

UNITED NATIONS
OFFICE FOR OUTER SPACE AFFAIRS

# FROM STRATEGY TO ACTION

ANNUAL REPORT 2024



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# LEADERSHIP STATEMENT

Just as the Outer Space Treaty and related instruments formed the backbone of space activities over the past six decades, the work of the United Nations Office for Outer Space Affairs (UNOOSA) in 2024 is poised to shape the next era. By supporting the Committee on the Peaceful Uses of Outer Space (COPUOS) as it confronts emerging challenges in space governance and equipping Member States to harness unprecedented global investments in space technology, UNOOSA is laying the foundation for a future where space solutions drive sustainable development at global, regional and local levels.

From proactive engagement and priority-setting to strategic articulation and swift implementation, UNOOSA is aligning its initiatives to tackle emerging space challenges and seize new opportunities head-on.

Hundreds of bilateral meetings with Member States in 2023 demonstrated to me how the unique initiatives of UNOOSA across space policy, law, science and technology have kickstarted space economies, strengthened national space governance, enhanced disaster preparedness through space-based technologies and expanded access to satellite data. These impact stories and priorities provided a clear understanding of the niche and unique added value of UNOOSA in the global space ecosystem, forming the basis of the UNOOSA Vision and Strategy 2024–2030, which focuses on five pillars: space sustainability, climate change, sustainable development, multi-stakeholder partnerships and developing countries.

In 2024, COPUOS addressed the surge in lunar missions by establishing a new action team on lunar activities, with UNOOSA advancing this effort through the organization of the first multi-stakeholder conference on lunar sustainability. COPUOS further proclaimed 2029 as the International Year of Asteroid Warning and Planetary Defence, and welcomed two new Member States, Djibouti and Latvia, along with new non-governmental observers, including the Space Data Association and the Global Satellite Operators' Association.

I am pleased that the Secretary-General's Summit of the Future, held in September 2024, elevated space to the Heads of State level and reaffirmed the mandate of UNOOSA as the lead United Nations entity for space governance and broader space affairs. The resulting Pact for the Future, embodied in a General Assembly resolution, reaffirms the role and mandate of COPUOS in global space governance, and invites the Committee to explore the development of new frameworks for space traffic coordination, space debris mitigation and governance of space resources.

In October 2024, we hosted the inaugural United Nations Space Bridge (USB), convening industry stakeholders alongside government representatives from all continents to discuss the critical challenge of space traffic coordination. USB is a flexible platform for UNOOSA to breakdown silos, provide thought leadership and bridge gaps between key stakeholders on key questions regarding the evolving space landscape.

Under my leadership, UNOOSA is rising to the challenge of ensuring that both the international community and the United Nations system fully leverage space to address the defining issues of our time: from promoting the safe and sustainable use of space to advancing the achievement of the Sustainable Development Goals (SDGs), and from expanding access to space-derived data to scaling and replicating space-based solutions for global challenges.



In 2023 and 2024, my Deputy and I listened, learned and built understanding. From 2025 onward, we move to implementation, driving action and making tangible progress.

**Aarti Holla-Maini**Director, UNOOSA

# LEADERSHIP STATEMENT

#### Navigating complexity: scaling impact, deepening partnerships

2024 marked a pivotal year for the United Nations Office for Outer Space Affairs (UNOOSA). Building on the foundations laid in 2023, we transitioned decisively from vision to implementation. Guided by the UNOOSA Vision and Strategy 2024–2030, we focused on delivering concrete outcomes that bring tangible benefits to people and planet, responding to the accelerated growth and critical reliance on space-based technologies worldwide.

As Deputy Director, I have been privileged to work across teams, regions and disciplines – bridging technical, legal and policy domains to ensure our initiatives are coherent, inclusive and transformative. This year, we expanded access to space-based solutions through our Space Applications Programme, strengthened national space governance through our space law technical advisory missions, advanced capacity-building through our Regional Centres for Space Science and Technology Education, and supported disaster risk reduction through the UN-SPIDER programme. These efforts reaffirm the role of UNOOSA as a trusted partner to Member States, navigating an increasingly complex and dynamic space environment.

Collaboration remained a core driver of our success. In a fragmented global landscape marked by rising geopolitical tensions, UNOOSA continues to unite stakeholders around shared goals – from advancing discussions on space traffic coordination and planetary defence, to ensuring that emerging space nations and underrepresented regions, particularly in Africa, have a voice and access to the benefits of space.

I am particularly proud that in 2024, we continued to support emerging space nations in developing their national space programmes, while also empowering women and girls through the Space4Women initiative and elevating space-based solutions at key multilateral forums such as COP29, the G20 and the Summit of the Future. These efforts reflect our commitment to ensuring that space is a lever for sustainable development, resilience and an opportunity for all.

Looking ahead, while we remain committed to operationalizing the Guidelines for the Long-term Sustainability of Outer Space Activities (LTS), strengthening partnerships, reinforcing capacity-building and amplifying the voices of developing countries within the global space agenda, we must acknowledge the challenges that lie ahead. UNOOSA operates in a context where mandates and expectations have expanded significantly, yet resources have remained largely stagnant. The ongoing liquidity crisis affecting the United Nations system has further strained our ability to deliver at the scale required.

To maintain our relevance and impact, continued and strengthened political and financial support from Member States will be critical. We look forward to continuing commitment from Member States to provide UNOOSA with the resources needed to match the increasing complexity and urgency of the global space agenda. With their support, UNOOSA can continue to serve as a catalyst for international cooperation, sustainable space governance and the achievement of the Sustainable Development Goals.

Together, let us ensure that the benefits of outer space are accessible, equitable and sustainable for all humankind.



**Driss El-Hadani**Deputy Director





# **OUR VISION AND STRATEGY 2024-2030**

#### **MISSION STATEMENT:**

A world that fully captures the benefits of space technology, data and services

The leadership of UNOOSA spent six months listening to the priorities of Member States; identifying and show-casing the Office's impact and space solutions. The resulting Vision and Strategy 2024–2030 focuses on five pillars: space sustainability, climate change, sustainable development, partnerships and developing countries.

UNOOSA has a strong track record of delivering impactful programmes across space policy, law, science and technology, in partnership with Governments, space agencies, industry and academia. Our unique initiatives have kickstarted space economies, strengthened national space governance, enhanced disaster preparedness through space-based technologies that save lives, and expanded access to satellite data. Launched during the Scientific and Technical Subcommittee, the Vision and Strategy 2024 -2030 marks a pivotal first step in ensuring that UNOOSA remains relevant, forward-looking and impactful for decades to come.



# Space sustainability

Ensure space remains available for future generations



# **Climate** action

Drive climate action through space



# Sustainable development

Advance progress on sustainable development through the use of space



# Developing countries

Ensure developing countries can contribute to and benefit from space



# Stakeholder engagement

Accelerate the achievement of objectives by strengthening engagement with nongovernmental actors

# **SECRETARIAT**

The Committee on the Peaceful Uses of Outer Space (COPUOS) is the intergovernmental body responsible for developing the global governance of outer space. COPUOS has two subsidiary bodies, both established in 1961:



The Scientific and Technical Subcommittee (STSC) continues to lead international negotiations on the long-term sustainability of outer space activities, the use of nuclear power sources in outer space and asteroid warning.



The Legal Subcommittee (LSC) addresses the legal aspects of space resources, the definition and delimitation of outer space, and clarifies and reviews the applicability of the outer space treaties.

Operating by consensus, regardless of size, economic power or spacefaring status, COPUOS reports to the Fourth Committee of the General Assembly, which adopts the annual "omnibus" resolution on international cooperation in the peaceful uses of outer space.

UNOOSA also maintains the United Nations Register of Objects Launched into Outer Space on behalf of the Secretary-General. The Register was first created in 1961 at the request of Member States and is a treaty-based transparency mechanism that identifies the State responsible for each space object.

In 2024, a historic milestone for global spaceflight was surpassed with over 250 successful rocket launches taking place in a single year, representing a 20 per cent increase on 2023 (212). Thirty-two Member States submitted registrations on 2,434 functional space objects.

The International Committee on Global Navigation Satellite Systems (ICG) brings together global navigation satellite system (GNSS) providers to improve technology, compatibility and interoperability, and the use of GNSS for sustainable development.

The Space Mission Planning Advisory Group (SMPAG) connects the world's space agencies active in the domain of planetary defence. SMPAG is responsible for preparing an international response to a near-Earth object threat through the exchange of information, the development of collaborative research and mission opportunities, and by conducting planning activities to mitigate such threats.

UNOOSA also cooperates with the International Asteroid Warning Network (IAWN) in strengthening international coordination and cooperation in the case of near-Earth object impact hazards.

UNOOSA leads the Inter-Agency Meeting on Outer Space Activities (UN-Space), a United Nations-wide endeavour that examines the contribution of space science and technology and their applications to the work of the organization and the achievement of the Sustainable Development Goals. Through the breadth of its activities, UNOOSA addresses all stages and aspects of space applications, space law and space policy, helping all countries leverage the benefits of space for sustainable development.

We invite all United Nations Member States to join the multilateral forum on space and make sure their voice is heard.

# **CAPACITY-BUILDER**

As a capacity-builder, UNOOSA empowers developing countries to harness space data, services and technology, and to develop national space law and policy - enabling them to strengthen resilience, build independence, grow their space economies and advance the Sustainable Development Goals.

Through the **Programme on Space Applications**, UNOOSA helps countries build capacity in space science, technologies, and their applications in areas such as global health, disaster and climate change management, water and environmental monitoring, and natural resources management. The Space Applications Section provides scientific and technical opportunities, such as payload hosting initiatives, which support States in the development, launching and deployment of satellites.

Through the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) programme, UNOOSA helps countries use space data and technologies, such as satellite imagery, to reduce the risks of disaster and respond to disasters when they occur. UN-SPIDER has offices in Beijing, Bonn and Vienna.

UNOOSA works closely with the six Regional Centres for Space Science and Technology Education affiliated with the United Nations to reinforce space-related education globally. The Centres provide unique training and education programmes, especially for nurturing talent in developing countries.

UNOOSA also implements a series of extrabudgetary projects focused on the space economy, Space4Women and Space Law for New Space Actors, and ensures the application of the Guidelines for the Long-term Sustainability of Outer Space Activities.

Space Law for New Space Actors was established in 2019 to help countries increase their capacity to draft or revise national space law and policy in line with existing international normative frameworks, such as the five United Nations treaties on outer space, the Space Debris Mitigation Guidelines and the Guidelines for the Long-term Sustainability of Outer Space Activities of COPUOS.



# **UNOOSA IN ACTION IN 2024**



The first United Nations Sustainable Lunar Conference, held on 18 June



UNOOSA Director Aarti Holla-Maini, right, with former Director Simonetta Di Pippo at the International Astronautical Congress (IAC) in Milan, Italy



Signing ceremony between UNOOSA Director Aarti Holla-Maini and Mr. Humbulani Mudau, CEO of the South African National Space Agency (SANSA)



Meeting of the Directors of the Regional Centres for Space Science and Technology Education, affiliated to the United Nations



Director Aarti Holla-Maini takes a selfie with a group of participants of the International Astronautical Congress (IAC) in Milan, Italy



International Astronautical Federation (IAF) President Clay Mowry and Director Aarti Holla-Maini



Participants of the thirty-first Workshop on Space Technology for Socioeconomic Benefits: "Space Sustainability as a Game-Changer for Development"



Director Aarti Holla-Maini interviewed by the Financial Times on the topic of space sustainability



Exolaunch CEO Robert Sproles explaining the technology behind Exolaunch's Microsatellite Separation System



Winners of the 2024 Space4Youth Essay Competition dressed in astronaut uniforms in Huntsville, Alabama, United States



Broadcast interview with Monaco Info on the Space Law Advisory Mission in September 2024



Aarti Holla Maini and NASA Administrator Bill Nelson at a reception on the sidelines of the Fourth Committee in New York

# **UNOOSA IN 2024 IN NUMBERS**



Aarti Holla-Maini, Director

Driss El-Hadani, Deputy Director and Senior Adviser

Khrystyna Ladenhauf-Kleindienst, Front Office

# **UNOOSA STAFF 2024**

THE REAL PROPERTY.

**Senior Adviser** 

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**Space Applications Section** 



# LEADERSHIP ENGAGEMENT: AT A GLANCE

In their first six months of leadership, Director Aarti Holla-Maini and Deputy Director Driss El-Hadani held hundreds of bilateral meetings with Member State representatives. Building on this foundation, they engaged widely with space agencies, international organizations, industry leaders, journalists and non-governmental organizations. Through inclusive dialogue, they shaped and articulated a bold vision and strategy to ensure UNOOSA delivers a forward-looking, results-driven work programme focused on five strategic pillars: space sustainability, climate change, sustainable development, partnerships and developing countries with a focus on Africa.

The following are some of the key events that have taken place under the leadership of UNOOSA, which furthered the implementation of this vision and strategy, reinforced bilateral relationships with Member States, and showcased the leadership role of UNOOSA and COPUOS in global space governance.



Opening ceremony of the seventy-fifth International Astronautical Congress (IAC)

# The International Astronautical Congress 2024 in Milan, Italy

UNOOSA attended the seventy-fifth International Astronautical Congress (IAC) from 11–18 October in Milan, Italy. As one of the world's largest and most preeminent space industry fairs, IAC provided a valuable platform for UNOOSA to engage with heads of space agencies and industry leaders, reinforcing the Office's role in global space governance and work to address issues such as space situational awareness, space sustainability, gender equality in the space sector and "Making the Case for Space". UNOOSA participated in the Heads of Space Agencies panel and the Space Generation Congress and announced new opportunities, such as a CubeSat launch opportunity in partnership with Exolaunch and the second round of the payload hosting initiative together with the Mohammed Bin Rashid Space Centre (MBRSC). It also moderated or participated in panel discussions of the Space Generation Advisory Council, the China Manned Space Agency, World Space Week, the Atlantic Council, the World Economic Forum and the Italian Space Agency, and others.

# Lisbon Conference on Sustainable Space Governance

On 14–15 May 2023, UNOOSA co-organized the Management and Sustainability of Space Activities Conference in Lisbon with the Portuguese Space Agency. The event convened over 30 COPUOS Member States and global stakeholders to advance international dialogue on the sustainable use of outer space to prepare for the Summit of the Future.

Key themes included space traffic management, debris mitigation, regulatory transparency and youth engagement in space governance. The conference culminated in the adoption of the Lisbon Declaration on Outer Space, a consensus-based document supported by all participating Member States. The Declaration outlines core principles for sustainable space governance and affirms the central role of COPUOS in building global consensus.

#### Summit of the Future and the Fourth Committee of the General Assembly, New York

Director Aarti Holla-Maini travelled to New York where she met with other senior United Nations officials and Permanent Representatives of Member States and co-moderated a joint panel of the First and Fourth Committees of the General Assembly. The Fourth Committee adopted two draft resolutions that declared (a) 2029 as the International Year of Asteroid Awareness and Planetary Defence (A/RES/79/86) and (b) the annual Omnibus Resolution on International Cooperation in the Peaceful Uses of Outer Space (A/RES/79/87), endorsing the 2024 report of COPUOS.

UNOOSA, in collaboration with Amazon, the Business Council for International Understanding, Austria and Zambia, hosted "A Night at the Museum: Exploring Earth – Space for Sustainable Development" at the iconic American Museum of Natural History in New York on 21 September 2024. Held in the Hayden Planetarium, the event featured a powerful immersive dome experience showcasing planetary data, climate insights and the transformative potential of space technologies for sustainable development.

The evening brought together global leaders, astronauts, policymakers and private sector innovators. Highlights included remarks from UNOOSA Director Aarti Holla-Maini on bridging the digital and data divide, and presentations from NASA,



Director Aarti Holla-Maini meeting the Hon. Fekitamoeloa Utoikamanu, Minister of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications of Tonga at the American Natural History Museum

the Amazon Project Kuiper, and high-level representatives from Austria, Colombia, Germany, Saudi Arabia, Sweden and Tonga, who made contributions on how spacebased tools are driving progress on the SDGs.

UNOOSA also hosted the inaugural United Nations Space Bridge on Space Traffic Coordination and brought together experts from Governments and the commercial sector to tackle the complex issues of space traffic coordination.

#### **Director's first visits to the United States** and China - April 2024

Director Aarti Holla-Maini visited Washington D.C. in April 2024 where she engaged with high-level stakeholders from Government, industry and civil society, including the United States National Space Council, astronauts, the Atlantic Council and the United Nations Foundation. Additionally, she visited the NASA Goddard Space Flight Center, participated in the fifth NASA Planetary Defense Tabletop Exercise and the Washington Space Business Roundtable. The Director subsequently travelled to Colorado Springs, where she participated in the thirtyninth Space Symposium, met the United States Space Command and highlighted the need to protect the spectrum for space applications.

In late April, Aarti Holla-Maini visited China. In Wuhan, she attended China Space Day and the China-Latin America-Caribbean Space Cooperation Forum, where she engaged with Chinese space stakeholders and emphasized the need for global space cooperation. She showcased the contributions of the Beijing office of **UN-SPIDER** to socioeconomic development in the Asia-Pacific region and welcomed the expansion of the Regional Centres for Space Science and Technology Education with a new branch in Hangzhou for international students. The visit concluded with the historic Chang'e 6 mission launch in Hainan.



Programme Management Officer Romana Kofler moderates the fifth Planetary Defense Tabletop Exercise in Washington, D.C. Credit: NASA/JHU-APL/Ed Whitman



Director Aarti Holla-Maini and the Dean of the Hangzhou International Innovation Institute, Hong Guanxin, sign the winning entry of the China Space Day poster design contest Credit: Regional Centre for Space Science and Technology Education in Asia and the Pacific (China) (affiliated with the **United Nations**)

#### **G20 Space Economy Leaders Meeting**

The G20 Space Economy Leaders Meeting in Brazil in September 2024 brought together global leaders to explore how space technology drives innovation and economic growth and addresses our planet's most pressing challenges. The Director highlighted that equitable access to space services and capacity-building enables solutions to climate change, food and water insecurity, and the widening digital divide; all of which are crucial in empowering all nations, especially developing countries. UNOOSA also partnered with the Brazilian Space Agency and UNDP to develop a space economy masterclass exploring how space technology and its commercialization can foster economic growth.

#### COP29 United Nations Climate Change Conference, Baku

The 2024 Conference of the Parties in Baku, held from 11 to 22 November, provided a key platform for global discussions on climate action. As 26 of the 55 essential climate variables can only be measured from space, UNOOSA actively advocated for the role of space-based solutions. Director Aarti Holla-Maini participated in high-level panels and round tables, including the Climate Finance High-level Round Table and the Space Leaders Summit, emphasizing the need for international collaboration, data-sharing and capacity-building in space science to drive climate resilience. UNOOSA highlighted initiatives such as UN-SPIDER and Space4Water, which support climate adaptation and disaster response through space technology. Engagements at COP29 laid the foundation for strengthened partnerships and joint activities to advance space-enabled climate solutions in the years ahead. During a highlevel round table hosted by the United Nations Environment Management Group, we emphasized the importance of making space data more affordable and accessible.



On the sidelines of COP29, Aarti Holla-Maini was interviewed by content creator Max Klymenko as part of his "Career Ladder" YouTube show. Credit: Maxklymenko, P Episode 56: Career Ladder

#### International **Telecommunications Union Space Sustainability Forum**

The ITU Space Sustainability Forum, held on 10–11 September in Geneva, gathered space industry professionals and regulators. The Director emphasized the importance of COPUOS delivering 65 years of global space governance, and the ongoing work to operationalize the Guidelines for the Long-term Sustainability of Outer Space (LTS), agreed on by COPUOS in 2019. The Director also underscored the Office's capacity-building efforts, including how UNOOSA is operationalizing Guideline B.1 – provide updated contact information and share information on space objects and orbital events – as a core component of space traffic coordination. She stressed that the LTS Guidelines could be translated into binding rules if implemented nationally and shared case studies on how space law technical advisory missions and the implementation of the LTS Guidelines by industry have delivered results.



Aarti Holla-Maini shared insights in a panel on the impact of space-based services for space sustainability at the ITU Space Sustainability Forum in Geneva, Switzerland Credit: International Telecommunication Union

#### World Space Forum, Bonn

From 3 to 5 December 2024, UNOOSA, in partnership with Germany, Peru and the United Arab Emirates, convened the World Space Forum 2024 in Bonn under the theme "Sustainable Space for Sustainability on Earth." UNOOSA led and participated in key sessions addressing space for climate action, disaster management, space sustainability and the integration of space into global governance. In reaffirming UNOOSA leadership in fostering space governance, the Director delivered a keynote on international cooperation and space safety and emphasized the role of COPUOS in advancing the Pact for the Future and the Space 2030 Agenda.



At the World Space Forum in Bonn, Germany, Lego and ESA presented Lego bricks made of meteorite dust, simulating the properties of lunar regolith amid increased international interest in lunar materials Credit: Fotomedien Köln

# **SUMMIT OF THE FUTURE**

#### Pact for the Future

On 22 September, world leaders adopted the Pact for the Future, along with its annexes – the Global Digital Compact and the Declaration on Future Generations. Notably, the Pact underscored the strategic importance of outer space and called on the Committee on the Peaceful Uses of Outer Space (COPUOS) to address emerging and novel space technologies that foster space activities and guide the space sector for decades to come:



We will strengthen international cooperation for the exploration and use of outer space for peaceful purposes and for the benefit of all humanity.

The Outer Space Treaty of 1967 identifies outer space as the province of all humankind. Humanity's reliance on space is increasing day by day and the Outer Space Treaty must be recognized as the cornerstone of the international legal regime governing outer space activities. We are living through an age of increased access to and activities in outer space. The growth in the number of objects in outer space, the return of humans to deep space, and our expanding reliance on outer space systems demands urgent action. Safe and sustainable use of space plays a critical role in the achievement of the 2030 Agenda. The opportunities for people and planet are enormous, but there are also risks that must be managed. We encourage the Committee on the Peaceful Use of Outer Space to further consult on the proposal to hold a fourth United Nations Conference on the Peaceful Exploration of Outer Space (UNISPACE IV) in 2027.

#### We decide to:

- (a) Reaffirm the importance of the widest possible adherence to and full compliance with the 1967 Outer Space Treaty and discuss the establishment of new frameworks for space traffic, space debris, and space resources through the Committee on the Peaceful Uses of Outer Space.
- (b) Invite the engagement of relevant private sector, civil society, and other relevant stakeholders, where appropriate and applicable, to contribute to intergovernmental processes related to the increased safety and sustainability of outer space.

# THE INAUGURAL UNITED NATIONS SPACE BRIDGE ON GLOBAL SPACE TRAFFIC COORDINATION

The objective of the United Nations Space Bridge (USB) is to promote global dialogue to enable action on key issues for the space sector and the uptake of space solutions.

This action will be achieved by convening policymakers and key stakeholders through dedicated round tables aimed at enhancing international expertise, asking the right questions and breaking down silos. Director Holla-Maini and UNOOSA held the inaugural United Nations Space Bridge at United Nations Headquarters in New York in October 2024 on the theme of Global Space Traffic Coordination.

It convened a broad cross-section of operational experts from Governments, the commercial sector, academia and civil society, representing 35 countries, to examine issues related to global space traffic coordination. Several key themes and shared observations

emerged during the discussion, including the urgent need for action given the growing number and complexity of space activities and the importance of ensuring the input, expertise and relevant perspectives of all space actors are incorporated into any potential solutions. Participants identified several concrete recommendations for UNOOSA and actions for consideration by entities such as COPUOS.

A report on the themes, observations and recommendations of the United Nations Space Bridge on Global Space Traffic Coordination can be found here

This United Nations Space Bridge set the stage for the UNOOSA United Nations Space Sustainability Days capacity-building events held in January 2025 and prompted a Member State proposal for consideration by COPUOS to address global space traffic coordination.



"

Coming from the space industry to the United Nations, I see clearly how the private sector can bring critical value to support Member States in addressing operational issues such as space traffic coordination. It is our responsibility to ensure that this expertise is harnessed to advance and accelerate the work of COPUOS – while fully respecting and preserving the Member State-driven decision-making process.

Aarti Holla-Maini
Director

Director Aarti Holla-Maini chairing the first-ever United Nations Space Bridge on Space Traffic Coordination (STC) in New York

# **UNOOSA IN FOCUS: LUNAR**

In 1969, 650 million people watched the first Moon landing live. While that was a unique event, Moon missions are no longer such a rare occurrence. Since the start of the space age in the 1950s, there have been more than 77 successful lunar missions. This number is expected to increase tremendously over the next few years with more crewed landings, soft landings and sample return missions planned by both public and private entities. Against this background we are confronted with the inevitable question of how to ensure such activities are conducted in a safe and sustainable manner.

Since its inception, the intergovernmental Committee on the Peaceful Uses of Outer Space (COPUOS) has continued to develop global governance of outer space affairs. It has built international consensus in the peaceful uses of outer space, upholding the fundamental principle of the Outer Space Treaty, which recalls that "the exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries".

# **United Nations Conference on Sustainable Lunar Activities**

The first-ever United Nations Conference on Sustainable Lunar Activities supported COPUOS by convening heads of space agencies, Chief Executives of lunar companies, astronauts from three continents, and scientific and legal experts to determine priority areas of consensus, complexities and challenges to lunar activities, as well as identify avenues for global coordination, which is a prerequisite for sustainable, future lunar activities.

Held on 18 June, ahead of the sixty-seventh Session of the Committee on the Peaceful Uses of Outer Space, the conference saw hundreds of representatives from the space community, including Member States, space agencies, astronauts, non-governmental organizations, academia and the private sector attend.

Participants highlighted the need for transparency in lunar activities and dedicated international platforms for relevant stakeholders to build trust, facilitate consultations and leverage existing international workstreams in COPOUS and UNOOSA, in order to promote information sharing and ensure mission safety. Sessions brought together signatories of the Artemis Accords and the International Lunar Research Station, who highlighted the importance of international cooperation, legal adherence and enhanced communication. A central theme was the role of global partnerships, regulatory predictability and information-sharing mechanisms to support sustainable and inclusive lunar missions.



First meeting of the United Nations Conference on Sustainable Lunar Activities in Vienna

#### **Action Team on Lunar Activities Consultation**

In June 2024, COPUOS established an action team on lunar activities consultation (ATLAC), marking a significant step towards facilitating international consultations and recommendations to ensure that lunar activities are conducted in a safe, peaceful and transparent manner. Proposed by Romania and co-sponsored by Austria, Belgium, Bulgaria, Germany, Poland, Portugal, the Republic of Korea and Switzerland, ATLAC will operate for at least three years.

## International Committee on GNSS: Fifth Working Group on Lunar Positioning, Navigation and Timing

By 2040, up to 1,000 people could be living on the Moon. As time moves 56 microseconds a day faster on the Moon, the sun can be up for 14 days at a time, and some mountains never experience nights, the international community is working on a standardized lunar time.

In 2024, the International Committee on Global Navigation Satellite Systems (ICG) established a new Working Group on Lunar Positioning, Navigation and Timing (PNT).

With several upcoming lunar infrastructure and settlement projects, a reliable navigation network will be key to allow precise localization and communication on the Moon's surface. Lunar PNT will also reduce risks associated with lunar landings and enable seamless transportation, mapping and construction of lunar infrastructure, resource exploration and exploitation, and scientific research, much like navigation satellites do on Earth.



A view of the Earth rising over Moon's horizon taken from the Apollo 11 spacecraft Credit: NASA



A close-up view of an astronaut's foot and footprint in the lunar soil, photographed in 1969 by a 70 mm lunar surface camera during Apollo 11 lunar surface extravehicular activity Credit: NASA



Lunar conference: Astronauts, Taikonauts and Cosmonauts convene to discuss lunar priorities

Through the establishment of a dedicated Working Group on **Lunar Positioning, Navigation** and Timing (PNT), leveraging existing GNSS technologies whose PNT signals have already been demonstrated on the surface of the Moon, ICG is working to provide precise, reliable and globally accessible lunar PNT services to lay the foundation for a sustainable human presence on the Moon and beyond.

> Sharafat Gadimova Scientific Affairs Officer



# **UNOOSA IN FOCUS: SPACE4WOMEN**

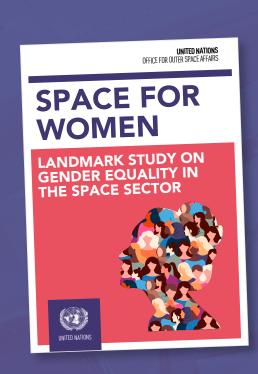
Increasing the representation of women in space isn't just a matter of fairness – it's about ensuring that this new frontier is shaped by the full spectrum of talent and expertise our world has to offer.

When half the world's population are women, gender equality isn't just the right thing to do - it's the smart thing to do. Space4Women is a UNOOSA initiative dedicated to advancing gender equality in the space sector and STEM fields. It also strives to ensure that all children - especially marginalized girls - have equal access to quality STEM education and opportunities. Since 2017, the Space4Women project has raised awareness about the importance of gender equality and women's empowerment in the space sector. It strengthens and delivers targeted capacity-building activities both at institutional and individual level, encourages women and girls to pursue space and STEM education and careers through dedicated mentorship,

and contributes to achieving SDG 4 on quality education and SDG 5 on gender equality.

2024 was a major milestone for UNOOSA and for gender equality in the space sector. This year, UNOOSA contributed to the identification of challenges related to gender equality and parity within the space sector through sound research, the elaboration of the Gender Mainstreaming Toolkit to provide solutions, and the convening of international experts in Nairobi to further reflect on the specific challenges and needs faced by women in underprivileged communities.

Achieving gender balance in the space sector is the keystone to unlocking the full potential of humanity to innovate, push boundaries and drive progress for the benefit of all. Through a powerful network of dedicated women and men, the Space4Women Project is committed to turning this vision into reality



# Landmark Study on Gender Equality in the Space Sector

In early 2024, UNOOSA launched the Landmark Study on Gender Equality in the Space Sector thanks to the generous support of the Korea Aerospace Administration (KASA). Drawn up by Space4Women, the study provides qualitative data on gender representation in space-related public organizations and examines policies or interventions that advance gender equality.

Presented at IAC2024, it is the largest study of its kind, gathering insights from 53 space agencies and public space organizations globally to assess gender representation and policy in the space sector. In particular, the study found that while some progress has been made over the years, women make up 30 per cent of staff at

public sector space organizations while holding only 19 per cent of board roles and 21 per cent of leadership positions. The study finds that women are particularly underrepresented within technical, astronaut and policy roles, while being overrepresented in education, outreach, human resources and administrative roles. Furthermore, the study highlights the championing role of the African States who are the closest to achieving gender parity in the space sector.

The second phase of the study is currently ongoing with findings expected in 2026. This second part will cover the private sector and analyses systemic hurdles to women entering and pursuing a career in space.





# Gender Mainstreaming Toolkit for the Space Sector

While the landmark study showcased the challenges of achieving gender equality and gender parity, the Gender Mainstreaming Toolkit for the Space Sector, funded with the generous support of the Canadian Space Agency, provided concrete measures under four clusters:

- Committing at all levels to advance gender equality
- Promoting equal opportunities within organizations
- Creating dedicated programming to empower all women and girls
- Measuring and reporting on gender equality outcomes

Available in English and French, the toolkit provides simple and practical measures, examples and tools to help people who are not gender specialists adapt gender mainstreaming efforts to their own contexts. If implemented by national Governments and industry actors, the toolkit can strengthen the capacity of the global space community to undertake gender mainstreaming efforts to address underlying systemic inequalities.

# Space4Women Expert Meeting, Nairobi

From 27 to 29 November, UNOOSA and the Kenya Space Agency organized the fifth Space4Women Expert Meeting in Nairobi, with a focus on addressing capacity-building needs and efforts at local levels.

This marked the first such meeting on the African continent and provided a platform for experts from Governments and national space agencies, academia, the private sector and civil society organizations to exchange knowledge, experiences and ideas. They discussed solutions to promote and foster capacity-building efforts, especially at grassroots level, to raise awareness and further opportunities for local women and girls to pursue science, technology, engineering and mathematics (STEM) education and build a career in the space sector.

The expert meeting also provided a regional platform to roll out the implementation of the Gender Mainstreaming Toolkit where countries came forward to champion it. Initial consultations were conducted on the elaboration of a STEM education toolkit for women and girls in underprivileged communities, while participants also called for more funding opportunities for women and girls, including scholarships and mentorship programmes.

Finally, participants pointed out the need for the UNOOSA Space4Women project to expand and carry out more activities at regional, national and local levels, highlighting the critical power of the Space4Women network.



Participants at the fifth Space4Women Expert Meeting in Nairobi Credit: Kenya Space Agency



The Canadian Space Agency is honoured to have participated in the fifth Space4Women Expert Meeting, hosted in Nairobi. Participants built on the success of the first Gender Mainstreaming Toolkit for the space sector, a key achievement of the fourth Expert Meeting, which we were proud to co-host in Montreal, Canada in 2023. The 2024 meeting reinforced the notion that achieving gender equality in the space sector requires a collective global effort. We look forward to continuing our work with UNOOSA towards achieving a space sector in which all women and girls have the opportunity to reach for the stars.

Lisa Campbell
President of the Canadian Space Agency



# Chapter 3.

# Our impact: 2024 highlights

- SPACE SUSTAINABILITY
- SPACE4CLIMATEACTION
- SPACE FOR THE SUSTAINABLE DEVELOPMENT GOALS
- DEVELOPING COUNTRIES/PARTNERSHIPS
- UNITED NATIONS REGISTER OF OBJECTS LAUNCHED INTO OUTER SPACE
- REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION (AFFILIATED TO THE UNITED NATIONS)
- PUBLICATIONS

- \*Please note that the list of activities is not a comprehensive list of all UNOOSA activities carried out in 2024. The full list, along with donor support, memorandums of understanding and capacity-building initiatives, can be found in the annex of the Director's Statement, delivered at the sixty-second session of the Scientific and Technical Subcommittee of COPUOS.
- Director's Statement

# SPACE SUSTAINABILITY

Ensuring the safe and sustainable use of space, through the implementation of the full set of COPUOS commitments from treaties to guidelines and principles and the development of global space governance, preserving it for future generations

## **Space Law for New Space Actors**

The Space Law for New Space Actors project continued to play a pivotal role in supporting emerging spacefaring nations in developing robust legal and policy frameworks for outer space activities.

On 16–18 January 2024, UNOOSA partnered with the United Nations University in Tokyo to deliver a regional space law technical advisory mission for 24 representatives from seven countries in the Asia-Pacific region.

**UNOOSA** also supported Member States in aligning national space laws and regulations with international space treaties and best practices through five tailor-made space law technical advisory missions in Chile, Malaysia, Monaco, Morocco and the Philippines.

Through these missions, UNOOSA raised awareness on key legal topics such as authorization and licensing, state responsibility and liability, space object registration, space debris mitigation, transfer of ownership and the regulatory aspects of national space activities.

The United Nations Conference on Space Law and Policy in Vienna from 19–21 November further reinforced the importance of national space laws in creating predictable regulatory environments that attract investment and promote sustainability.

As part of ongoing efforts, UNOOSA continues to provide legal capacity-building tools, including the ASTRO database and e-learning modules, to empower States in shaping their space governance structures. ASTRO includes national space laws and policies, which are continuously collected and uploaded to share best practices and foster the development of national spacerelated legislation and policies.

Astro database



Director Aarti Holla-Maini meeting with Astroscale CEO Nobu Okada and COO Chris Blackerby on the margins of the International Astronautical Congress in Milan, Italy, on the topic of active debris removal



Space Debris Mitigation Guidelines

@ Guidelines for the Long-term Sustainability

## Space sustainability

In 2024, UNOOSA continued to demonstrate leadership in the tangible implementation and operationalization of the Guidelines for the Long-term Sustainability of Outer Space Activities (2019) and the Space Debris Mitigation Guidelines (2007), both of which were negotiated through consensus by COPUOS. This leadership was further recognized in Action 56 of the Pact for the Future, which called on COPUOS to address critical novel space activities, such as active debris removal (ADR).

To strengthen multilateral dialogue on space sustainability, the Office convened industry, operators and States to identify existing national and international practices and solutions for space traffic coordination and ADR. In doing so, we catalyzed discussions aimed at identifying a viable market for ADR, all of which further incentivizes investment, scales innovative solutions and tackles pressing issues such as cost.

In implementing sections B.1 on the sharing of information and D.2 on managing space debris of the Guidelines for the Long-term Sustainability of Outer Space Activities, UNOOSA further expanded the list of focal points, enhancing space situational awareness and communication between major spacefaring nations in the event of risks and hazards associated with conjunctions and/ or debris.

#### **Status of the Treaties**

The numbers of Member States that have ratified international agreements relating to space activities currently stands at:

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

#### **OUTER SPACE TREATY**

116

Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space

#### **RESCUE AGREEMENT**

100

Convention on International Liability for Damage Caused by Space Objects

#### LIABILITY CONVENTION

100

Convention on Registration of Objects Launched into Outer Space

#### **REGISTRATION CONVENTION** 76

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies

MOON AGREEMENT

In 2024, we also welcomed treaty ratifications by the following States Parties:

14 May 2024: Accession by the Philippines to the Convention on Registration of Objects Launched into Outer Space

15 April 2024: Ratification by Colombia of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies

17 October 2024: Accession by Uzbekistan to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies

Full list of the status of international agreements relating to activities in outer space as of 1 January 2025

An unprecedented number of countries are requesting UNOOSA support to develop national space laws, which is clear evidence of a global commitment to safe and sustainable space activities. UNOOSA is proud to lead the way in tangibly translating paper into practice - implementing global space governance and COPUOS commitments.

> Rosanna Deim-Hoffmann Associate Legal Officer



# SPACE4CLIMATE ACTION

Ensuring the latest technologies work with space data and services to address climate-related challenges, climate action, disaster-risk reduction and environmental sustainability

#### **UN-SPIDER**

UN-SPIDER is mandated to deliver specialized capacity-building on the use of space applications for disasters and emergency response situations.

We supported Guatemala, Morocco and Uruguay in 2024 in activating the International Disaster Charter and access data in the aftermath of disasters. UN-SPIDER carried out institutional strengthening missions to Morocco, Nepal and Tonga. Following this, we welcomed the South African National Space Agency (SANSA) as the newest Regional Support Office. In this role, SANSA will work with UN-SPIDER in facilitating the use of space-based information in disaster management applications in southern African countries.

UN-SPIDER organized three international training courses and three national training courses with several partners. The international training courses allowed more than 80 professionals from national disaster management institutions, space agencies and universities from developing countries to learn how to use specific procedures or tools developed by the space community and by UN-SPIDER. The international training courses targeted professionals from Algeria, Argentina, Brazil, Chile, Colombia, Ecuador, French Polynesia, Ghana, Madagascar, Mexico, Nigeria, Peru, South Africa and Tonga. National training courses also targeted more than 50 professionals from El Salvador, Nepal and South Africa.

#### Tonga case study

Following the Secretary-General's visit to the Pacific Islands Forum Leaders Meeting in August, UNOOSA, through the UN-SPIDER programme, worked with Spacedata Inc and Airbus Defence and Space to develop a 3D Digital Twin of Tonga using AI and Earth-observation (satellite) imagery. Digital twin

technology is increasingly being used to simulate the effects of rising sea levels and climate change, and provides valuable tools for decision-makers in areas such as urban planning, coastal management and disaster preparedness.

Link to more information

# **United Nations/Austria Symposium** and the Space for Climate Observatory

Attendees celebrated the thirtieth annual United Nations/Austria Symposium, which provided a valuable platform for scaling space solutions for climate action and insights on user engagement, capacity-building and fundraising strategies. Experts presented success stories showcasing how strong national policies and ecosystems enable the transformation of technical projects into sustainable services.

As a signatory to the Space for Climate Observatory (SCO), UNOOSA provided support through 2024 for the elaboration of the SCO Awareness-Raising and Communication Strategy as well as for the creation, launching and operationalization of the SCO Working Group on Global Awareness-Raising, aiming at scaling up the voice of SCO to the global level while raising awareness on the increasing potential and benefits of space technologies and their applications to mitigate and tackle climate change. The creation of the Working Group was approved by the SCO Steering Committee in May and launched in July on the margins of the United Nations/Austria Symposium in Graz. The first Working Group meeting took place in September and was chaired by UNOOSA.



Through the Tonga digital twin, we highlight how Earth observation and artificial intelligence can support island nations to adapt to climate change — turning satellite data and science into safety and practical tools for resilience.

Jumpei Takami Associate Expert in Remote Sensing for Disaster Management

# SPACE FOR THE SUSTAINABLE DEVELOPMENT GOALS

Accelerating and scaling the implementation of the SDGs through the use of space technology, data and services

## **Access to Space for All**

A team from the Universidad Central de Venezuela won an opportunity to carry out a combustion test in microgravity, which helped understand the effects of microgravity on the welding of aerospace aluminium alloys. This was conducted through the UNOOSA "Drop Tower Experiment Series" (DropTES), which is in partnership with the Center of Applied Science technology and Microgravity in Bremen, Germany and the German Aerospace Center.

HyperGES, in partnership with European Space Agency (ESA), a team of researchers from two universities in the Philippines – the University of San Carlos and Holy Name University – made use of the ESA Large Diameter Centrifuge to test the growth of bone cells in hypergravity. The results of their experiment could improve bone implant technology or "bioprinted bone generation", as well as help support seaweed farming communities across the country.

Read their story here



Access to facilities and infrastructure through Access to Space for All are sparking national developments and four nations have become spacefaring. The different opportunities serve as catalysts for the establishment of national space ecosystems, the creation of space agencies, the registration of space objects, the creation of indigenous satellites, and new national laws. We're grateful for the valuable contributions of all our partners to the UNOOSA Access to Space for All initiative and are confident that this will help countries on their spacefaring journey.

Lorant Czaran Acting Head of Space Applications



#### **SPACE4WATER**

UNOOSA continues to champion space-based solutions for water management through the Space4Water project and portal.

On 7–10 May, UNOOSA co-organized the sixth Conference on the Use of Space Technology for Water Management in Costa Rica. The event highlighted the role of space technology in addressing global water challenges, with a particular focus on hydrology, ecosystem preservation and the water-food nexus. Experts discussed how developing countries can overcome infrastructure and policy challenges to sustainably manage water resources.

On 23-24 October 2024 the fourth Space4Water Stakeholder Meeting took place, and the co-creation of space-based solutions by interdisciplinary, multi-stakeholder teams on rainwater harvesting, wetland extent mapping, monitoring hydrocarbon contamination as well as groundwater monitoring for Bahrain and a simulation of sea level rise have been developed for presentations at the stakeholder meeting in May 2025. Furthermore, country case studies on the use of space-based technology and data for water management, hydrology and aquatic ecosystem preservation have been developed and presented by Brazil and the Gambia.

On 8 November, the eleventh Prince Sultan Bin Abdulaziz International Prize for Water awards ceremony was held in Vienna with support from PSIPW and the Permanent Mission of Saudi Arabia to the United Nations. Awardees from China, the United Kingdom and the United States received recognition for groundbreaking solutions aimed at improving global access to clean water.

The PSIPW awardees and their respective projects can be found here

## **Space for health**

In 2024, the Scientific and Technical Subcommittee of COPUOS endorsed the long-term strategy on space and global health for the period 2025-2035, following recommendations from the United Nations/World Health Organization International Conference on Space and Global Health. This strategy, supported by General Assembly resolution 77/120, aims to leverage space technology to enhance global health outcomes through institutional strengthening, knowledge and awareness-raising, and capacity-building. Key initiatives include developing policy frameworks, fostering interdisciplinary collaboration, promoting access to space-derived data and establishing educational programmes to build competencies in space and health applications.

To add a regional perspective to these efforts, UNOOSA organized the United Nations/World Health Organization Regional Conference on Space Technology for Advancing Global Health, held in Vienna from 23 to 25 October 2024, which showcased several impactful initiatives. For instance, the "More Well-being" model from Bogotá integrated intersectoral data to enhance health governance and community wellbeing. In Chile, a comprehensive territorial analysis approach was used to address healthcare delivery challenges in rural areas. The Pan American Health Organization collaborated with the Plurinational State of Bolivia to improve vaccination operations using geospatial data. Additionally, the National Institute for Space Research of Brazil utilized satellite data to study diseases such as leptospirosis and dengue fever, while the National Commission on Space Activities of Argentina employed climate data for dengue surveillance. These examples underscore the significant contributions of space technology in addressing public health challenges in the Latin American and Caribbean region.



An example of telemedicine in Mexico: on-screen consultation with a patient and her doctor who are located 400 miles away Credit: Agathe Padovani

The space sector is set for exceptional growth, driven by commercialization. UNOOSA is committed to supporting Member States in building sustainable space ecosystems through bridging the gap between space and non-space actors, tailored capacitybuilding and global collaboration.

> Xing Yi Ang Space Economy Lead Associate Scientific Officer



#### **Space economy**

The global space economy is predicted to reach \$1.8 trillion by 2035 and UNOOSA is a gateway to providing States with the practical tools to tap into this economy, driving public-private partnerships, scaling-up economies and building networks. In 2024, UNOOSA, with support from the United Nations Development Programme, made strides in advancing the space economy internationally, and particularly in Brazil.

In spring, we launched a global, free eLearning course, providing an entry-level overview of the past, present and future of the space economy.

Following the G20 meeting in Rio de Janeiro, UNOOSA and the Brazilian Space Agency hosted a space economy masterclass exploring the commercial potential of space technology for economic, social and environmental progress in Brazil. Experts from industry, ESA, the European Association of Remote Sensing Companies and the Oxford Space Initiative covered key topics such as the dynamics of the commercial space industry, the transformative uptake of downstream applications, and how to reach beyond the space bubble.

E-learning Modules



# **DEVELOPING COUNTRIES/PARTNERSHIPS**

Ensuring developing countries can contribute to, and benefit from, space tech, data and services

#### KiboCUBE - JAXA

On 30 July, UNOOSA and the Japan Aerospace Exploration Agency (JAXA) announced the winners of the eighth round of the KiboCUBE programme. KiboCUBE has already enabled four countries - Kenya, Guatemala, Mauritius and Moldova - to launch their first satellites, often leading to the establishment of national space agencies, space policies, and domestic space ecosystems and economies.

A joint team from the Dar es Salaam Institute of Technology in the United Republic of Tanzania and the Institut National Polytechnique Félix Houphouët Boigny in Côte d'Ivoire won the 2024 award to deploy their CubeSat from the Japanese Experiment Module "Kibo" on the International Space Station. This round marks the first time the United Republic of Tanzania and Côte d'Ivoire will deploy a satellite, further expanding space access to developing countries. Their satellite will track GPS boundary beacons in game reserves and collect environmental data to support biodiversity conservation and climate change mitigation efforts.

On November 30, UNOOSA and JAXA held an onsite KiboCUBE Academy workshop



SS-1 deployed from ISS Credit: JAXA/NASA

at Stellenbosch University in South Africa. Dr. Masahiko Yamazaki from Nihon University in Tokyo introduced HEPTA-sat, a hands-on CubeSat training tool that teaches students about satellite subsystems, integration and operations. This workshop helped build technical capacity and foster collaboration among participants from across Africa.

#### **Exolaunch**

On 31 January, UNOOSA and Exolaunch GmbH announced an opportunity for up to two 1U-3U cube satellites (CubeSats) to be deployed into space with the Exolaunch EXOpod deployment system.

The collaboration with Exolaunch will further enhance access to space, with selected awardees receiving support in satellite registration, space sustainability and policy engagement. This initiative will help bridge the space technology gap, ensuring that more nations can benefit from satellite technology and applications. Seventeen applications from institutions in Argentina, Bahrain, Bangladesh, Bolivia (Plurinational State of), Guatemala, Indonesia, Jordan, Malaysia, Mexico, Moldova, Morocco, Nepal, Paraguay, Thailand and Tunisia were submitted to seize this unparalleled opportunity to enhance their capabilities in space technology.



Photo credit: Exolaunch

Partnering with UNOOSA on the Access to Space for All Initiative is a significant milestone for Exolaunch. We are dedicated to expanding global access to space, and this collaboration allows us to contribute our expertise in satellite deployment to benefit and empower countries new to space activities.

Jeanne Allarie Chief Commercial Officer, Exolaunch



## Payload hosting initiative - Mohammed Bin Rashid **Space Centre**

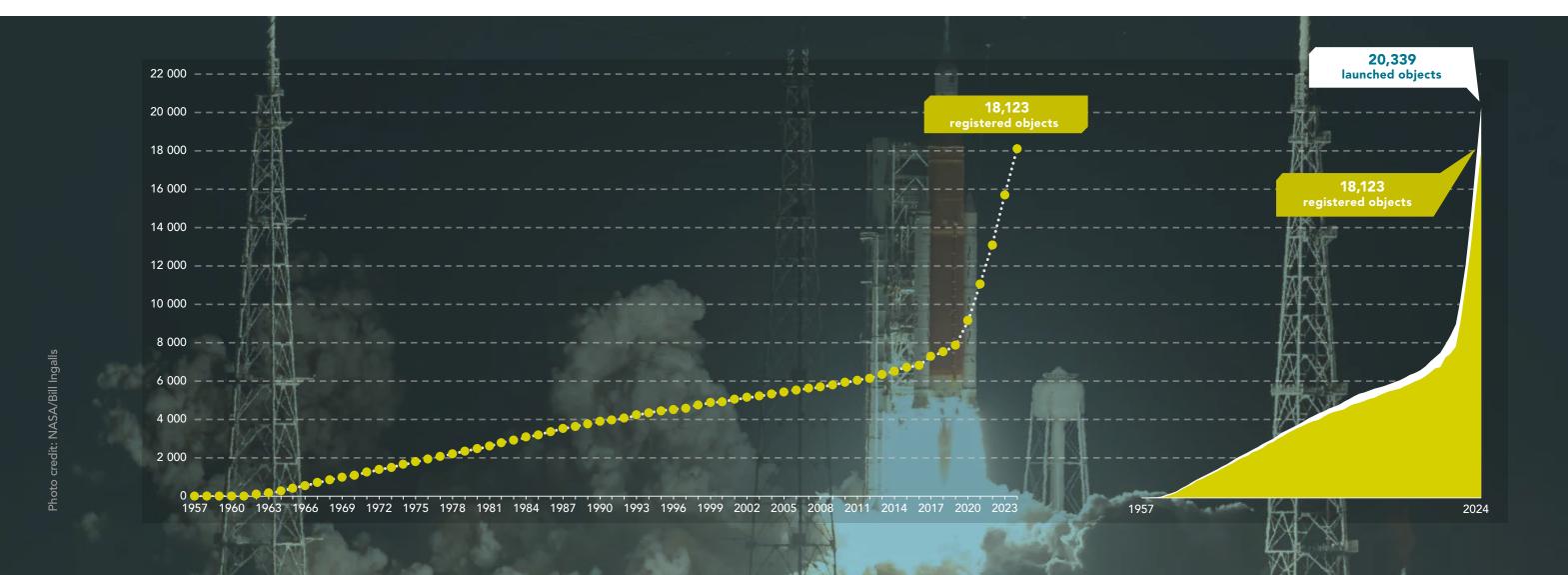
The payload hosting initiative, in partnership with the Mohammed Bin Rashid Space Centre (MBRSC), will enable two teams from Moldova and the United Arab Emirates to host payloads in the satellite bus developed by MBRSC. Teams from Universitatea

Tehnică a Moldovei and Madari Space will test satellite positioning, space radiation, Al-powered space data storage and debris detection systems while in orbit aboard the PHI-2 mission.

# UNITED NATIONS REGISTER OF OBJECTS LAUNCHED INTO OUTER SPACE

In 2024, a historic milestone for global spaceflight was surpassed with over 250 successful rocket launches taking place in a single year, representing a 20 per cent increase on 2023 (212). While a considerable proportion of these launches were dedicated to the completion of large-and mega-satellite constellations, others were representative of the increasing number of governmental, civil or commercial space activities conducted by new and established space actors in Earth orbit or beyond. Given the profusion of space activities, a means of identifying who is responsible for a given space object is increasingly important to ensure that space is safe and sustainable for future generations.

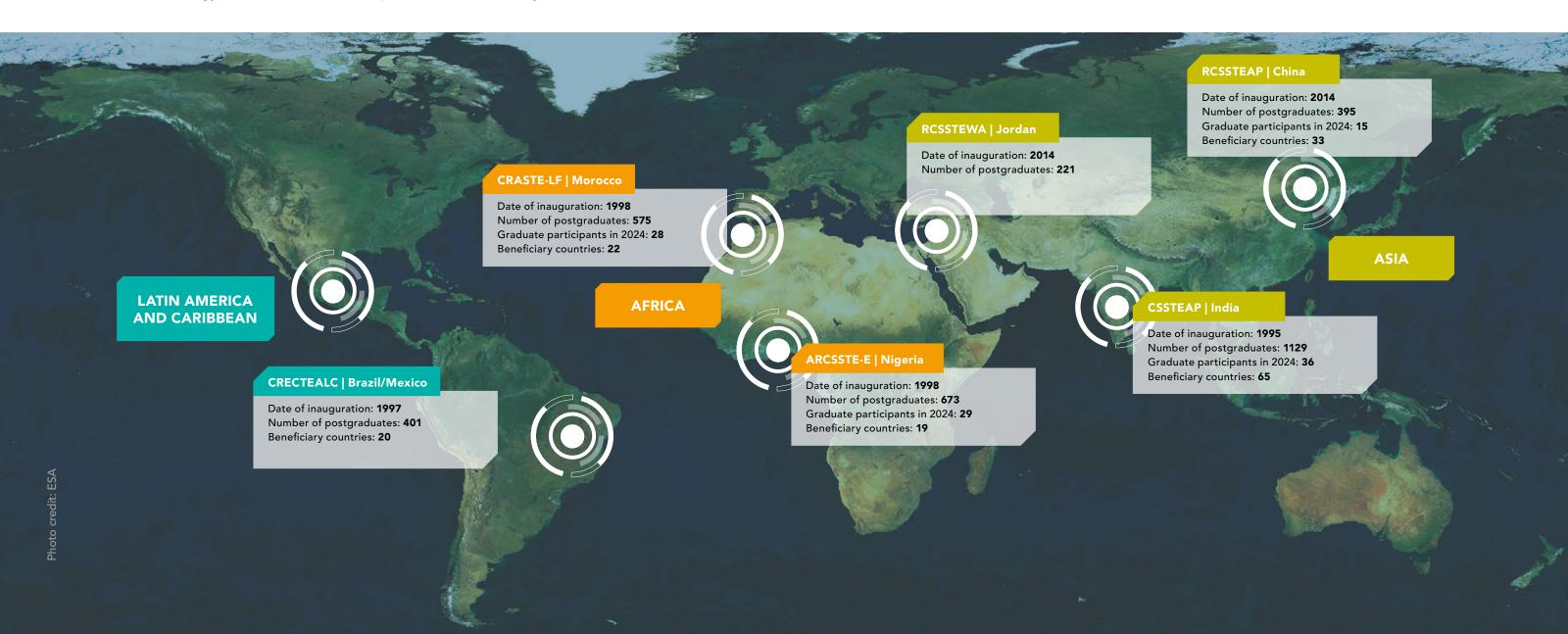
Since 1962, Member States have registered their space objects with the Secretary-General. First, voluntarily under General Assembly resolution 1721B (XVI) and then as a treaty obligation under the Convention on Registration of Objects Launched into Outer Space, over 18,100 functional space objects (satellites, probes, lander, rovers, cargo craft, crewed spacecraft and space stations) have been registered by States and international intergovernmental organizations. In 2024, 32 Member States submitted registrations on 2,434 functional space objects with Armenia, Ireland, Portugal and Qatar providing information for the first time. Additionally, in 2024, notifications of over 730 space object re-entries were also furnished to the Secretary-General.



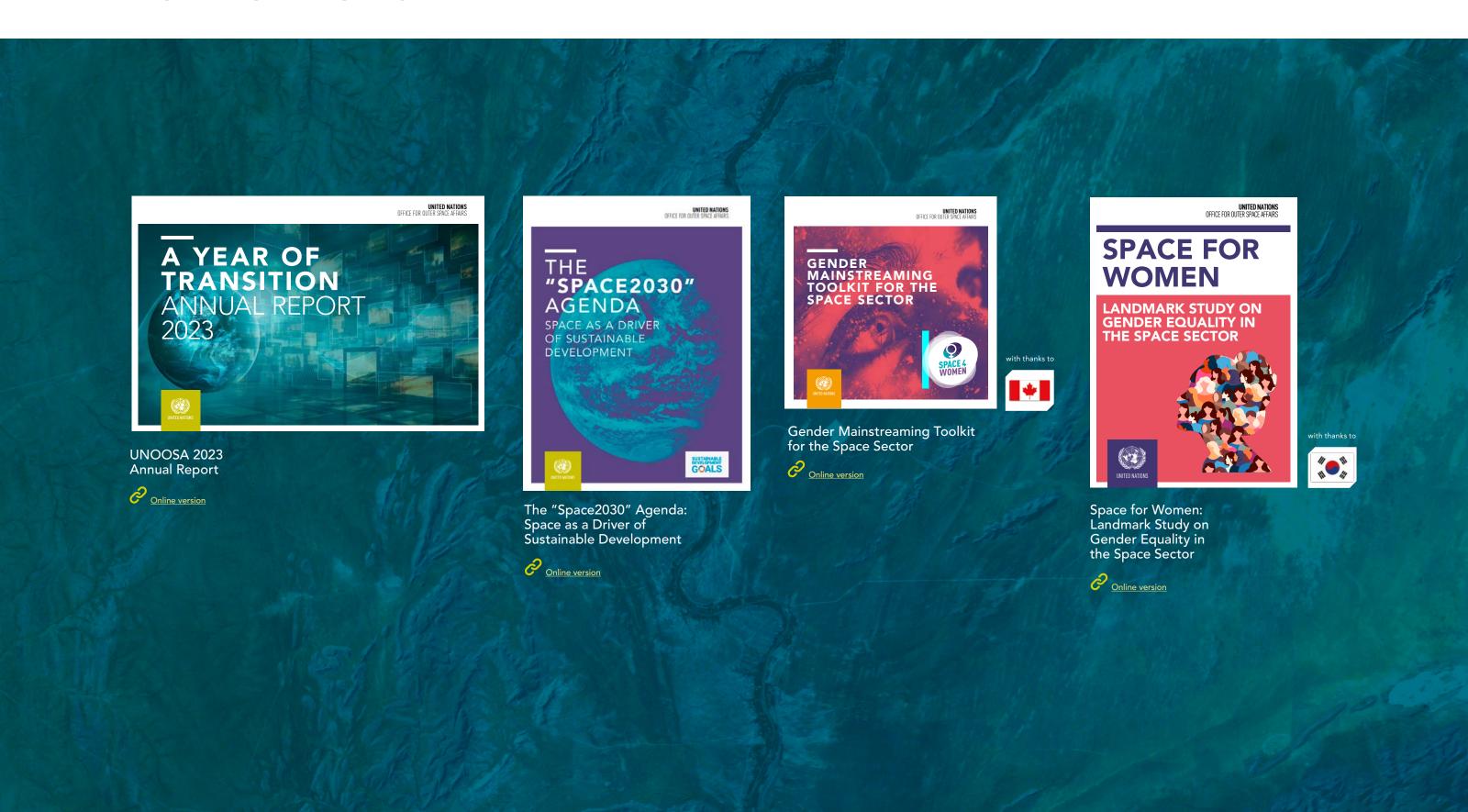
# REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION (AFFILIATED WITH THE UNITED NATIONS)

The United Nations-affiliated Regional Centres for Space Science and Technology Education are instrumental in providing educational, research and practical application opportunities in space science and technology. These centres aim to enhance the expertise and capabilities of university educators, researchers and scientists in practical, tailored and theoretical aspects of space science and technology. This is achieved through comprehensive training involving theory, research, fieldwork and pilot projects, all focused on leveraging space technology for sustainable development in each country.

Delivering quality education requires a common standard of teaching. Education curricula developed by the Office focus on all major fields of space applications, including satellite meteorology, climate, satellite communications, space and atmospheric science, remote sensing, as well as GIS and GNSS. These materials are open source, free of charge and available to other educational institutions.



# **PUBLICATIONS**





# COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE

COPUOS welcomed Djibouti and Latvia as the newest members of the Committee as well as two new international organizations with observer status with the Committee, taking the overall of membership of COPUOS to 104 Member States and 51 permanent observers (international and regional organizations or international non-governmental organizations).

#### **Scientific and Technical Subcommittee**

Reinforcing the commitment of States to space sustainability, the Working Group on the Long-term Sustainability of Outer Space Activities continued to address three core areas: (a) identifying and studying challenges and considering possible new guidelines for the long-term sustainability of outer space activities; (b) sharing experiences, practices and lessons learned from voluntary national implementation of the adopted Guidelines; and (c) raising awareness and building capacity, in particular among emerging space nations and developing countries.

The Working Group on the Use of Nuclear Power Sources in outer space worked on a questionnaire to collect information about potential future uses of nuclear power sources in space applications, particularly nuclear fission reactors and new types and uses of radioisotope power systems. The Working Group engages with and benefits from the expertise of the International Atomic Energy Agency (IAEA).

# **Legal Subcommittee**

The Working Group on the Status and Application of the five United Nations treaties on outer space agreed to continue its work on the questionnaires and advanced its work on recommendations to be addressed to States of registry to support the enhancement of registration practices.

The Working Group on Legal Aspects of Space Resource Activities held an expert meeting in Luxembourg on 26 March to collect preliminary inputs for consideration at the International Conference on Space Resources in Vienna on 15 April 2024. The Working Group further exchanged views on the development of a set of initial recommended principles for space resource activities.

The Space and Global Health Network, established by the resolution on space and global health (A/RES/77/120), met in 2024 to develop a multidisciplinary curriculum on space and health, which seeks to enhance international expertise in, inter alia, the applications of space services for satellite connectivity for telemedicine, and remote sensing for monitoring and forecasting vector-borne diseases.

# INTERNATIONAL YEAR OF ASTEROID AWARENESS **AND PLANETARY DEFENCE, 2029**

Near-Earth objects are asteroids and comets whose orbit brings them closer than 1.3 astronomical units, or approximately 195 million kilometres, to the Sun. Near-Earth objects that are closer than 0.05 astronomical units to Earth's orbit (about 7.5 million kilometres) and larger than about 140 metres in size, represent potentially catastrophic threats to our planet.

UNOOSA has worked on near-Earth objects for many years, recognizing a near-Earth object impact hazard as a global issue demanding an international response. Addressing such a hazard, including the identification of those objects that pose a threat of impact and planning a corresponding mitigation campaign, requires cooperative action in the interest of public safety on the part of the global community.

Building on recommendations for an international response to a near-Earth object impact threat, endorsed by the Committee on the Peaceful Uses of Outer Space (COPUOS) in 2013, the International Asteroid Warning Network (IAWN) and the Space Mission Planning Advisory Group (SMPAG) were established in 2014.

#### Once-in-a-millennium event

On Friday 13 April 2029, the asteroid 99942 Apophis will pass safely at a distance of about 32,000 kilometres above Earth's surface, within the geostationary orbit, posing no threat to the planet. This extremely close approach will make the asteroid visible to billions of people with the naked eye in the clear night sky.

This will be a once-in-a-millennium event and a unique occasion for a worldwide campaign to raise awareness about asteroids, their scientific and resource value and the potential hazard they pose.

On the occasion of the International Year of Asteroid Awareness and Planetary Defence in December 2016, the General Assembly adopted resolution A/RES/71/90, declaring

30 June International Asteroid Day, marking the anniversary of the Tunguska impact over Siberia, Russian Federation, on 30 June 1908. Building on this, 2024 saw Romania table and pass a General Assembly resolution to declare 2029 the International Year of Asteroid Awareness and Planetary Defence to take advantage of the close approach of 99942 Apophis and raise global awareness about asteroids.

This initiative aims to highlight the collaborative efforts of COPUOS in mitigating potential hazards from near-Earth objects, while also providing an opportunity for a global educational campaign.

International Year of Asteroid Awareness and Planetary Defence, 2029 (A/RES/79/86)



We need to find asteroids before they find us, is a saying in the planetary defence community. A call for strengthened international collaboration to protect our planet against natural hazards from space, such as asteroids, stems from the Vienna Declaration and UNISPACE III. UNOOSA works with the **International Asteroid Warning Network** (IAWN) and the Space Mission Planning Advisory Group (SMPAG) in harmonizing the worldwide efforts directed at identification, follow-up observation and orbit prediction of near-Earth objects. The goal is to ensure that all countries, in particular developing countries with limited capacity in predicting and mitigating an asteroid impact, are aware of potential threats, and of effective emergency response in the event of a near-Earth object impact.

> Romana Kofler Programme Management Officer, SMPAG secretariat, UNOOSA



## STATEMENTS BY THE CHAIRS

# Statement by the Chair of the Committee on the Peaceful Uses of Outer Space



**Sherif Sedky** 

CEO of the Egyptian Space Agency

Chair of COPUOS 2024

I am honoured to have been elected as Chair of the sixty-seventh session of the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS 2024). This marks a historic moment as it is the first time an African country has chaired the committee since its establishment in 1959.

I am proud that despite the turmoil in the world, COPUOS has delivered excellent achievements during 2024. This would never have been achieved without the unprecedented support and trust of the distinguished delegates of all 102 Member States. Members states kept the Vienna Spirit alive through compromise and focus on substantive and technical work. Special thanks go to the Director and Deputy Director of UNOOSA; the Permanent Missions of Egypt in Austria and in New York, the UNOOSA secretariat and the entire Conference Management Team - including interpreters, editors and translators for facilitating our discussions in all the official languages of the United Nations;

and the UNOOSA secretariat team for their outstanding support throughout this session.

One of the notable outcomes of the sixty-seventh session of COPUOS is the establishment of the Action Team on Lunar Activities Consultation (ATLAC). Thanks are due to UNOOSA for paving the way by holding the first ever conference on sustainable lunar activities prior to the June session. The establishment of ATLAC is an important step towards facilitating international consultations to ensure that lunar activities are conducted in a safe, peaceful and transparent manner. In addition, it demonstrates the proactive role of the Committee in setting governance for exploring celestial bodies.

The Committee also held productive discussions on space traffic coordination and space debris remediation, while ensuring the solid advancement of work in the Longterm Sustainability and Space Resources Working Groups.

Important new initiatives also took place this year that will set the committee's agenda for the next few years. The General Assembly agreed to declare 2029 a United Nations-designated year of asteroid awareness and planetary defence, taking advantage of the rare close approach of asteroid Apophis in 2029. The Summit of the Future called on the Committee to work on new frameworks for space resources, space debris and space traffic. Furthermore, the Committee welcomed a potential space summit – UNISPACE IV – in 2027.

Finally, I wish my colleague Dr. Rafiq Akram all success in chairing the sixty-eighth session of the committee.

## STATEMENTS BY THE CHAIRS

# Statement by the Chair of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space



#### Ulpia Botezatu

Chair of the Scientific and Technical Subcommittee 2023–2024

Dear Reader,

Serving as Chair of the Scientific and Technical Subcommittee (STSC) of the Committee on the Peaceful Uses of Outer Space (COPUOS) during 2024–2025 has been an extraordinary honour and privilege. This tenure has provided me with a unique vantage point to witness remarkable achievements in advancing international cooperation for the peaceful, sustainable, and equitable exploration and utilization of outer space.

Throughout this journey, the Subcommittee has been at the forefront of addressing critical issues that define our era. We have tackled challenges such as space debris mitigation, the effects of space weather and ensuring the long-term sustainability of outer space activities. Among our accomplishments, a particularly inspiring milestone was the adoption of the United Nations resolution designating 2029 as the International Year of Asteroid Awareness and Planetary Defence. This initiative, tied to the close but safe approach of asteroid 99942 Apophis, symbolizes humanity's ability to unite in the face of shared challenges, fostering global awareness and collaborative action in planetary defence.

Equally significant has been the establishment of the Action Team on Lunar Activities Consultation (ATLAC), a bold step toward improving dialogue and coordination on lunar activities. By facilitating expert-level exchanges, ATLAC embodies the spirit of multilateralism, aiming to address the complexities of lunar exploration and align them with principles of international cooperation and sustainable development.

Moreover, the Subcommittee has shown great foresight in addressing emerging challenges, such as the impact of large satellite constellations on dark and quiet skies. By introducing a dedicated agenda item on this matter, we reaffirm our commitment to preserving the integrity of astronomical observations, which are vital not only for scientific discovery but also for humanity's cultural heritage.

These achievements are a testament to the transformative potential of space technologies in tackling societal challenges and driving progress towards the objectives of the Space2030 Agenda. They also underscore the vital role of COPUOS and its subcommittees in shaping a future where the benefits of outer space are accessible to all.

As I reflect on this year of tenure, I am reminded of the timeless words of Eleanor Roosevelt: "The future belongs to those who believe in the beauty of their dreams." Space exploration represents the embodiment of this sentiment – a shared dream that unites humanity and inspires us to strive for a better future.

Looking beyond the current mandate, I am encouraged by the progress made through initiatives such as ATLAC, an effort actively promoted by Romania to enhance international dialogue and collaboration in lunar exploration. Moreover, my aspiration for the Subcommittee is to continue serving as a beacon of innovation, inclusivity and global collaboration. By embracing the power of multilateralism and science-driven policy, we can ensure that the benefits of outer space not only address the challenges of today but also lay the foundation for a brighter, more sustainable tomorrow.

# STATEMENTS BY THE CHAIRS

# Statement by the Chair of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space



Santiago Ripol Carulla, Professor of Public International Law, Universitat Pompeu Fabra, Barcelona, Spain

Chair of the Legal Subcommittee 2023–2024

Dear Reader,

It is with great honour and a profound sense of responsibility and gratitude that I chaired the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space at its sixty-third session. The privilege of guiding our deliberations is a testament to our joint commitment to ensuring that outer space remains a domain of peace, cooperation, and progress for the benefit of all humankind.

The sixty-third session of the Legal Subcommittee addressed some of the most pressing challenges and opportunities in space governance, underscoring the transformative changes occurring in the global space landscape. The complexity of the technological advancements we are witnessing, combined with the growing multiplicity of actors – including Governments, private companies, academic institutions and international organizations – has reinforced the necessity of a responsive and adaptive legal framework. The session continued to demonstrate the ability of COPUOS to deliver on the priorities of the space sector and positioned the LSC at the forefront of legal considerations on key issues such as: space resources, space debris and orbital congestion, transparency and accountability in space activities, and the registration of objects launched into outer space, including large constellations and effective strategies to ensure compliance with international obligations related to registration.

As the exploration and utilization of space resources becomes increasingly viable, the Legal Subcommittee, through the Working Group on the Legal Aspects of Space Resource Activities, explored potential models for regulating these activities – a process that will no doubt complement the recently established Action Team on Lunar Activities Consultation (ATLAC). These deliberations highlighted the importance of ensuring that the exploitation of

space resources is conducted in a manner consistent with international law and the principles of equity, sustainability and benefit-sharing.

While this year's achievements reflect significant progress, the committee's work remains ongoing and ever more crucial.

Looking ahead, the Subcommittee will continue to navigate complex legal, technological and geopolitical challenges and the success of future sessions will depend on deepening and reinforcing the spirit of international collaboration, dialogue and consensus-building that characterize the "Vienna Spirit". This spirit must remain the foundation of our work.

## **2025 AND BEYOND**

# IMPLEMENTING THE UNOOSA VISION AND STRATEGY, 2024–2030

UNOOSA will implement and operationalize the Vision and Strategy by creating new partnership opportunities and fundraising, to deliver on the needs of States.

#### SPACE SUSTAINABILITY

UNOOSA will continue to support the implementation of the Guidelines for the Long-term Sustainability of Outer Space Activities and the ongoing work of the LTS Working Group.

UNOOSA will demonstrate leadership on space situational awareness, by providing capacity-building events, such as the UN-Space Sustainability Days, to foster a greater understanding of subject knowledge.

# UNITED NATIONS SPACE BRIDGE

UNOOSA will convene round tables with the right expertise, ask the right questions and scale existing use of space applications to address global challenges.

# GROWING COPUOS MEMBERSHIP

We will continue to leverage our networks and engage Member States to increase the membership of COPUOS, to ensure all States have a voice in the future of space governance, services and solutions.

#### **UNISPACE IV**

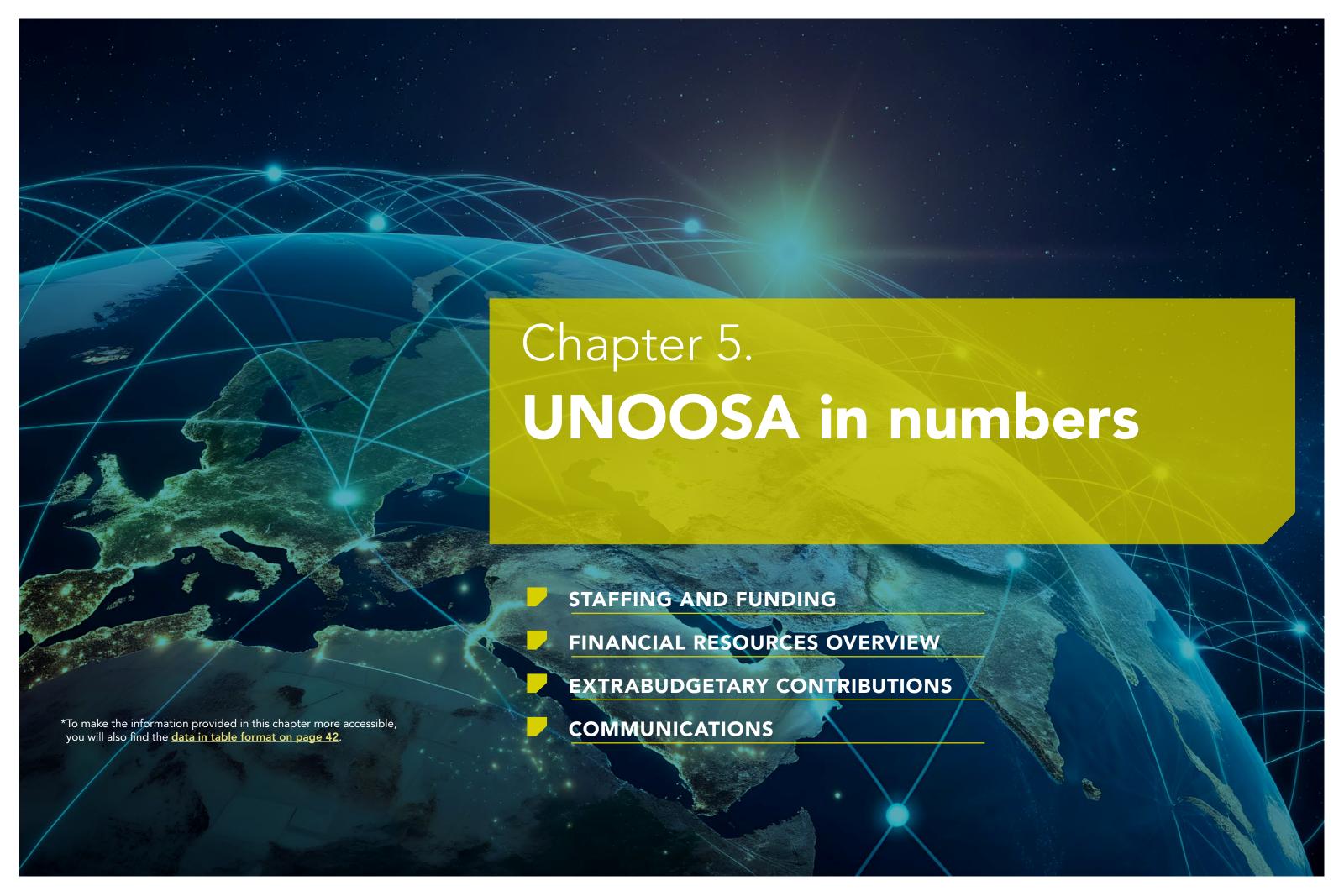
Member States will continue to deliberate the possible hosting of a fourth United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE IV) in 2027.

#### FOOD SECURITY

We will continue to leverage our networks and engage Member States to increase the membership of COPUOS, to ensure all States have a voice in the future of space governance, services and solutions.

# SCIENCE-FICTION OR JUST SCIENCE?

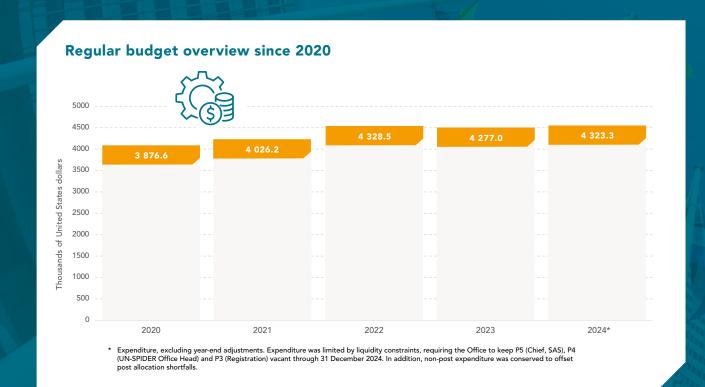
We will continue to strengthen our communications efforts on the relevance of space to ensure that policymakers can make the case for space at the national level, and that the public understand how space plays a significant role their daily lives.



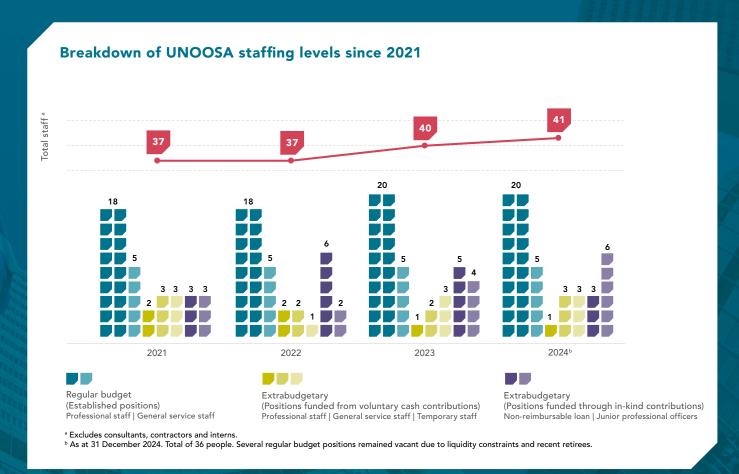
This section presents data on the financial and human resources of UNOOSA covering the period through 31 December 2024. The Office acknowledges and wishes to express its gratitude to all Member States that continuously support its activities, whether through an in-kind or a cash contribution. The data reflected in this section represent cash contributions only.

The full list of in-kind contributors for 2024, can be found within the statement by Aarti Holla-Maini, Director of UNOOSA, at the sixtysecond session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, Vienna, 3 February -14 February 2024.

## FINANCIAL RESOURCES OVERVIEW

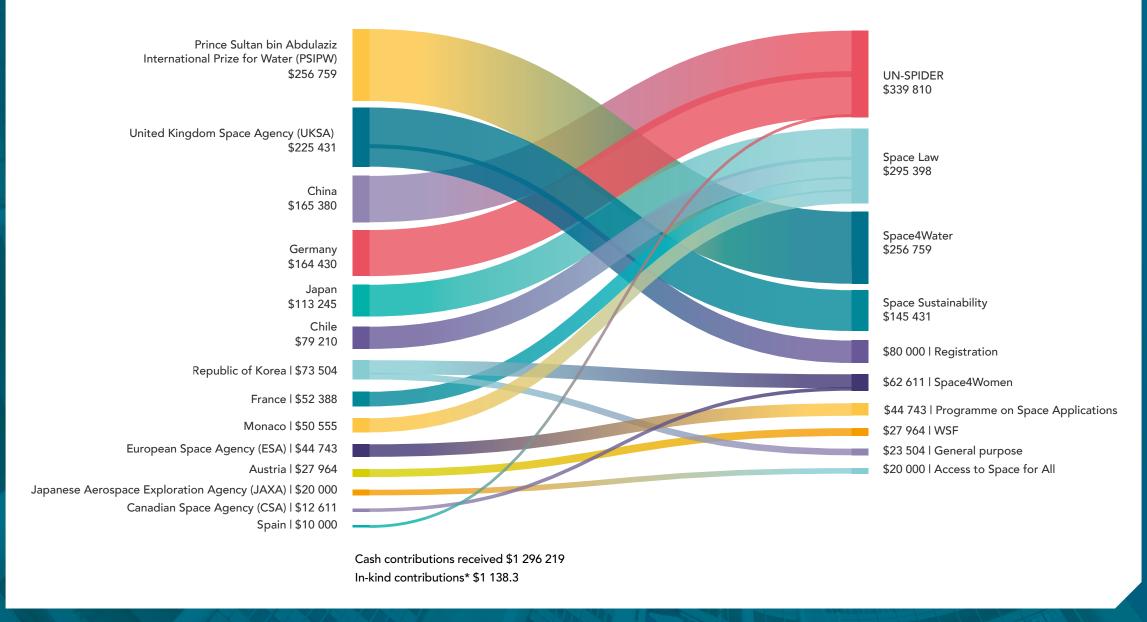


### STAFFING AND FUNDING



## **EXTRABUDGETARY CONTRIBUTIONS**

#### **UNOOSA** extrabudgetary donors, 2024



**UNOOSA** would like to thank the following donors for their contributions:



<sup>\*</sup> As reported to the Office. Not all in-kind donors are able to submit estimated value of the support and services provided to the Office in the delivery of its activities.

#### **COMMUNICATIONS**

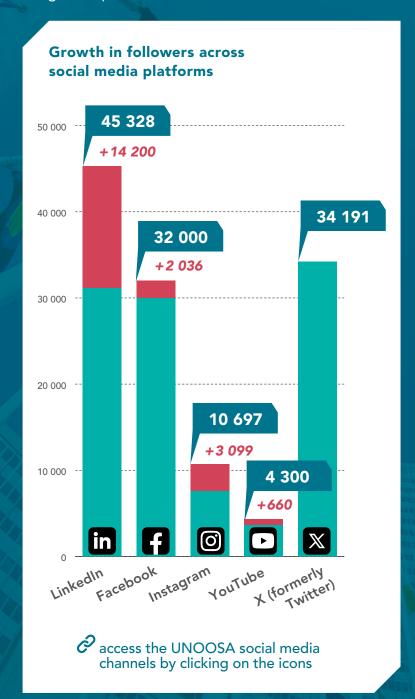
To reach new audiences and break down silos, UNOOSA launched a series of social media campaigns aimed at demonstrating the role, relevance and impact of the Committee on the Peaceful Uses of Outer Space and the work of UNOOSA. This involved going back to basics with the creation of substantive explainer videos, infographics, explainer carousels and publicizing the ongoing work of the Committee to deliver on the priorities of the space sector for the decades to come.

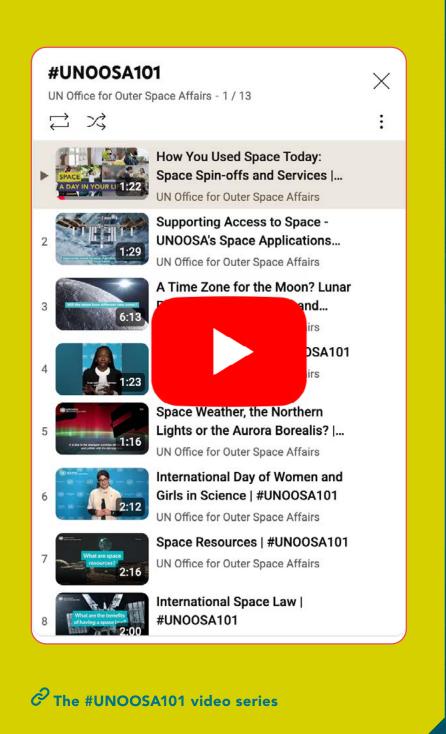
Space is no longer the realm of science fiction. The vastness of space lies roughly 100 km above our heads, but the practical benefits of space lie in our pockets, on our smartphones, in facilitating global connectivity and travel. UNOOSA is committed to ensuring that we're no longer just communicating the benefits of space solutions within a vacuum.

> Andrew Marchetti **Acting Public Information Officer**



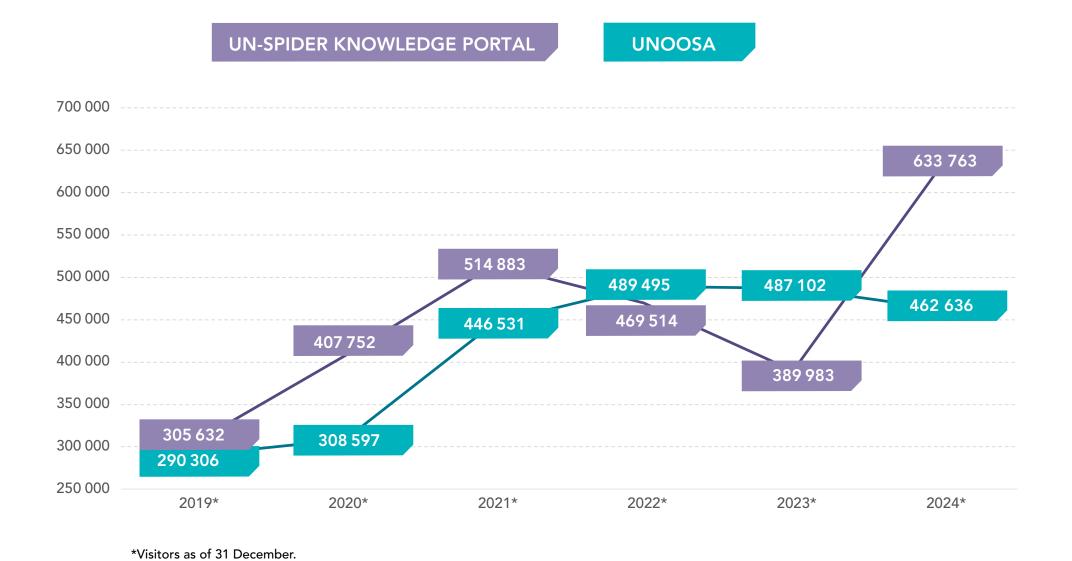
Here are a few which gained significant engagement, reach or click throughs and were amplified by key influencers within the space sector, other United Nations entities and the general public:





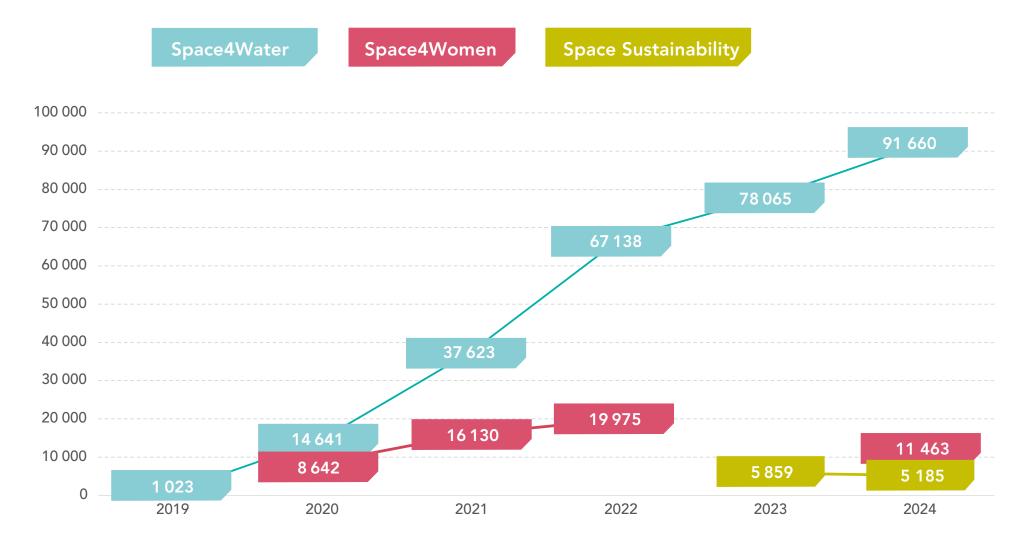
## COMMUNICATIONS

Levels of traffic on the UNOOSA and UN-SPIDER knowledge portal sites, 2019–2024



## COMMUNICATIONS

Levels of traffic on the Space4Water, Space4Women and Space Sustainability sites, 2019–2024



\*Visitors as of 31 December.

## **TABLES**

#### Regular budget overview since 2020

	2020	2021	2022	2023	2024°
Budget in thousands of United States dollars	3 876.6	4 026.2	4 328.5	4 277.0	4 323.3

<sup>&</sup>lt;sup>a</sup> Expenditure, excluding year-end adjustments. Expenditure was limited by liquidity constraints, requiring the Office to keep P5 (Chief, SAS), P4 (UN-SPIDER Office Head) and P3 (Registration) vacant through 31 December 2024. In addition, non-post expenditure was conserved to offset post allocation shortfalls.

#### Breakdown of UNOOSA staffing levels since 2021

Funding source	2021	2022	2023	2024°
Regular budget: Established positions	18 Professional staff 5 General service staff	18 Professional staff 5 General service staff	20 Professional staff 5 General service staff	20 Professional staff 5 General service staff
Extrabudgetary: Positions funded from voluntary cash contributions	2 Professional staff 3 General service staff 3 Temporary staff	2 Professional staff 2 General service staff 1 Temporary staff	1 Professional staff 2 General service staff 3 Temporary staff	1 Professional staff 3 General service staff 3 Temporary staff
Extrabudgetary: Positions funded through in-kind contributions	3 Non-reimbursable loan 3 Junior professional officers	6 Non-reimbursable loan 2 Junior professional officers	5 Non-reimbursable loan 4 Junior professional officers	4 Non-reimbursable loan 6 Junior professional officers
Total staff <sup>b</sup>	37	37	40	42

Note: Not all positions are encumbered. Liquidity constraints presently impact the filling of several established positions that are vacant.

#### **Digital communications**

Website	2019*	2020*	2021*	2022*	2023*	2024*
UNOOSA	290,306	308,597	446,531	489,495	487,102	462,636
SPIDER KP	305,632	407,752	514,883	469,514	389,983	633,763
Space4Water	10,230	14,641	37,623	67,138	78,065	91,660
Space4Women	N/A	8,642	16,130	19,975	N/A	11,463
Space Sustainability	N/A	N/A	N/A	N/A	5859	5185

<sup>\*</sup> Visitors as of 31 December

#### **UNOOSA** extrabudgetary donors, 2024

	World Space Forum	Programme on Space Applications	Access to Space for All	UN-SPIDER	Space Law	Space Sustainability	Space4Water	Registration	Space4Women	General purpose	Totals
China				\$165.380,37							\$165.380,37
PSIPW							\$256.759,14				\$256.759,14
Japan					\$113.245,00						\$113.245,00
Germany				\$164.429,53							\$164.429,53
UKSA						\$145.431,00		\$80.000,00			\$225.431,00
Austria	\$27.964,21										\$27.964,21
France					\$52.388,08						\$52.388,08
Chile					\$79.209,50						\$79.209,50
JAXA			\$20.000,00								\$20.000,00
Republic of Korea									\$50.000,00	\$23.504,00	\$73.504,00
ESA		\$44.742,73									\$44.742,73
Canadian Space Agency, CSA									\$12.611,00		\$12.611,00
Monaco					\$50.554,98						\$50.554,98
Spain				\$10.000,00							\$10.000,00
Totals	\$27.964,21	\$44.742,73	\$20.000,00	\$339.809,90	\$295.397,56	\$145.431,00	\$256.759,14	\$80.000,00	\$62.611,00	\$23.504,00	\$1.296.219,54

Cash contributions received: \$1,296,219; in-kind contributions: \$1,138.3, as reported to the Office. Not all in-kind donors are able to submit estimated values of the support and services provided to the Office in the delivery of its activities.

#### Growth in followers across social media platforms

Platform	Follower growth (growth y/y)
LinkedIn	45,328 (+14,200)
Facebook	32,000 (+2,036)
Instagram	10,697 (+3,099)
YouTube	4,300 (+660)
X (formerly Twitter)	34,191

<sup>&</sup>lt;sup>a</sup> As at 30 January 2024. <sup>b</sup> Excludes consultants, contractors and interns.

# 02/90

# THE UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS (UNOOSA)

IS RESPONSIBLE FOR ADVANCING INTERNATIONAL COOPERATION IN THE PEACEFUL USES OF OUTER SPACE AND HELPS ALL COUNTRIES USE SPACE SCIENCE AND TECHNOLOGY TO ACHIEVE SUSTAINABLE DEVELOPMENT.

