

THE UN COPUOS GUIDELINES ON THE LONG-TERM SUSTAINABILITY OF OUTER SPACE ACTIVITIES

A SECURE WORLD FOUNDATION FACT SHEET

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In 2010, the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) established the Working Group on the Long-Term Sustainability (LTS) of Outer Space Activities. The Working Group was tasked with producing a set of voluntary guidelines for all space actors to help ensure the long-term sustainable use of outer space. The Working Group's mandate ended in June 2018. During its mandate, the UN COPUOS member States agreed on 21 guidelines and a context-setting preambular text. The States also agreed to continue their discussions of space sustainability under a dedicated agenda item of the Scientific and Technical Subcommittee of COPUOS. This Fact Sheet provides a general overview of the COPUOS process, the resulting consensus guidelines, and the way forward.

The UN and Space Sustainability

The United Nations has addressed the concept of sustainable development on Earth in a number of global summits and fora for the past 40 years. The Sustainable Development Goals (SDGs) are a set of 17 global goals set by the United Nations in 2015 to address the world's most pressing problems. The extension of the concept of sustainability to outer space is a more recent development, and arises from the realization that the Earth's orbital space environment constitutes a finite resource that is being used by an increasing number of space actors that include States, international intergovernmental organizations, and non-governmental entities. The proliferation of space debris, the increasing complexity of space operations, the emergence of large constellations of satellites and the increased risks of collisions and interference with the operation of satellites raise concerns about the safety of space operations and the long-term sustainability of space activities. Addressing these developments and risks requires international cooperation.

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.*¹

— Definition developed in the UN process described in this Fact Sheet

The United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) is the leading international forum for discussion among States regarding cooperation in space activities and for the progressive development and codification of international space law and norms for behavior. Over the years, UN COPUOS has considered different aspects of the long-term sustainability of outer space activities from various perspectives. Building on those previous efforts and other relevant related efforts, in 2010 COPUOS established a Working Group on the Long-term Sustainability of Outer Space Activities under its Scientific and Technical Subcommittee.²

The Working Group examined the long-term sustainability of space activities within the broader context of sustainable development on Earth; considered current practices, operating procedures, technical standards, and policies relevant to space sustainability and safety; and took as its legal framework the existing UN treaties and principles governing space activities.³

Four expert groups were created to discuss specific topics and propose candidate guidelines. The expert groups focused on the following thematic areas:

- A — Sustainable space utilization supporting sustainable development on Earth
- B — Space debris, space operations, and tools to support collaborative space situational awareness
- C — Space weather
- D — Regulatory regimes and guidance for new actors in the space arena

States and intergovernmental organizations with permanent observer status at COPUOS nominated experts to serve on the four expert groups as a part of their official delegation. Secure World Foundation staff served in each of the four expert groups. The expert groups received inputs from other UN bodies, such as the Conference on Disarmament and the International Telecommunication Union (ITU), and nongovernmental bodies, such as the Inter-Agency Space Debris Coordination Committee (IADC) and the International Academy of Astronautics (IAA). The expert groups finalized their reports in 2014 and presented 31 candidate guidelines and a set of possible additional topics for consideration by the Working Group.^{4,5,6,7}

Following the expert group phase, the Working Group began developing the draft guidelines based on the recommendations of the expert groups. A number of member States also proposed draft guidelines for consideration by the Working Group. By the start of 2016, through a process of consolidation and streamlining, the Working Group had narrowed its focus to 29 draft guidelines, all at various stages of maturity.

Since COPUOS takes decisions by absolute consensus of its member States, all 87 member States had to reach agreement on the text of each one of these guidelines. Progress was gradual and uneven, but in June 2016 COPUOS reached agreement on the first 12 guidelines.⁸ In February 2018, agreement was reached on a further nine guidelines and the text of a context-setting preamble that included the definition of space sustainability quoted above.⁹

The Guidelines

The 21 agreed guidelines¹⁰ comprise a collection of internationally recognized measures for ensuring the long-term sustainability of outer space activities and for enhancing the safety of space operations. They address the policy, regulatory, operational, safety, scientific, technical, international cooperation, and capacity-building aspects of space activities. They are based on a substantial body of knowledge, as well as the experiences of States, international intergovernmental organizations and relevant national and international non-governmental entities. Therefore, the guidelines are relevant to both governmental and non-governmental entities. They are also relevant to all space activities, whether planned or ongoing, as practicable, and to all phases of a space mission, including launch, operation, and end-of-life disposal.

The purpose of the guidelines is to assist States and international intergovernmental organizations, both individually and collectively, to mitigate the risks associated with the conduct of outer space activities so that present benefits can be sustained and future opportunities realized. Consequently, the implementation of the guidelines should promote international cooperation in the peaceful use and exploration of outer space.

The guidelines are intended to support the development of national and international practices and safety frameworks for conducting outer space activities while allowing for flexibility in adapting such practices and frameworks to specific national circumstances. They are also intended to support States and international intergovernmental organizations in developing their space capabilities in a manner that avoids causing harm to the outer space environment and the safety of space operations.

The guidelines are voluntary and not legally binding under international law. The existing United Nations treaties and principles on outer space provide the fundamental legal framework for these guidelines. However, despite their non-binding status under international law, the guidelines can have a legal character in the sense that States may choose to incorporate elements of the guidelines in their national legislation, as has been the case with the COPUOS space debris mitigation guidelines.¹¹

The guidelines are grouped into four categories:

- Policy and regulatory framework for space activities
- Safety of space operations
- International cooperation, capacity-building, and awareness
- Scientific and technical research and development

The titles of the 21 agreed guidelines are indicated in the adjacent box. The full text of the guidelines is available in UN document

[A/AC.105/2018/CRP.20](#). The remaining seven guidelines that did not reach consensus during the mandate of the Working Group are contained in document [A/AC.105/2018/CRP.21](#). The progress made in discussions of these draft guidelines will inform future discussions of space sustainability in COPUOS.

Implementation and Updating

States and international intergovernmental organizations are encouraged to implement these guidelines to the greatest extent feasible and practicable, in accordance with their respective needs, conditions and capabilities, and with their existing obligations under applicable international law.

International cooperation is required to implement the guidelines effectively and to monitor their impact and effectiveness. However, COPUOS recognizes that not all space actors have equal capability or capacity to implement these guidelines. Therefore the guidelines place strong emphasis on international cooperation and information sharing. States and international intergovernmental organizations with extensive experience in conducting space activities are encouraged to support developing countries to strengthen their national capacities to implement the guidelines.

COPUOS also recognizes that these guidelines should be a “living document” that is periodically updated to ensure that, as space activities evolve, the guidelines continue to reflect the most current state of knowledge of pertinent factors influencing the long-term sustainability of outer space activities. This “living document” aspect of the guidelines is especially important given that the rapid evolution in space activities makes space sustainability a dynamic, multi-scale problem.

States and international intergovernmental organizations are encouraged to share their practices and experiences with COPUOS regarding the implementation of the guidelines. States are also encouraged to promote and/or conduct research on topics relevant to these guidelines and their implementation.

The Committee envisages that it may periodically review, revise or add to these guidelines to ensure that they continue to provide effective guidance to promote the long-term sustainability of outer space activities. Proposals for revising this set of guidelines, or for new guidelines, may be submitted by any COPUOS member State for consideration by the Committee.

The Way Forward

The 60th session of COPUOS in June 2018 agreed that the long-term sustainability of outer space activities is an important topic and that discussions would continue in 2019 under a dedicated agenda item of the Scientific and Technical Subcommittee of COPUOS, but it did not reach consensus on the specific content and modality of such discussions. In part, the reason for this was that there were different views on the way forward concerning the seven guidelines that had not reached consensus during the mandate of the LTS Working Group. The Working Group discussed various options for continuing work related to the topic of the long-term sustainability of outer space activities. These included extending the mandate of the Working Group by one year to carry out specific tasks related to the remaining seven draft guidelines, and creating a new working group on safety and transparency in space activities. However, by the end of the 60th session, the Working Group had not been able to reach a consensus on the details of any proposal. These discussions will resume at the fifty-sixth session of the Scientific and Technical Subcommittee, and, as warranted, at the fifty-eighth session of the Legal Subcommittee in 2019.

Participation in the LTS process is the latest example of increased interest by UN member States in the work of COPUOS. Since the start of the LTS process in 2010, the membership of the Committee has grown from 70 to 87 States. Although States may occasionally disagree on elements of some of the guidelines, or the modality of the discussions, or the scope and implementation of the guidelines, their engagement signifies a common belief in the importance of ensuring a sustainable future for space activities and that such a future is achievable only through international dialogue and cooperation. In this regard, the increased number of States aware of, and knowledgeable about, these issues is a net positive outcome of the LTS process, in addition to the 21 guidelines agreed to date.

UN COPUOS Guidelines on Long-term Sustainability of Outer Space Activities

A. Policy and regulatory framework for space activities

- Guideline A.1 Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities
- Guideline A.2 Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities
- Guideline A.3 Supervise national space activities
- Guideline A.4 Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites
- Guideline A.5 Enhance the practice of registering space objects

B. Safety of space operations

- Guideline B.1 Provide updated contact information and share information on space objects and orbital events
- Guideline B.2 Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects
- Guideline B.3 Promote the collection, sharing and dissemination of space debris monitoring information
- Guideline B.4 Perform conjunction assessment during all orbital phases of controlled flight
- Guideline B.5 Develop practical approaches for pre-launch conjunction assessment
- Guideline B.6 Share operational space weather data and forecasts
- Guideline B.7 Develop space weather models and tools and collect established practices on the mitigation of space weather effects
- Guideline B.8 Design and operation of space objects regardless of their physical and operational characteristics
- Guideline B.9 Take measures to address risks associated with the uncontrolled re-entry of space objects
- Guideline B.10 Observe measures of precaution when using sources of laser beams passing through outer space

C. International cooperation, capacity-building and awareness

- Guideline C.1 Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities
- Guideline C.2 Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange
- Guideline C.3 Promote and support capacity-building
- Guideline C.4 Raise awareness of space activities

D. Scientific and technical research and development

- Guideline D.1 Promote and support research into and the development of ways to support sustainable exploration and use of outer space
- Guideline D.2 Investigate and consider new measures to manage the space debris population in the long term

This fact sheet supersedes the [SWF UN COPUOS LTS Guidelines Fact Sheet](#) published in July 2017.

Endnotes

1. This definition of space sustainability was developed in the UN process described in this Fact Sheet and appears in paragraph 5 of document A/AC.105/2018/CRP.20. It has obvious parallels with the definition of sustainable development in the Report of the Brundtland Commission: *Our Common Future*, which is available at <http://www.un-documents.net/our-common-future.pdf>.
2. For a discussion of the origin of the LTS discussions in COPUOS, refer to the articles by Brachet (*Space Policy*, Vol. 28, pp 161-165, 2012) and Martinez (*Space Policy*, Vol. 43, pp 13-17, 2018).
3. The terms of reference and scope of the Working Group are available in Report of the Committee on the Peaceful Uses of Outer Space, fifty-fourth session (1–10 June 2011), UN General Assembly document A/66/20, Annex II.
4. Report of LTS expert group A — Sustainable space utilization supporting sustainable development on Earth, COPUOS session document A/AC.105/C.1/2014/CRP.13, available on the website of the UN Office for Outer Space Affairs www.unoosa.org.
5. Report of LTS expert group B — Space debris, space operations and tools to support collaborative space situational awareness, COPUOS session document A/AC.105/C.1/2014/CRP.14, available on the website of the UN Office for Outer Space Affairs www.unoosa.org.
6. Report of LTS expert group C — Space weather, COPUOS session document A/AC.105/C.1/2014/CRP.15, available on the website of the UN Office for Outer Space Affairs www.unoosa.org.
7. Report of LTS expert group D — Regulatory regimes and guidance for new actors in the space arena, COPUOS session document A/AC.105/C.1/2014/CRP.16, available on the website of the UN Office for Outer Space Affairs www.unoosa.org.
8. Report of the Committee on the Peaceful Uses of Outer Space, Fifty-ninth session (8–17 June 2016), UN General Assembly document A/71/20, Annex.
9. Report of the Scientific and Technical Subcommittee on its fifty-fifth session (29 January to 9 February 2018), UN General Assembly document A/71/20, Annex III. The detailed text of the agreed guidelines appears in document A/AC.105/C.1/2018/CRP.18/Rev.1.
10. The consolidated text of the agreed guidelines as of the end of the Working Group's mandate is contained in document A/AC.105/2018/CRP.20. The working texts of the draft guidelines that did not reach consensus by the end of the Working Group's mandate are contained in document A/AC.105/2018/CRP.21.
11. Several States have implemented space debris mitigation measures in their national legislation. A compendium of space debris mitigation standards adopted by States and international organizations is available on the website of the UN Office for Outer Space Affairs at the following URL: <http://www.unoosa.org/osa/en/ourwork/topics/space-debris/compendium.html>.