

The Office for Outer Space Affairs

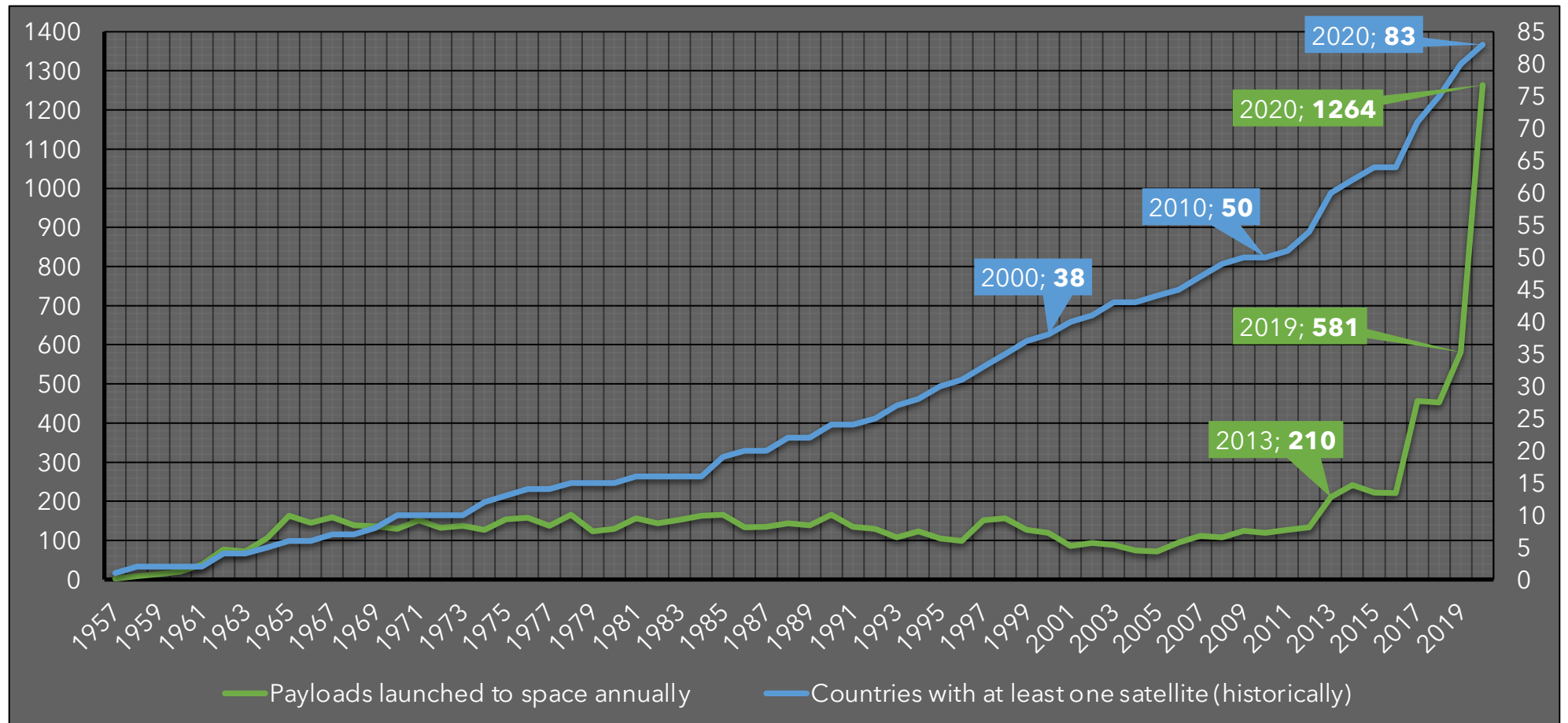
Access to Space for All Webinar
Long-term Sustainability of Outer Space Activities



Space Sustainability

In the first 55 years, the space sector was developing gradually with annual launches remaining relatively stable. With the birth and proliferation of small satellites, **we are witnessing a major change in space activities.**

- **10,500+** functional objects launched to space since 1957
- Over **10%** launched in 2020 alone



THE INTERNATIONAL COMMUNITY RECOGNIZES THE NEED TO **ENSURE** **SPACE SUSTAINABILITY IN THE LONG TERM**

Space is being used by an increasing number of States, international intergovernmental organizations and non-governmental entities.

Space debris, the increasing complexity of space operations, the emergence of large constellations and increased risk of collisions and interference with space objects may affect the long-term sustainability of outer space activities.

This has been, and continues to be, a top area of focus for the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).

The Earth's
orbital environment
constitutes a
finite resource



#LTSGUIDELINES
#SPACESUSTAINABILITY

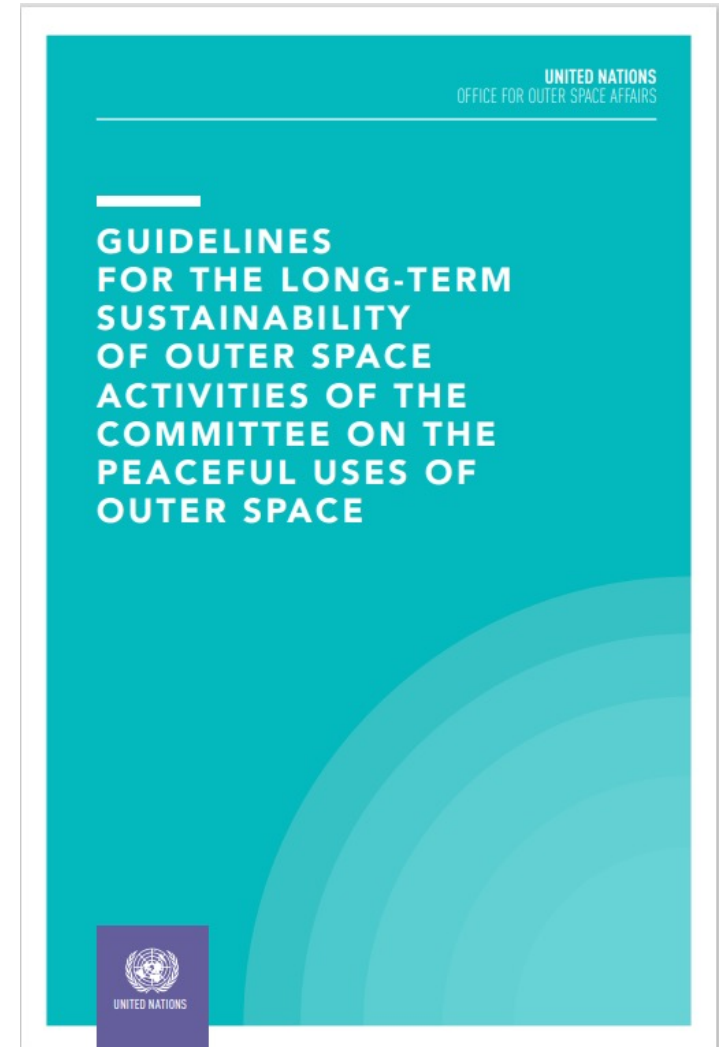


UNITED NATIONS
Office for Outer Space Affairs

**INTERNATIONAL COOPERATION IS NEEDED
TO ADDRESS THESE DEVELOPMENTS AND RISKS**

“The long-term sustainability of outer space activities is defined as the ability to **maintain the conduct of space activities indefinitely** into the future in a manner that realizes the objectives of **equitable access to the benefits** of the exploration and use of outer space for peaceful purposes, in order to meet the needs of the present generations while **preserving the outer space environment** for future generations.”

ST/SPACE/79



The permanent Committee on the Peaceful Uses of Outer Space (COPUOS) was established by the United Nations General Assembly in 1959

- ❑ **Two subcommittees:** Scientific and Technical (STSC) and Legal Subcommittees (LSC)
- ❑ **Reports to the United Nations General Assembly** (one of the principal organs of the UN) via the GA's Special Political and Decolonization Committee (Fourth Committee)
- ❑ Decision taken in **consensus**, giving **equal negotiating power to all member States**
- ❑ Focuses on international cooperation in the peaceful uses of outer space, discussing the most pressing issues in the space sector
- ❑ Secretariat services provided by the Office for Outer Space Affairs



COPUOS has an expanding membership, demonstrating the increasing awareness of the relevance of outer space activities to the everyday lives of citizens

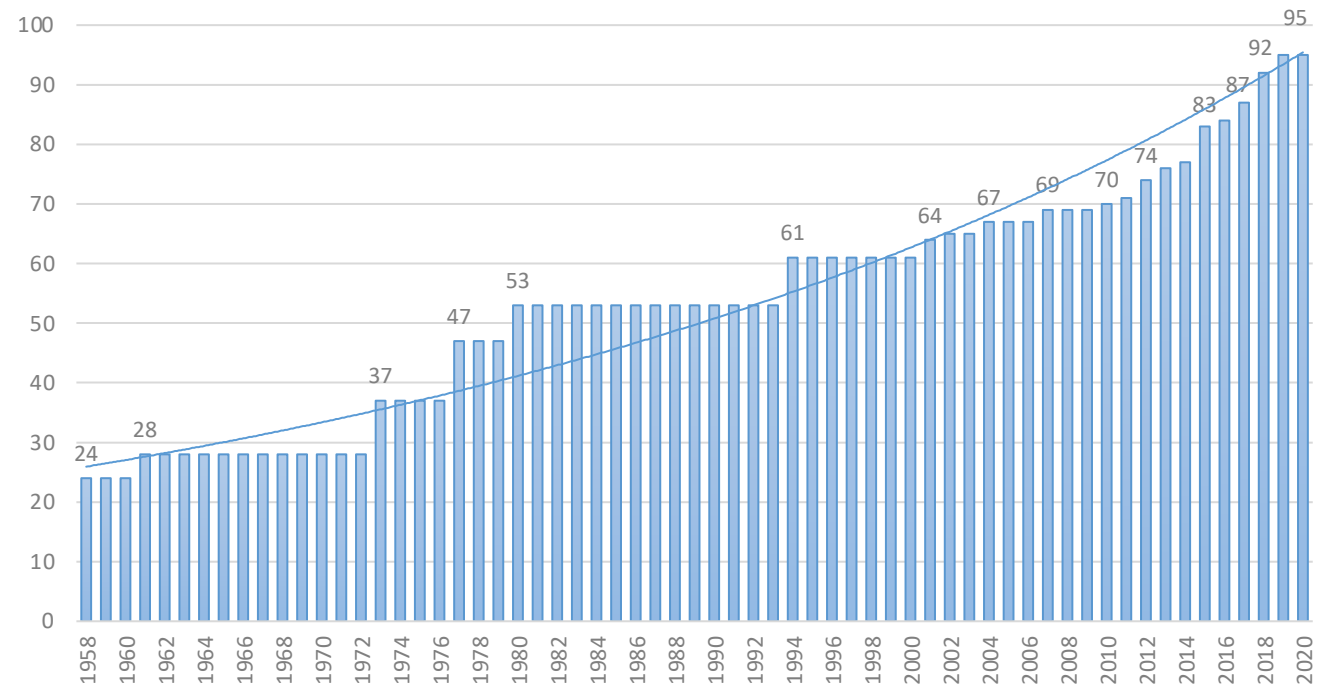
❑ COPUOS's expanding membership:

- 1958 - 18 members
- 2019 - 95 members

❑ 5 more States joining in 2021 = **100 members**

❑ COPUOS also benefits from the participation of, and contributions by, intergovernmental and non-governmental permanent observer organizations

COPUOS Membership Evolution



Committee on the Peaceful Uses of Outer Space



ALBANIA
ALGERIA
ARGENTINA
AUSTRALIA
AUSTRIA
ARMENIA
AZERBAIJAN
BAHRAIN
BELARUS
BELGIUM
BENIN
BOLIVIA
BRAZIL
BULGARIA
BURKINA FASO
CAMEROON
CANADA
CHAD
CHILE
CHINA

COLOMBIA
COSTA RICA
CUBA
CHECHIA
DENMARK
DOMINICAN REPUBLIC
ECUADOR
EL SALVADOR
EGYPT
FRANCE
GHANA
GERMANY
GREECE
HUNGARY
INDIA
INDONESIA
IRAN
IRAQ
ISRAEL
ITALY

JAPAN
JORDAN
KAZAKHSTAN
KENYA
LEBANON
LIBYA
LUXEMBOURG
MALAYSIA
MEXICO
MONGOLIA
MOROCCO
NETHERLANDS
NEW ZEALAND
NICARAGUA
NIGER
NIGERIA
NORWAY
OMAN
PAKISTAN
PERU

PHILIPPINES
POLAND
PORTUGAL
QATAR
REPUBLIC OF KOREA
ROMANIA
RUSSIAN FEDERATION
RWANDA
SAUDI ARABIA
SENEGAL
SIERRA LEONE
SINGAPORE
SLOVAKIA
SOUTH AFRICA
SPAIN
SRI LANKA
SUDAN
SWEDEN
SWITZERLAND
SYRIA

THAILAND
TUNISIA
TURKEY
UKRAINE
UNITED ARAB EMIRATES
UNITED KINGDOM
UNITED STATES OF AMERICA
URUGUAY
VENEZUELA
VIET NAM

ANGOLA
BANGLADESH
KUWAIT
PANAMA
SLOVENIA

Working Group on the Long-term Sustainability of Outer Space Activities (2010 -2018)

- ❑ Establishment in 2010 **under the Scientific and Technical Subcommittee** (A/AC.105/958, para. 181)
- ❑ Chaired by Peter Martinez (South Africa)
- ❑ Tasked to identify areas of concern for the long-term sustainability of outer space activities, propose measures that could enhance sustainability, prepare a report, and **produce voluntary guidelines** to reduce risks to the long-term sustainability of outer space activities (A/66/20, Annex II, paras. 11-12)
- ❑ Established **four expert groups**, which developed reports and candidate guidelines
- ❑ Created an informal translation and terminology reference group.
- ❑ Held five intersessional meetings



Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee Of the Committee on the Peaceful Uses of Outer Space

- ❑ 2016: the Committee reached consensus on a **first set of 12 guidelines** (A/71/20, Annex).
- ❑ 2018: consensus was reached on a **preamble and nine additional guidelines** (A/AC.105/1167, Annex III).
- ❑ 2019: the Committee **adopted the Guidelines** (A/74/20, para 163 and Annex III) and established a further working group (A/74/20, para 165).
- ❑ 2019: Guidelines welcomed with appreciation by the United Nations General Assembly – GA Res 74/82.




IN 2019 INTERNATIONAL AGREEMENT WAS REACHED ON GUIDANCE FOR THE **LONG-TERM SUSTAINABILITY OF OUTER SPACE ACTIVITIES**

The United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) adopted, by consensus, a preamble and 21 Guidelines, demonstrating how States collaborate multilaterally to prioritize space sustainability.

The Guidelines for the Long-term Sustainability of Outer Space comprise a compendium of internationally recognized measures for, and commitments to, ensuring the long-term sustainability of outer space activities.

The preamble of the Guidelines defines the long-term sustainability of outer space activities, explains their voluntary and non-legally binding status, and shares how the guidance they provide is to be reviewed and updated.

The Guidelines
are relevant to both
governmental and
non-governmental entities.



#LTSGUIDELINES
#SPACESUSTAINABILITY



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THE GUIDELINES PROVIDE DETAILED GUIDANCE **ACROSS FOUR SECTIONS:**
A) POLICY AND REGULATORY FRAMEWORK FOR SPACE ACTIVITIES; B) SAFETY OF SPACE OPERATIONS; C) INTERNATIONAL COOPERATION, CAPACITY-BUILDING AND AWARENESS; AND D) SCIENTIFIC AND TECHNICAL RESEARCH AND DEVELOPMENT.



A.1 Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities

A.2 Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities

POLICY AND REGULATORY FRAMEWORK FOR SPACE ACTIVITIES

Guidelines for the Long-term Sustainability of Outer Space Activities: Section A

A.3 Supervise national space activities

A.4 Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites

A.5 Enhance the practice of registering space objects





- B.1** Provide updated contact information and share information on space objects and orbital events
- B.2** Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects
 - B.3** Promote the collection, sharing and dissemination of space debris monitoring information
- B.4** Perform conjunction assessments during all orbital phases of controlled flight
- B.5** Develop practical approaches for pre-launch conjunction assessments
- B.6** Share operational space weather data and forecasts

SAFETY OF SPACE OPERATIONS

Guidelines for the Long-term Sustainability of Outer Space Activities: Section B

- B.7** Develop space weather models and tools, and collect established practices on the mitigation of space weather effects
 - B.8** Design and operation of space objects regardless of their physical and operational characteristics
- B.9** Take measures to address risks associated with the uncontrolled re-entry of space objects
- B.10** Observe measures of precaution when using sources of laser beams passing through outer space





C.1 Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities

C.2 Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange

INTERNATIONAL COOPERATION, CAPACITY-BUILDING AND AWARENESS

Guidelines for the Long-term Sustainability of Outer Space Activities: Section C

C.3 Promote and support capacity-building

C.4 Raise awareness of space activities





D.1 Promote and support research into and the development of ways to support sustainable exploration and use of outer space

SCIENTIFIC AND TECHNICAL RESEARCH AND DEVELOPMENT

**Guidelines for the Long-term
Sustainability of Outer Space Activities: Section D**

D.2 Investigate and consider new measures to manage the space debris population in the long term



Guideline B.8 - Design and operation of space objects regardless of their physical and operational characteristics

- Promote design approaches that increase the trackability of space objects
- Design objects... to limit the long-term presence in protected regions of outer space after the end of their mission
- Share experiences and information on the operation and end-of-life disposal of space objects

Guideline D.1 - Promote and support research into and the development of ways to support sustainable exploration and use of outer space

- Minimize the environmental impact of manufacturing and launching space assets
- Maximize the use of renewable resources and the reusability or repurposing of space assets

Working Group on the Long-term Sustainability of Outer Space Activities - Way Forward

- ❑ Chair, Umamaheswaran R. (India), elected and first meetings convened in 2021.
- ❑ To be guided by the following framework:
 - Identifying and **studying challenges** and **considering possible new guidelines** for the long-term sustainability of outer space activities;
 - **Sharing experiences, practices and lessons learned** from voluntary **national implementation** of the adopted guidelines;
 - **Raising awareness and building capacity**, in particular among emerging space nations and developing countries.
- ❑ Terms of reference, methods of work and workplan are being negotiated.



UNOOSA Project

Awareness-raising and capacity-building to support the implementation of the LTS Guidelines

- Searchable case study collection
- Virtual event series held in early 2021 - recordings available.
- Publication of the LTS Guidelines



spacesustainability.unoosa.org

(The Project is made possible with financial support from the United Kingdom.)

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POLICY AND REGULATORY FRAMEWORK FOR SPACE ACTIVITIES

Guidelines for the Long-term Sustainability of Outer Space Activities: Section A

- A.3 Supervise national space activities
- A.4 Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites
- A.5 Enhance the practice of registering space objects



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SAFETY OF SPACE OPERATIONS

Guidelines for the Long-term Sustainability of Outer Space Activities: Section B

- B.7 Develop space weather models and tools, and collect established practices on the mitigation of space weather effects
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- B.10 Observe measures of precaution when using sources of laser beams passing through outer space



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INTERNATIONAL COOPERATION, CAPACITY-BUILDING AND AWARENESS

Guidelines for the Long-term Sustainability of Outer Space Activities: Section C

- C.3 Promote and support capacity-building
- C.4 Raise awareness of space activities



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- D.1 Promote and support research into and the development of ways to support sustainable exploration and use of outer space

SCIENTIFIC AND TECHNICAL RESEARCH AND DEVELOPMENT

Guidelines for the Long-term Sustainability of Outer Space Activities: Section D

- D.2 Investigate and consider new measures to manage the space debris population in the long term



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Thank you for your attention.