity building, an area in which Germany is also contributing across the continent in many space fields, is another important factor for a successful involvement of African actors into the global Space community.

At national level, Germany is aiming at supporting the building up of the African economy and industry, for example through the Pro!Afrika initiative, aiming on areas like digitalization or water management driven by the German Ministry for Economics and Energy. This approach was also reflected in the German concept presented during its G20 presidency in 2016/2017 and resulted in the Compact with Africa initiative (CWA). Also Germany’s private sector is pushing towards more intense cooperation with Africa through its North Africa Middle East Initiative (NMI),

European programmes like the ESA TIGER programme or the “GMES and Africa” initiative offer a cooperation framework for Earth observation-based services that support sustainable development in Africa. “GMES and Africa” is coordinated by the African Union Commission and supported by international partners. For example the German company GAF AG was recently awarded a service contract for this programme by the European Commission and is now providing support to the African Union.

Besides public efforts there are also first initiatives driven by the commercial sector, like the Airbus BizLab. In summer 2017 the Airbus BizLab, a global business accelerator, scouted aerospace start-ups from East and Southern Africa to trigger Entrepreneurship in the field of Space. The focus was on UAVs, satellite operations and Imagery, 3D printing, smart sensors and Artificial Intelligence.

The German space industry is also willing to cooperate with local actors to implement solutions for the whole space supply chain from up-stream, to mid and downstream.

There are many more instruments and opportunities to strengthen ties between Africa and the rest of the global Space landscape and we should make use of them, because only by integrating universities, academia, companies and Space Agencies in Africa into the global network of Space players we will unleash the potential of African countries.

Germany welcomes the adoption of the Africa page that will be added to the Trento 2016 International Space Statement and, even more important, the efforts of making African space players part of the global space community! The German space sector is willing to contribute to the development of the continent and help implementing specific solutions that will provide socio-economic benefits here in Africa.

Thank you for your attention.

Statement of ECSL (European Centre for Space Law)

By Sergio Marchisio

Chairman, ECSL and Full Professor of International Law,
University Sapienza of Rome



Madam Minister, Excellencies, Distinguished delegates, Ladies and Gentlemen

As Chairman of the European Centre for Space Law, I would like to thank you for the opportunity to address the participants to this African Chapter session of the International Space Forum.

Let me begin by giving a brief overview of who we are and what we do. The ECSL was established under the auspices of the European Space Agency in 1989, with a mandate to promote the awareness, knowledge and development of space law. As such, the ECSL organises a range of activities and events to encourage capacity-building in space law and policy within Europe, but also beyond. We are happy to observe that each year we usually have African students or professionals taking part in our activities.

As in Europe, the African space sector is developing. The emergence of more accessible, cheaper and better technology means that more countries, universities and private companies are manufacturing and launching satellites. In addition, we are excited to note the African Union’s Space Strategy, signalling an ambitious new space era in Africa. Overall, this implies many great opportunities, but also a need for law and policy to regulate emerging activities. The UNISPACE+50 process has identified good governance and a sound regulatory framework as essential for ensuring the sustainable uses of outer space. To achieve this, knowledge of and education in space law are essential. The ECSL will continue to support the UNISPACE+50 process and the SPACE 2030 agenda, by ensuring capacity-building opportunities for student and professionals within the field of outer space regulatory frameworks.

Our efforts will include the continuance of ECSL’s core annual activities, such as the ECSL Summer Course on Space Law and Policy, organized every year in cooperation with a European University, to spread knowledge of the legal instruments governing outer space activities: the UN treaties and other legally binding instruments, national legislation and non legally binding instruments, such as the 2007 COPUOS Space Debris Mitigation Guidelines and the Guidelines on the Long Term Sustainability of outer space activities currently under discussion within the COPUOS Scientific and Technical Subcommittee. As 2017 was the 50th anniversary of the Outer Space Treaty (OST), I urge the African countries to adhere to the United Nations treaties on outer space. While the ECSL’s mandate is primarily to ensure an offer to the European region, we perceive international cooperation as essential. We held in the past decades several initiatives in cooperation with African Mediterranean countries, but we hope that future initiatives could also be organized to the benefit of the entire African region. Already in 2011, the Mombasa Declaration on Space and Africa’s Development, adopted by the 4th African leadership Conference on Space and Technology for Sustainable Development underlined that the dissemination of knowledge in space law in Africa was essential for cooperation and mutual understanding in space activities. This concept has been reiterated by the African Space Strategy adopted by the African Union in 2017.

I am sure that this Second International Space Forum, the African Chapter, could be a starting point for identifying concrete ways to promote space education in Africa and support the understanding of space benefits among the international space community. We hope African students and professionals will keep engaging with our activities. The ECSL is always happy to consider new ways of cooperating and sharing our experience and expertise. As Chairman of the ECSL, I therefore invite anyone interested in our activities or looking to develop new partnerships or initiatives to contact us. For more information and contact details please consult our webpage www.esa.int/ecsl.

Thank you for your time and attention.



Statement of ESA (European Space Agency)

By Jan Woerner

Director General, ESA



ESA is pleased to present an initiative based on long-time experience and results already achieved in many of our programmes. In fact, since years, ESA programmes and activities are pushing the frontiers of knowledge and developing or supporting the development of services, applications or technologies for the benefit of all, European and non-European, in space and on Earth.

This year, 2018, will see the anniversary of the first UN Space Conference that took place in 1968, UNISPACE+50 that will endorse a political resolution entitled « Space as a driver of sustainable development ». ESA is a strong supporter of UNISPACE+50 and will continue to provide support to the UN space community and to the Office of outer space affairs, UNOOSA, in particular on the main challenges regarding implementations of the recommendations of UNISPACE+50.

Among the 4 resolutions adopted during the ESA Council at Ministerial level on 1st December 2016, the first resolution entitled “Towards Space 4.0 for a United Space in Europe” has several sections related to UNISPACE+50. Member states recognized that space serves “societal needs, responds to *European and global challenges and offers opportunities, notably those related to the attainment of Sustainable Development Goals, ... mitigation of risks, ... climate change...*”, etc.

Space, and thus space agencies such as ESA, have a strong role to play in the implementation of the three global agenda's:

- United Nations Sustainable Development Goals
- Paris Agreement on Climate Change
- Sendai Framework on the reduction of risks related to disasters

All three are strongly related to sustainability and development, as well as environmental sustainability in particular.



Changes in land – Sentinel 2-A

Over the last years, ESA has identified many specific activities that support the UN Sustainable Development Goals for various geographical areas including Africa and is developing a coordinated approach across Directorates towards the main actors of development. Space projects, applications, technologies and services are of benefit to all countries, organisations or citizens in the world. A recent initiative highlighting these benefits has been the development by ESA of the catalogue of ESA activities supporting the UN SDGs (on-line version available mid-March 2018). Global by nature, this catalogue shows that Africa, is already benefiting from ESA missions, data and services and that these benefits could be further enhanced.

ESA is committed to continue supporting Africa and in particular Kenya in the setting up of their National Space Agency, KSA, as well as the recent initiatives of Italy, one of our Member States, with the creation of an Earth observation Centre and of an International Centre for Space Education in Africa at the Broglio Space Centre in Malindi.



ESA is also committed to continue carrying out a multitude of activities through its programmes in support of Sustainable Development in Africa ranging from Research and Development projects and capacity building and education actions to EO data dissemination and exploitation.

With the adoption of the United Nations 17 Sustainable Development Goals in September 2015, goals to be reached by all countries by 2030, the nations of the world have decided on ambitious goals for their people, prosperity, the planet, peace and partnerships. And “space” as a tool can support the measurement of and the improvement of each of these goals, already today with actual programmes, and much more tomorrow with all the programmes that are being prepared by ESA. Worth to be noted that all domains contribute one way or another to one or more of these goals, from Earth observation, telecommunications, positioning, technology or Human spaceflight to operations. We do not pretend space can solve all challenges on Earth and be “the” answer to development, but we are convinced and know that space can be a very valuable contributor.



Water treatment unit in Morocco

In parallel we will identify the existing partnerships supporting Africa and the potential partners that could be approached by ESA or its Member States and that could benefit from space technologies, applications or services. Analysis will be also performed of the quantitative and qualitative benefits deriving from using space assets or technologies in order to help decision-making. This is rather complex given the very large variety of activities concerned and the difficulty to separate the effect of using space from potential other effects. But we believe it would be useful.

Communication on this initiative and in particular the development of the catalogue will improve knowledge and understanding of how space supports measurement of and reaching the Sustainable Development Goals, making best use of the investments made by our Member States, and for the benefits of all countries and their citizens. Proposing a specific action towards Africa will help us all support a sustainable development of the continent, our closest neighbour.

We are ready to work with our Member States and all actors that pursue the same goals, to coordinate our actions for better efficiency and make sure investments made in space will benefit a maximum of people on Earth.

www.esa.int/SDG



Statement of IISL (International Institute of Space Law)

By Kai-Uwe Schrogl

President, IISL



Distinguished participants,

The International Institute of Space Law (IISL) very much appreciates the invitation to address the African Chapter session of the International Space Forum. IISL is a sister organization of IAF and IAA, and is a partner in organising the International Astronautical Congresses. We therefore appreciate the opportunity that IISL has also been invited to speak at the IAF's Forum today. In this short address, the topic of space law will be introduced and the value of space law and regulations for the efficient and equitable use and exploration of outer space in the interest of all States shall be highlighted.

We celebrated last year the 50th anniversary of the Outer Space Treaty, which has laid the foundations of space activities up to our days. It is rare that such a long-time anniversary can be celebrated of an international agreement. The reason can only be that its provisions are of practically timeless value and their implementation and acknowledgement mirror the State Parties continued appreciation and respect. Let me point out the most relevant such principles contained in the OST: freedom of use, peaceful uses, sharing of benefits, non-appropriation, State responsibility and liability, international cooperation.

Let me make in this context a first point. The provisions of the Outer Space Treaty (and the agreements, which have been based on it as the Astronauts Rescue Agreement, the Liability Convention, the Registration Convention and the Moon Agreement), which are of a particular value also for developing countries, since they respond very much to their needs and interests, can only be translated into benefits, only when States actually have ratified the OST and the other space law agreements. So far, only 110 States have ratified the OST and far less States have ratified the other agreements. Therefore, signing and ratifying the space law agreements is very much encouraged in order to become a beneficiary of the principles enshrined in the corpus of space law. IISL is open to support any such initiatives with our knowhow and our network of experts.

While the principles of the Outer Space Treaty can be regarded as solid, their application has to take new developments into account. To name a few: the regulation of private space activities through national space legislation, the regulation of new types of telecommunication technologies and services, the search for dealing with cyber activities/security as it relates to space activities, Space Traffic Management, the regulation of the use of extraction and use of space resources, and the search for an approach for the regulation of High Altitude Pseudo Satellites (HAPS). These issues of national and international relevance might even require new legislation or arrangements. From a perspective of IISL as global association for the promotion of space law, these developments should be conducted in an open and inclusive way. This was the second point, which I wanted to make and it also goes with the offer from the Institute to be entirely dedicated to support such developments and provide assistance, in particular in the field of the establishment of national space legislation.

IISL is very pleased to have an active membership from Africa. I would like to point out that African Universities successfully compete in our global Manfred Lachs Moot Court Competition. Last year, we had the University of Pretoria as a semi-finalist at the International Astronautical Congress in Adelaide (photo). A lot of papers have already been presented by African scholars at our International Space Law Symposia and subsequently been published in our Proceedings. A former Board Member, Mr. Tare Brisibe from Nigeria, served as Chairman of the UNCOPUOS Legal Subcommittee. These are just a few highlights to make you aware of how Africa is enriching IISL and space law as a whole.



Distinguished participants,

The United Nations will hold this year a special session of UNCOPUOS commemorating the first global UNISPACE conference, which took place five decades ago. Space law will figure high on the agenda, since it is of such paramount importance for each of the spacefaring countries, since it protects your activities, it enables safe and secure space activities and it makes an equitable and fair progress possible. IISL is ready to support you in deriving the benefits from space law, building on your engagement and expertise in dynamic environments.



Statement of ISA (Israel Space Agency Statement)

By Isaac Ben-Israel

Chairman, ISA



Honorable Ministers and distinguished guests:

Allow me to bring greetings from Israel, a country that is connected to the African continent not only geographically. It is an honor to attend this International Space Forum - The African Chapter. I would like to take this opportunity to congratulate the IAF for this initiative with the aim of encouraging the discussion on how Space education and technology can support the understanding and exploitation of Space benefits for Africa's socio-economic development.

It is my strong belief that a global Space knowledge can foster development in higher education, science, technology, research and innovation, thus eliminating disparities and promoting the use of Space applications to protect the African environment, to ensure peace and security, to manage natural resources, diversity, and more.

Israel will be happy to work together with you on the utilization of Space to implement the African Union Agenda 2063.

The Israel Space Agency at the Ministry of Science and Technology is based on the recognition of the importance to support scientific research and development with real economic potential, such as the development of unique and innovative technologies.

The Israel Space Agency's goals are diverse, including expanding the cooperation and reciprocal relationships with various countries, promoting infrastructure research studies, leading the world trend of miniaturizing satellites, supporting the development of unique innovative space technologies and aerospace industries.

Another goal of the Space Agency is about education. Space attracts the imagination of children and youth and encourages their great natural curiosity and interest in science. We, for example, organize activities and events for the public that offer interactive experience in the space fields. The Space Agency organizes national contests for students, supports technological projects for high school students such as the launch of two Nano satellites by two high schools.

Israel celebrates this year 70 years of independence. For that occasion, we plan to launch 70 satellites, by 70 different high schools in the coming years.

The Agency organizes conferences and seminars for educators and develops training programs for teachers and instructors. Israel has a long-standing successful space heritage, including technological development, applications and durable and competitive products of space industry. The Space Program was established in the 1980s, at which time, Israel was the eighth country in the world to succeed in launching and positioning self-developed satellites in space.

Let me give you only one example that demonstrates the value of space to economy: VENμS - Vegetation and Environment monitoring on a New Micro-Satellite that was jointly built by the French Space Agency (CNES) and the Israeli Space Agency (ISA) and has been successfully launched last August by VEGA launcher.

The less than 300-kilogram satellite will contribute to human knowledge in the areas of precise agriculture, water and soil contamination, pollution and other environmental preservation. Currently, the Israel Space Agency is involved in several programs with international collaboration, including a hyperspectral mission done in cooperation with the Italian Space Agency. Concurrently, this unprecedented successful activity encourages Israel's future generation to choose a career in

space industry, and is serving as a catalyst for promoting a large number of outstanding professionals in the science and technology industries, in light of the growing needs and challenges of Israel's hi-tech industry.

The Space Agency serves as an open house for entrepreneurs and works to increase public awareness to the importance of space and its direct impact on the quality of our lives.

The field that once was just the product of our imagination has currently become a reality that is here to stay.

Israel is a small country without natural resources but our human capital. Space is one of the main tools we use to develop our human talent.

We have built an indigenous space capacity under severe constraints of being small country and we are ready to share our experience and to work together with Africa for the socio-economic transformation of the continent over the next 50 years, seeking to accelerate the implementation of initiatives for growth and sustainable development through space sciences and technologies.

Excellencies,

Thank you for your kind attention.



Statement of SGAC (Space Generation Advisory Council)

By Maryanne Muriuki

Kenya National Point of Contact, SGAC



The Space Generation Advisory Council (SGAC) is a global nongovernmental organisation and network which aims to represent university students and young space professionals to the United Nations, space agencies, industry and academia. We are a network of over 10,000 members and alumni from 110 countries.

SGAC has Permanent Observer status in the United Nations Committee for Peaceful Uses of Outer Space (UNCOPUOS) taking part in the annual meeting, as well as its Legal and Scientific and Technical Subcommittees.

SGAC has active project groups ranging from Commercial Space, Space Law, Near Earth Objects, Small Satellites, and Space Technologies for Disaster Management. Members shape key topics on space through technical papers, policy briefs and recommendations.

The organisation hosts a number of competitions and projects to enable young professionals and university students to submit their work and ideas, and are given the chance to present their work at space conferences.

SGAC organises global events around the world. The Space Generation Congress (SGC) is held in conjunction with the IAC. The Space Generation Fusion Forum (SGFF) is held every March. Regionally, Space Generation Workshops are held annually. The inaugural AFSGW was held in Nigeria in 2017. Locally, SGAC National Points of Contacts (NPoCs) work closely with academic institutions and other stakeholders and hold local SGAC events such as Yuri's Night and Asteroid Day.

Two days ago, the world marked the International Day of Women and Girls in Science. Africa, like all the other regions in the world is faced by the underrepresentation of women in scientific and technological disciplines. SGAC wishes to thank the organizers of this forum for recognizing the role of African youth in the Continent's quest towards becoming the next frontier in space.



5 THE AFRICAN PAGE (to be added to the Trento Space Statement)

2nd International Space Forum (ISF) 2017 at Ministerial level – The African Chapter “Space Science and Academia for Sustainable Development in Africa”

On February 13th, 2018, the Kenyan Minister of Defense, Ministries of Science, University and Research, Space Authorities, Space Agencies, representatives from International Space Organisations and senior space experts from almost 40 countries met in Nairobi (Kenya), under the auspices of the International Astronautical Federation (IAF), the Italian Space Agency (ASI) and the Kenyan Ministry of Defence, for open and productive discussions on how space science and education can support the understanding and exploitation of space benefits for Africa's socio-economic development.

The 1st Ministerial International Space Forum was jointly organised by the Italian Space Agency (ASI), the International Astronautical Federation (IAF) and the International Academy of Astronautics (IAA) under the mandate of the IAF Vice President for Science and Academia relations, in Trento (Italy), where 42 governmental delegations attended and adopted the Trento Space Statement.

In Nairobi, delegates, representatives of academia and experts exchanged views, shared experiences and made statements, which declared, inter alia, that:

- Space is a global and multidisciplinary system requiring high-level technical and scientific knowledge, in both upstream and downstream areas;
- Universities and academia constitute a worldwide network of privileged knowledge that could support the design, development and exploitation of space programs, regardless of any geographical location;
- African universities and academia need to become part of the global space network to benefit from scientific and technological knowledge;
- Space applications and services should be leveraged to protect the African environment, ensure a peaceful and secure continent, manage natural resources, manage diversity so as to convert it into a source of wealth, harmony and socio-economic transformation.

Delegations heard and considered presentations from space experts on three main topics:

- **Capacity Building:** Space disciplines represent an opportunity to develop high-level technical and scientific, as well as legal and regulatory knowledge in Africa, which will contribute both to the achievement of Africa's self-reliance and the attainment of Africa's Agenda 2063;
- **Environmental Sustainability:** Ecological integrity and an equitable allocation of the available resources are closely linked to sustainable development in Africa. Earth observation, navigation and telecommunication satellites, are precious tools for gathering information and protecting the environment;
- **Space Partnerships:** Partnerships and collaborations among countries with different levels of space knowledge would support dissemination of space knowledge and technology transfer. Partnerships with the private sector will help leverage the necessary funds for a vibrant space enterprise, reserving a key role to the academia, so as to ensure the success of a quad-helix model of economic growth within the continent.

Governmental representatives and delegates noted that:

- Space activities, services and technologies could support the implementation of the Africa Agenda 2063;
- Capacity Building in space is a key to develop high-level technical and scientific knowledge in Africa;
- Investments in indigenous human capacity is a priority objective;
- Space cooperation would be a driver for Capacity Building and sustainable development in Africa.

Ministries, Heads of delegations, governmental representatives and experts welcomed the 2nd International Space Forum 2017 – The African Chapter – highlighting the importance of considering the following points as the first results of discussions in Nairobi:



- Involvement of all African countries at science, university and research level could increase the number of professionals and experts in the Space sector;
- Networking amongst African universities and academia would better support space capacity building by pooling and coordinating the existing resources and by disseminating knowledge among all African countries;
- Consider the existing space centres and facilities in Africa as the starting point assets, upon which to build up a network of infrastructures to develop a sustainable Capacity Building programme and road map;
- The International Center for Space Education in Africa, located at the Broglio Space Center (BSC) in Malindi (Kenya), could collect the African needs and propose space application activities and training for the development of the African Capacity Building to achieve the goals of the United Nations 2030 Agenda for sustainable development;
- The African Resource Management Satellite Constellation (ARMSC) is an appropriate continental initiative that could be relied on to address Environmental Sustainability;
- Intra-Africa and international partnerships should be leveraged on a mutually beneficial basis to foster regional
- Collaboration and to ensure security, peace and stability. The proposed African Space Agency would represent a key institution in this endeavour;
- The second International Space Forum in Nairobi will contribute to UNISPACE+50 and to the implementation of the goals of the UN Agenda 2030.

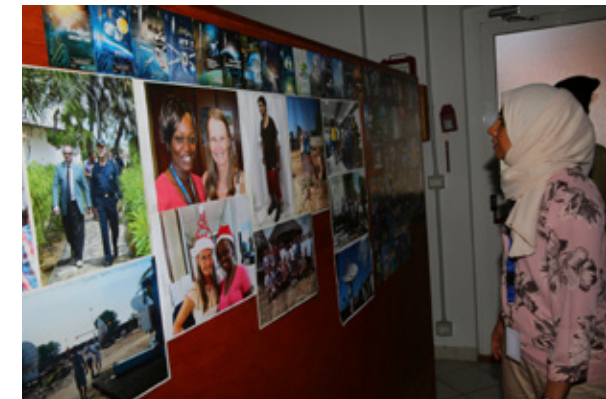
The African delegations expressed the wish to replicate this space forum model at a regional level within Africa to enhance participation by local universities, scientific communities, space experts, space lawyers and representatives from the private sector, as this will complement an existing initiative, namely the African Leadership Conference (ALC) on Space Science and Technology..

6 VISIT TO THE BROGLIO SPACE CENTRE (BSC), MALINDI, KENYA

The Broglio Space Centre (BSC) located in Malindi, Kenya was born in the 1960s thanks to the cooperation between the government of Italy and the government of Kenya as a launching Base in the equatorial area of Africa. Twenty-seven rocket launches have been performed until 1988 and nine satellites were put into orbit. Currently the BSC consists of two land and sea segments used for basic space science research and capacity building, including satellite tracking, data acquisition and telemetry services, communications, nautical structures, training and education.

During the ISFNairobi, the Italian Space Agency launched the proposal to establish an International Space Center of Education for Africa located in the BSC in collaboration with Kenya and all interested countries and space agencies. The main mission of the Centre is to educate African students and other trainees to become the Space leaders of future Africa for a peaceful and sustainable development of their Continent. Indeed, thanks to its consolidated infrastructures, the high-level technological capabilities and qualified human resources, the BSC can contribute, with other international space institutions, to the goals of educating and training to capacity building in Space Science and technologies as well as to the use of satellite data, in particular, of earth observation data.







7 ORGANIZERS INFORMATION

7.1 The International Astronautical Federation (IAF)

Founded in 1951 to foster dialogue between scientists around the world and support international cooperation in all space-related activities, the International Astronautical Federation is the world's leading space advocacy body with over **340 members**, including all key space agencies, companies, societies, associations and institutes across 68 countries.

Over 40 administrative and technical committees support the Federation in its mission to advance knowledge about space and to foster the development of space assets by facilitating global cooperation.

Following its theme "A space-faring world cooperating for the benefit of humanity", the Federation advances knowledge about space and fosters the development and application of space assets by advancing global cooperation.

As the organiser of the annual International Astronautical Congress (IAC), and other meetings on specific space-related topics, the IAF actively encourages the development of astronautics for peaceful purposes and supports the dissemination of scientific and technical information related to space.



7.2 The Italian Space Agency (ASI)

The Italian Space Agency, created in 1988, coordinates Italy's efforts in Space.

ASI activities range from space science to earth observation, telecommunications and navigation, launchers development, space technologies and related applications.

Italy is a founding member of the European Space Agency (ESA) and a third country in terms of investment. It participates in the major European programs and missions as well as in the realisation of the International Space Station and the space exploration activities (EXOMARS).

Italy is in the forefront in the studies related the origin of life and understanding of Universe. ASI participated I many scientific missions in collaboration with ESA and NASA.



7.3 The Kenya Space Agency (KSA)

Kenya's space activities are sector placed in a number of Government agencies and institutions that play a key role in the utilization of space applications, these include: Ministry of Defence, Ministry of Education Science and Technology, Ministry of Information and Communication Technology, Department of Resource Surveys and Remote Sensing, Kenya Meteorological Department, Kenya Civil Aviation Authority, Survey of Kenya, Communications Authority of Kenya, National Commission for Science, Technology and Innovation, and institutions of higher learning, among others.

The Kenya Space Agency was therefore established in 2017 under the Ministry of Defence in order to promote, coordinate and regulate space activities in Kenya. Its vision is to utilize space for Kenya's economic and social development.



Kenya Space Agency





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